

COMMUTING TO OFF-RESERVE EMPLOYMENT BY  
CANADIAN FIRST NATION'S RESERVE RESIDENTS

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By

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## ABSTRACT

Improving economic outcomes for First Nations people in Canada is a national policy objective and, of course, a priority for First Nations (FN). Among the options are policies designed to improve education and health of the FN individuals. These may result in increased migration of Reserve residents to off-Reserve locations, often urban centres, with better employment and income prospects. At the Reserve level, there are programs and policies in place to encourage and support economic development on Reserves. Many Reserves are remote and with limited potential. A third channel by which economic outcomes for FNs may be improved is by commuting to off-Reserve employment while retaining their on-Reserve residence.

Positive urban agglomeration spillovers in the form of employment opportunities for rural populations, and the resulting effect of this employment on the economic conditions of rural communities, are well established for the general population. This has not been investigated for Reserve populations. This paper examines the relationship between out-commuting from Reserves and Community Well-being of the FNs. We also estimate the incidence and determinants of off-Reserve employment by FNs. We find that distance from urban centres is negatively related to Community Well-being, as are population growth rates. Percentages of the population over the age of 15 and out-commuting rates from Reserves are positively associated with Community Well-being Scores. Out-commuting is, in turn, facilitated by better high school completion rates and negatively affected by distance. We conclude that improved access to off-Reserve employment for Reserve residents is an important means of improving the well-being of Reserve populations, and that a high school education is an asset.

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## Dedication

For my parents, Orene & Ishmael, who continue to inspire; my uncle Wesley for holding me to a higher standard, and my daughter, Eden, who wants me back home. To God be the glory.

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## CHAPTER 1 INTRODUCTION

In 2011 the Aboriginal Affairs and Northern Development Canada (AANDC) Community Well-being (CWB) Index study indicated that CWB scores were 35% lower for First Nations<sup>1</sup> Reserves than for non-Aboriginal<sup>2</sup> communities. Of the “bottom 100” Canadian communities in 2006, all but four of them were First Nations Reserve Communities (AANDC, 2011). Further, the outgoing Auditor General of Canada, in her May 25th, 2011 address, lamented the socio-economic conditions on First Nations Reserves. Ms. Fraser pointed out that despite 10 years and 31 reports from the Office of Auditor General, Indian and Northern Affairs Canada (INAC) between 2001 and 2006 there was little or no progress in the improvement of the well-being of First Nations communities (O’Sullivan, 2011).

### **1.1. Current Context**

In 2007, Canadian Prime Minister Steven Harper suggested that “the first priority is economic development” in order to improve the lives of Aboriginal people and their families. Clearly improvements in First Nations living standards are imperative. One way of realising this change is through the integration of Reserve population into the mainstream Canadian economy (Federal Framework for Aboriginal Economic Development, 2009).

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<sup>1</sup> "First Nations" is a Canadian term, which came into common usage in the 1970's, which is widely used to replace the words band or Indian. It was first used by the National Indian Brotherhood in 1981. In the wording, First Nations in Canada is used rather than Canada's First Nations, to reflect the meaning that for First Nation's peoples, Canada is theirs. There is no legal definition for this term.

<sup>2</sup> Aboriginal peoples of Canada are defined in the Constitution Act, 1982, Section 35 (2) as including the Indian, Inuit and Métis peoples of Canada. Statistics Canada defines Aboriginal ancestry as referring to whether a person reported ancestry associated with the Aboriginal peoples of Canada.

“Idle No More”, a grass roots movement of youth and Aboriginal Peoples, begun in November 2011 as a response to Bill C-45<sup>3</sup>, came to symbolize the Aboriginal Peoples’ resolve to be “Idle No More,” and seek to redress and resolve long standing issues including community economic problems, unemployment, incarceration and female exploitation. The movement brought increased visibility of young Aboriginal Canadians, at drum-in’s and protests in malls and other public spaces across Canada (The Manitoban, 2013). The “Idle No More” movement signals the Aboriginal Peoples’ articulation of the conditions within their communities, and the urgent need for policies at federal and provincial levels to address and mitigate these challenges.

The Centre for Living standards attempted to quantify the effect on the Canadian economy by 2017, of raising the educational attainment and labour market outcomes for Aboriginal Canadians as a group, to the same level of non-Aboriginal Canadians in 2001. They reported that in a best-case scenario, the potential contribution of Aboriginal Canadians is an additional \$160 billion (2001 dollars) over the 2001-2017 time period, an increase of 1.27% of projected GDP.

The Federal Framework for Economic Development, in a 2011 update suggested that the emerging trends within the Aboriginal identity population offered a unique opportunity for action by both private and public interests (Government of Canada, 2010). These trends included:

- A growing, youthful Aboriginal population;
- A growing land base, as land claims are settled;
- Increasing recognition of the economic importance of Aboriginal Canadians, and an increasing interest from the private sector in working with and within the Aboriginal community; and
- A growth of Aboriginal entrepreneurial leadership (Government of Canada, 2009).

The Aboriginal population in Canada is the fastest growing segment of the Canadian population, growing at a rate of 45% between 1996 and 2006, compared with only 8% for

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<sup>3</sup> The Jobs and Growth Act, also known as Bill C-45 passed in December of 2012. It is an omnibus act, and among various amendments, spanning from fishing rights to pensions, the bill lays a reworking of the Navigable Waters Protection Act (NWPA), originally penned in 1882.

Canada as a whole. Between 1996 and 2006, the proportion of FN people living off-Reserve increased from 58 to 60% (Statistics Canada, 2009). Statistics Canada also reports that about half of the off-Reserve FNs live in Census Metropolitan Areas (urban centres with a core population of 100,000 or more).

Many of the Reserves are remote. Within our set of rural Reserve Census Subdivisions (CSD's), the average distance from the nearest urban centre was 128 km, and half of the Reserves were 82 km or farther away. For those living on-Reserve, urban Canada is not next-door. Most reservations are located in sparsely populated regions and are small in size. The average Reserve CSD had 827 inhabitants in 2006, and the largest, 5,175 residents. Similarly, the geographic size of the individual Reserves is small, ranging in size from 1,000 to 143,500 ha, and on average, not much more than 1,000 hectares at 1,176 ha (AADNC, 1991).

Given the rapid growth of the on-Reserve population, the persistent challenges in terms of their economic well-being and the increased awareness both within Aboriginal communities and Canadian society in general, new policy approaches are required. Improving labour force outcomes and economic well-being will involve both on-Reserve economic development and better integration with economic opportunities off-Reserve. The latter will include both migration to off-Reserve locations, primarily urban centres, and commuting to urban centres from on-Reserve residences. In order to develop evidence-based policy in working towards improved economic well-being, research is needed into the factors influencing FN well-being, including the off-Reserve commuting of Reserve residents.

Following our problem statement below, this paper presents a background on Canadian treaties and the formation of Canadian Aboriginal Reserves, in Chapter 2. We then present a selected literature review (Chapter 3), and describe our research methodology in Chapter 4,

concluding with our hypotheses. Chapter 5 presents the results of our investigation and Chapter 6 offers some conclusions and policy implications of the research.

## **1.2. Problem Statement**

The Advantage Canada strategic policy document of 2006, suggested that building new opportunities for Aboriginal Canadians to participate in the economy would be the most effective method by which to bridge the socio-economic gap between Aboriginal peoples and other non-Aboriginal Canadians (Government of Canada, 2006). For Aboriginal Peoples, the areas where this socio-economic gap is most evident are the Reserve communities (O'Sullivan, 2011).

Improving economic conditions on Reserves entails providing access to employment and entrepreneurial opportunities for people living there (Centre for the Study of Living Standards, 2006). Of key importance is accessibility to neighboring urban centers (or economic opportunities), along with new economic opportunities on Reserves. In terms of accessibility to off-Reserve economic opportunities, the distance to urban centres will be a key determinant. In addition, the size of the urban centre in question will also be important in terms of the number and diversity of potentially available jobs (Ali et al., 2010).

The specific research question we address in this paper is the nature and determinants of the well-being of the residents of Canadian Aboriginal Reserves, as represented by the Community Well-Being Indices from AANDC (2012). The specific objectives are:

1. To estimate the extent to which the off-Reserve employment of Reserve residents affects the economic well-being of Reserve populations;
2. To estimate the determinants of out-commuting from Reserves; and
3. To discuss the policy implications of the empirical findings.

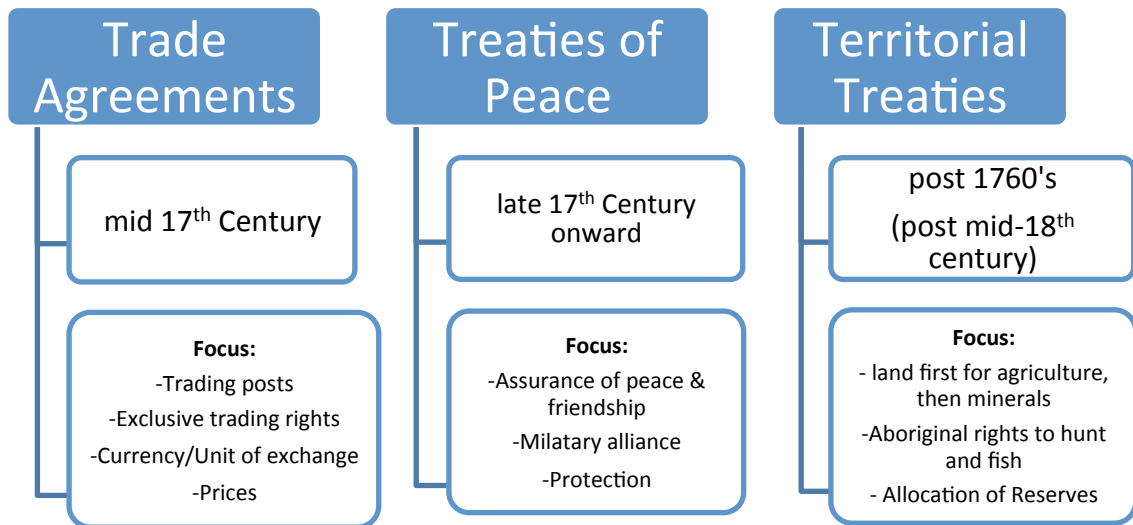
## CHAPTER 2 BACKGROUND

### **2.1. Canada, Aboriginal Peoples and Treaties**

Over the past 300 years in Canada, Aboriginal Peoples' treaties first with European powers, and later the Canadian government, have defined both the immigrants' and the Aboriginals' spaces, the latter being Reserves. The treaties that have fashioned the 21<sup>st</sup> century relationships between the Crown and Aboriginal Peoples, and form much of the foundation of the Canadian state, were authored during a span of two hundred years between the seventeenth and nineteenth centuries.

Miller (2004) points out that the English, Basque and French who came to Canadian shores, were motivated by four main goals: fish, fur, evangelisation and exploration - or some combination of these. Without the cooperation of Aboriginal Peoples, fulfillment any of those ends would have been difficult, if not impossible. Treaties were the codification of the relationships between the Aboriginals and the governments of the day, needed for the accomplishment of these objectives. Within this context, there were three main types of treaties, shown in Figure 2.1: commercial compacts (latter part of the 17th and eighteenth centuries); treaties of peace (friendship and alliance - late 17th century onward); and finally territorial treaties (emerging in the 1760's and dominating until the early 1920's). This was followed by nearly 50 years without any new treaties, until the treaty making process began again in the 1970's.

Figure 2.1: How the Focus of Treaty Making Changed Over Time



Source: Lashley, 2013.

Over time, even as the role (and economic focus) of treaties changed, the position of the Aboriginal Peoples' negotiators was also altered. The most pivotal change came after the Royal Proclamation of 1763, which attempted to regulate relations between Aboriginal Peoples and Great Britain, and perhaps more importantly, define conditions under which territory could legally be acquired. These foundational principles were that only the Crown or its representative could treat with Aboriginal Peoples for land, negotiations were to be public and the members of the Aboriginal community had to be made aware of the treaty under consideration.

## 2.2. Treaties and Reserves

Treaties after 1763 offered non-natives access to territory to facilitate settlement, in return for one time payments in kind. For example, one 1783 treaty - the Crawford Purchase - which consisted of over 2 million acres was acquired for goods costing the British Crown \$1,180. As settlement of non-Aboriginal people increased, so did problems of access by Aboriginal Peoples to water-fronts and fishing sites. By 1811, and the treaty

negotiations at Port Hope, the context of treaty making had changed. Aboriginal Peoples were now cognisant of the impact of the settlers and began to choose Reserve lands more strategically, such as fishing sites.

Following the war of 1812, immigration of settlers from Britain, coupled with losses of Aboriginal populations to disease, changed the demographics of what was then British North America. These changes were magnified as the railways contributed to the spread of the non-native population.

Shifting demographic, as settlers' numbers increased and they moved inland, were not the only changes. Post war of 1812, agreements between the Crown and Aboriginal Peoples shifted from one-time payments to annual disbursements, in return for territorial rights. In addition to becoming more legalistic and inclusive of annuities, post 1812 treaties also saw a widening gap between the oral history of the agreements and the written documentation.

Further, post 1812, peaceful relations between the United States and Britain meant that Aboriginal alliances were no longer a military necessity. The growth of settler populations meant FNs were no longer needed as trading partners, and instead were increasingly seen as potential barriers to newcomers winning wealth through use of the land to which the Aboriginal Peoples held title.

By the mid 1820's the growing immigrant society caused Aboriginal Peoples to seek to make provision for Reserves to be included in their agreements with the Crown. Notable at this time was also the transfer of Indian affairs back to civil oversight in 1830. This coincided with the shift in policy from trade and alliance towards what is known as "civilisation policy" (Miller 2004). Aimed at encouraging Aboriginals to adopt sedentary

habits and move away from migratory lifestyles, this policy was assimilationist in purpose.

Having provided land for settlers to reside and build agrarian economies, treaties then turned to mining and mineral wealth. As settlement lands were filled, attention was turned for the first time towards areas where minerals had been found. In the 1950's, two treaties with the Ojibway First Nation - Robinson-Huron/Superior treaties – were negotiated, which ceded lands and rights to the crown in exchange for Reserves, annuities and rights to hunt and fish. These Robinson negotiations set the pattern for subsequent treaties with the following features: 1) dealing with large quantities of land; 2) recognition of continued Aboriginal hunting and fishing rights; 3) inclusion of annuities; and 4) inclusion of “Reserves” as part of the treaty.

One of the major reasons for this new focus by Aboriginal leaders on annuities and hunting/fishing rights, was that with the depletion of game resources by the early nineteenth century, and uncertainty regarding the future viability of their mixed economies, chiefs were anxious regarding their peoples' continued economic security. Further, farsighted Aboriginal leadership had begun to see the necessity not just of rights of way for hunting and fishing, but also for their peoples to maintain some portion of their former lands. This is borne out in the eloquent, un-attributed words from 1861, speaking to how personal the land was to Aboriginal Peoples, during negotiations on a treaty: "This island of which I speak, I consider to be my body; I don't want one of my legs or arms to be taken from me (Canada Parliament Legislative Assembly, 1863)."

The political setting of the mid-19<sup>th</sup> century brought a new Canadian union, with the acquisition of lands seen as a pressing national necessity. Its parliament was now



assigned jurisdiction over 'Indians, and Lands Reserved for Indians.' The focus of Canadian economy moved from trade - furs, hunting and fishing, towards land based activities - agrarian and mining. This included settling farmers, acquiring land rights, and implementing inland access. During this period, the acquisition of previously Aboriginal lands fueled both Canadian and American economic growth (Frideres, 2008). The new emphasis, however, had the opposite effect on the Aboriginal peoples, who were increasingly unable to feed themselves. The most fertile land had been taken for European settlers and control of waterways and access was held by government, all to the disadvantage of the Aboriginal people (Miller, 2004).

Between 1871 and 1921, the Crown signed 11 treaties (shown in Figure 3.2), securing nearly half of the Canadian land mass north of the border, opened the country for settlement, and delineated Aboriginal Reserve boundaries and resource rights. For many Aboriginal Peoples it meant a loss of fishing, hunting rights and trapping rights.

Figure 2.2: Lands Covered Under Treaties 1 to 11



<[http://atlas.nrcan.gc.ca/data/english/maps/reference/national/hist\\_treaties/map.jpg](http://atlas.nrcan.gc.ca/data/english/maps/reference/national/hist_treaties/map.jpg)>  
Source: Government of Canada, 2007.

While the Reserve system undermined Aboriginal People's relationship to their traditional territories, it did not destroy it. For many, Aboriginal Reserves continued to serve as sites of economic, cultural and spiritual practices (Harris, 2002). The paradox of the Reserve system is that while it seemingly segregates Aboriginal peoples to isolated plots of land, the Reserve also serves as a spatial location for building and preserving community, culture and heritage, usually within the Aboriginal People's' traditional territory.

## CHAPTER 3 SELECTED LITERATURE REVIEW

Our selected literature review includes a brief overview of well-being indicators and measurement, selected research on economic conditions on Reserves and some work on the degree and integration of economic integration of Reserve populations in Canada. We also include a selected review of the policy options in terms of whether place-based or people-based policies are called for, along with empirical work supporting the policy options.

### **3.1. Well-being Indicators**

The most common measures of well-being have, looking back to the Brundtland Report (1987), sought to incorporate three main dimensions: economic, social and environmental. More recently, the Stiglitz report (Stiglitz et al., 2009) provides a comprehensive overview of various measures of well-being and their advantages and limitations. As might be expected, there is some overlap among various indicators in terms of which dimensions are used in the assessment of well-being. The Registered Indian Human Index Development index was based on the United Nations Human Development Index (HDI). Created in 1990, the United Nations HDI was designed to capture three dimensions of well-being: income, health, and knowledge.<sup>4</sup> Its composite measure of life expectancy, literacy, education standards of living and other variables, allows its use in the comparative evaluation of human development between countries.

The Registered Indian Human Development Index was developed in a similar vein by Indian and Northern Affairs Canada (as a modified HDI), to compare the well-being

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<sup>4</sup> “Knowledge” as measured by the adult literacy rate combined with the gross enrollment ratios of students in primary school through the university level (UNDP, 1990).

of Registered Indians to that of other Canadians. The index took into account three factors: life expectancy, education and income. Because of measurement problems it was abandoned in favour of a new measure, the Community Well-Being (CWB) Index.

The CWB Index published by Indian and Northern Affairs Development (IAND, 2006) Canada was developed to provide a tool to not just measure the quality of life of Aboriginal communities, but also to compare them to other Canadian communities, over time. It uses Statistics Canada Census of Population data, to produce community scores on “well-being”, and is actually an aggregate of four separate indicies:

- Education (High School Plus; University)
- Labour Force (Participation, Employment)
- Income (Total per Capita)
- Housing (Quantity: defined on the basis of overcrowding, Quality: defined based on the need for major repairs)

While the measure does not define all aspects of well-being, and is not ‘culturally sensitive’ it can be derived from readily available data and offers a method for comparison of the relative conditions in one community to those in another (O’Sullivan, 2011). The CWB index (an average of its four components) is used in our analysis as the main indicator of community economic well-being of Reserve populations.

### **3.2 Economic Conditions on Indian Reserves**

In 2011, the Office of the Auditor General of Canada presented a status report on Programs for First Nations on Reserves. In Chapter 4, the Auditor General of Canada pointed out to the House of Commons that despite the Federal government’s efforts, “Services available on Reserves are often not comparable to those provided off Reserves by provinces and municipalities. Conditions on Reserves have remained poor.” This was

only the most recent of a series of audit reports, decrying not just the physical living conditions, but also the highlighting the economic hardships within the communities.

Reports in 1993 and, ten years later in 2003, gave equally bleak pictures of the economic situation, highlighting gaps in key economic indicators such as employment and income, between Aboriginal and non-Aboriginal people in Canada. This gap had not improved by 2006.

A recent survey, released in June 2013 by the Canadian Centre for Policy Alternatives, highlights the dire situation of one of the most vulnerable population demographics, children. While the average child poverty rate (After Tax-Low Income Measure (AT-LIM) poverty line) for all children in Canada is 17%, for status First Nation children the average is 50% - half of these children live below the poverty line (McDonald and Wilson, 2013). The report indicates that the child poverty rate is even higher in Manitoba and Saskatchewan, 62% and 64% respectively.

From the 2006 census, Statistics Canada reported that persons of Aboriginal identity aged 15 and over, have a much lower educational attainment than their non-Aboriginal counterparts. In that year, 43.7 percent of them did not hold any type of certificate, diploma or degree, compared with 23.1 percent of other Canadians. However, the proportion of Aboriginal persons holding a university degree increased by 1.4 percentage points, an improvement that is not negligible, given that people with a high school diploma or higher had significantly better labour outcomes than those who did not (Centre for Study of Living Standards, 2009). However, at this rate of improvement it will take a long, long time to close the gap.

A 1999 report spoke to the Canadian Economic Development (CADE) Strategy, initiated by the Government of Canada to address the economic disparities between Aboriginal peoples and other Canadians. Established by Government in 1989, the CADE was meant to help develop and support economic self-reliance by providing Aboriginal persons with the means to take advantage of development opportunities, in order to achieve long-term employment and develop businesses. Three departments were to share the responsibility: by Indian and Northern Affairs Development, the Employment and Industry Department and the Department of Industry, Science, and Technology.

The report pointed out that despite some positive examples of Aboriginal economic development, the three departments responsible for implementing the strategy could NOT demonstrate that, “after spending at least \$900 million from the beginning of its implementation in 1989 to early 1993, they were meeting the Strategy's objectives”.

By 2003, the Auditor General’s report highlighted three main sources of impediments to Aboriginal economic progress:

- Barriers to accessing natural resources (treaties) and capital;
- Barriers to accessing federal business support programs; and
- Barriers to benefiting from federal institutional development programs.

The 2011 survey by the Canadian Council for Aboriginal Business (CCAB, 2011) supports these conclusions, particularly in the area of capital access and support. This report further indicated that while access to capital and support continued to be factors for concern, there was also the need for the development and maintenance of high quality personnel (HQP), especially in larger organisations. It was also noted that in recent years, several provinces, notably BC and Saskatchewan had implemented policies that helped First Nations Bands obtain greater access to lands and resources.

### **3.3. Economic Integration of Aboriginal Populations**

Increases in labour force participation and employment will improve the well-being of economically disadvantaged groups in the modern economy. The labour market disadvantages of rural areas are often explained by slower job growth and less beneficial demographic characteristics (Davis et al., 2003). Increasing education levels will improve the capacity of the labour force to engage in gainful employment in the modern economy. Integrating Aboriginal peoples into the Canadian economy will require overcoming two challenges within the First Nations community: employment access and education (Federal Framework for Aboriginal Economic Development, 2009).

There are some signs that economic integration is occurring. The number of Aboriginal business owners and entrepreneurs is growing at a rate that exceeds that for self-employed Canadians overall. Between 2001 and 2006, the number of self-employed Aboriginal people grew from 27,000 to 37,000 – a 37% increase, versus 7% for Canadians overall (CCAB, 2011). In addition, these small businesses create jobs for both Aboriginal and non-Aboriginal people, and influence economic growth and social well-being. Thirty-seven percent of these small businesses employ more than one person, with Aboriginal people comprising 62%.

Another important dimension of the Aboriginal business community is Aboriginal Economic Development Corporations (EDS's), which are the economic and business development arm of First Nations, Metis or Inuit governments. These community-owned businesses invest in, own or manage subsidiary business with the goal of benefiting the Aboriginal citizens whom they represent (CCAB, 2011).

There are other encouraging signs. Post high school, the earnings gap between Aboriginal students and their non-Aboriginal peers is decreasing. Census figures reveal

that the employment rates for Aboriginal and non-Aboriginal bachelor's graduates are almost identical. Over the last decade, the number of Aboriginal post-secondary students has been growing at roughly the same rate as the overall student population, and Aboriginal students represent approximately 3% of all Canadian undergraduates in 2006 (Statistics Canada Census, 2006).

Data suggest that policies to increase Aboriginal employment rates affect the entire Canadian economic bottom line. A 2012 study indicated that in Saskatchewan alone, if employment rates of Aboriginal peoples increased to that of the surrounding provinces (Alberta and Manitoba), there would be a net increase in the province's GDP of 6.7 billion dollars (Howe, 2012).

The interdependency between rural and urban economies (without respect to Aboriginal or non-Aboriginal) is evident in patterns of rural commuting (Green and Meyer, 1997; Partridge et al., 2007b; Ali, Olfert and Partridge, 2009). Rural areas deficient in job opportunities are likely to have many of their inhabitants commute to other areas, or relocate to other rural or (mostly) urban areas. For the 47% of the Canadian Aboriginal population who do not live in urban areas, employment opportunities include those that accessible through commuting from their Reserve residence. For an employed Aboriginal person living on-Reserve, employment may be on that Reserve or in a community within commuting distance.

Using Statistics Canada data, gravity models have been used to explain the level of interaction between two places (rural/urban) as a function of the populations of the areas and the physical distance between them. Out-commuting from residences in rural areas (like Reserves) to urban employment decouples local job and population growth



dependency (Partridge et al., 2010). Given the cost of commuting, the distance over which an employed individual will commute to earn income is limited. Urban centre size or the “tier” to which the labour force members commute is also important. Larger, more diverse centres may induce longer commutes, if they offer more diverse and more lucrative employment opportunities.

### **3.4. Place-based versus People-based Policy**

Canadian First Nation’s Reserves are located mainly in rural areas<sup>5</sup>. In the dataset used in this analysis, the average distance of the Reserve CSD’s from the nearest large urban centre (with a population of 500,000 or more) was 396 km. Rural communities are generally not able to benefit from the economies associated with concentrations of economic activity and are often dependent on primary sectors where productivity improvements are won through increasingly labour-saving technologies (Green and Myer, 1997; Partridge et al., 2010). The typical outcome of this process is that labour and population increasingly concentrate in urban centres while rural areas become more sparsely populated. Individuals migrate or commute in order to improve their expected well-being, including considerations of both economic opportunity and quality of life. From a policy perspective, to facilitate this migration, people-based policies such as education, health, information and communication are useful to increase mobility.

There are instances, however, where the mobility of the labour force and population may not be possible or desirable. In these cases, there may be a need for place-based policy in addition to people-based policies, to address poverty or other concerns in the places where people live. Place-based policies involve the type of

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<sup>5</sup> There are currently 120 urban Reserves in Canada. In this study we exclude the urban Reserves, restricting consideration to the rural Reserves.

intervention where the assets and/or the increased capacity cannot leave the region. Examples of place-based policies are infrastructure, local organizational innovation, governance reform and support for business development in specific places (Olfert et al., forthcoming). The 2009 World Bank report suggests that the potential candidates for place-based policy are places which are “are economically distant from places that are doing well (World Bank, 2009)”, as is the case with most Canadian Aboriginal Reserves. In addition to remoteness, historical, language and cultural factors may contribute to immobility. In the absence of local interventions, pockets of poverty can be persistent (Chokie and Partridge, 2007a; Olfert et al., forthcoming).

Local infrastructure development and economic incentives that may comprise place-based policy on Reserves may, however, have high costs and risks. Rural, remote locations face the high cost of providing private and public services to a dispersed population (Ali et al. 2009). Unlike the rest of Canada, local municipalities do not have responsibility for infrastructure provision on Reserves. Reserve communities, as stipulated in the *Indian Act*, are instead under the jurisdiction of Aboriginal Affairs and Northern Development Canada (AANDC). Infrastructure improvements might be undertaken as part of place-based policy where there is an expected reasonable return on investment from the perspective of the FN and/or AANDC.

An adaptation that would permit continued residence on-Reserve, while accessing the employment benefits of urban concentrations of economic activity would be attractive for Reserve populations. Olfert et al. (forthcoming) point out that in terms of policy development, facilitating out-commuting (to employment) from rural areas, offers potential as a component of a rural economic development strategy. Where local

economic development is possible at reasonable costs, such place-based policies would also be desirable. However, commuting to off-Reserve employment opportunities may be a less-costly and lower risk means of gaining access to the modern economy.

Broadly, there is a growing connectedness of rural and urban places, in terms of workers in urban areas being resident in rural areas (Green and Myer, 1997, Partridge et al. 2007a; Partridge et al. 2007b). The extent to which exploiting this connection is an option is strongly influenced by the availability of information and communication infrastructure, the cost of travel and wage differentials (Hoover and Renkow, 2000). Within the context of rural FN Reserves, investigating the commuting interdependencies should be informative for place-based policies such as expenditures on infrastructure and transport, along with general people-based policies investing in education and social development.

## CHAPTER 4 METHODOLOGY AND HYPOTHESES

In this chapter, we provide an overview of our data, and the methodology, including selected summary statistics. We then present, based on the literature review, a empirical framework for our analysis.

### 4.1. Data

Four data components are used in this research: Census of population data, a special tabulation from the census of the Population on commuting patterns (place of residence, POR and place of work POW), geographical data (distances), and Aboriginal Community well-being measures. Because Reserves are unique Census Subdivisions (CSD's)<sup>6</sup> the Census data were retrieved at the CSD level. These geographic units are the units of observation for this analysis.

From the 2001 and 2006 Census of Population, data were grouped into variables describing demographic, employment, education, and income characteristics. The demographic variables include total population, population growth 2001-06, population under (and over) the age of 15 and gender. Employment characteristics include the employment rate (employed/population 15+), and the labour force participation rate (employed plus unemployed/15+). The income characteristics include average employment income, average total income, and the change between 2001/6, as well as per capita income, both employment and total. For education, we consider the fraction of

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<sup>6</sup> Census subdivision (CSD) is the general term for municipalities (as determined by provincial/territorial legislation) or areas treated as municipal equivalents for statistical purposes (e.g., Indian Reserves, Indian settlements and unorganized territories) (Statistics Canada, 2011). Reserves are considered any of eight CSD types legally affiliated with First Nations or Indian bands: Indian Reserve (IRI), Indian settlement (S-É), Indian government district (IGD), Terres réservées aux Cris (TC), Terres réservées aux Naskapis (TK), Nisga'a village (NVL), Nisga'a land (NL), Teslin land (TL). In addition selected CSDs included are northern communities in Saskatchewan, the Northwest Territories and the Yukon Territory.

the population over age twenty five with a High School Diploma, and the fraction of the population (again over age twenty five) with a Bachelor's degree or higher.

In addition to the standard Census data, special tabulations for the POR (Place of Residence) and POW (Place of Work) data at the CSD level were acquired for all Reserves. These data tell us, for each Reserve, the number of employed<sup>7</sup> people who have jobs on the Reserve. From these data, we can calculate the off-Reserve commuting rates, for males and females, and whether to urban or rural CSD's. These variables are of primary interest since we want to assess the importance of the participation in commuting to off-Reserve locations in the economic well-being of the population on the Reserve. One limitation, however, is that the Statistics Canada data does not indicate where people have double residences, living both on and off Reserve.

There were 396 Reserve CSD's in the 2006 census dataset and 384 in 2001. Only those Reserve CSD's from the Census of population for which both the commuting (POW and POR) data were also available for both 2001 and 2006 were used in the study. Statistics Canada changed some CSD definitions between 2001 and 2006, however in those cases, they are given a different identification numbers in the subsequent year. For the data used in this study, none of the Reserve CSD's for which census data was available in either year, had changed.

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<sup>7</sup> Employed persons are those who, during the reference week: did any work at all at a job or business, that is, paid work in the context of an employer-employee relationship, or self-employment. It also includes unpaid family work, which is defined as unpaid work contributing directly to the operation of a farm, business or professional practice owned and operated by a related member of the same household; or had a job but were not at work due to factors such as own illness or disability, personal or family responsibilities, vacation, labour dispute or other reasons (excluding persons on layoff, between casual jobs, and those with a job to start at a future date) (Statistics Canada, 2006).

This resulted in 312 usable CSD's for the analysis. These are our representation of "Reserves". We use "commuting" within the context of the Statistics Canada Commute tabulation where the POW is not the POR Reserve CSD.

Geographical data from the C-RERL database<sup>8</sup> was used to determine the distance from the centroid of the Reserve CSD's to the centroid of urban centers differentiated by size. There are five distances used for each Reserve:

- The distance in km to the nearest urban center (CMA's<sup>9</sup> or CA's<sup>10</sup>);
- The distance in km to the nearest medium urban center (defined as population between 100,000 and 499,000);
- The distance in km to the nearest large urban center (defined as population greater than 500,000); and
- The incremental distances to the nearest medium and large CMA's or CA's.

Incremental distance refers to the additional distance if the nearest urban center is a 'small' urban center, we include the additional (incremental) distance to a medium-sized urban center and beyond the medium, to a large urban center (if applicable). A detailed discussion of the structure of incremental distances, including the theoretical basis, can be found in Partridge et al., (2010).

We are using the Community Well-Being (CWB) Index<sup>11</sup> as our measure of overall socio-economic well-being. These variables were available for all of the 312 "Reserve" CSD's in the study, but due to a change in how the index was calculated between 2001

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<sup>8</sup> The C-RERL data base is part of the Canada Rural Economy Research Lab, a Canadian Foundation for Innovation-funded lab at the University of Saskatchewan; its Geographic Information Systems provide distance estimates.

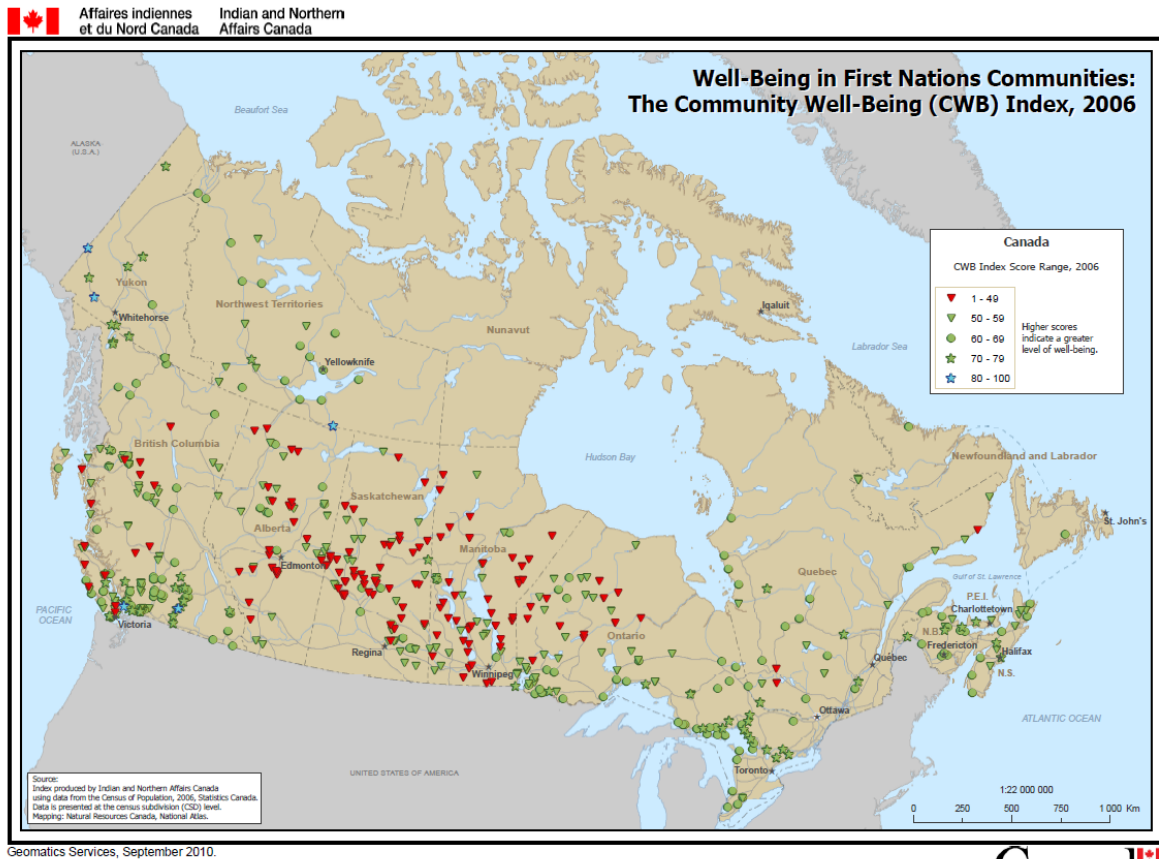
<sup>9</sup> CMA: Statistics Canada Census Metropolitan Area. An area consisting of one or more adjacent municipalities situated around a major urban core. To form a census metropolitan area, the urban core must have a population of at least 100,000.

<sup>10</sup> CA: Statistics Canada Census Agglomeration. To form a census agglomeration, the urban core must have a population of at least 10,000.

<sup>11</sup> The Community Well-Being (CWB) Index is a means of measuring socio-economic well-being in First Nations, Inuit and other Canadian communities. < <http://www.aadnc-aandc.gc.ca/eng/1100100016600/1100100016641>> The index and its components are constructed using data from the Canadian Census of Population (O'Sullivan, 2011).

and 2006, only information for the year 2006 will be used. Figure 4.1 shows the CWB indexes for all First Nations communities in Canada.

Figure 4.1 Canadian Distribution of Well-Being of First Nation Communities



Summary Descriptive Statistics for the main variables in the study are shown in Table 4.1. The Community Well Being index varies widely across the country, from the lowest score of 33 for a community in Saskatchewan, to a high of 89 for a community in BC. Average population growth is high at 16.64% over the 5-year period 2001-06, varying widely from over 200 to -30 percent. Population size is small with a maximum of just over five thousand people, and an average of just over eight hundred people, in 2006.

Table 4.1 Selected Descriptive Statistics, 2001 and 2006

Variable (all \$ values are nominal)	Mean	S.D.	Min	Max
Community Well-Being Score 2006	56.52	10.58	33	89
Distance to the nearest (DN) urban centre (CA/CMA) km	128.28	125.92	1.42	774.82
DN Medium urban centre (100K-499K pop) (CMA) km	129.98	125.78	1.42	774.82
DN Large (>500K pop) urban centre (CA/CMA) km	395.58	246.61	21.82	1187.63
Out-commuters/Total Employed (15+) 2001 (%)	13.48	22.48	0.00	100.00
2006 (%)	13.32	21.02	0.00	92.30
Percentage of Out-commuters going to Rural CSD's 2001 (%)	68.96	44.75	0.00	100.00
2006 (%)	71.04	41.19	0.00	100.00
Percentage of Out-commuters going to Urban CSD's 2001 (%)	31.03	44.75	0.00	100.00
Percentage of Out-commuters going to Urban CSD's 2006 (%)	28.11	40.74	0.00	100.00
Total Population on the Reserve in 2001	745.12	668.39	60	5020
2006	826.88	743.31	45	5175
Total Population on Reserve, % Chg. 2001-06 (%)	16.64	1.07	-29.54	233.00
Population >15/Total Population, 2001 (%)	65.03	8.32	49.00	97.22
2006 (%)	68.49	8.17	50.14	97.14
Population <15/Total Population, 2001 (%)	34.97	8.32	2.77	50.99
2006 (%)	31.00	8.17	2.86	49.86
Average Employment Income on Reserve in 2001 (\$)	14,281.15	7,462.91	0	44,017.00
2006 (\$)	17,001.85	7,627.28	0	48,054.00
Per Capita Employment Income on Reserve in 2001 (\$)	3,660.58	2,977.30	0	24,093.52
2006 (\$)	4,752.95	3,550.86	0	30,612.18
Per Capita Total Income on Reserve in 2001 (\$)	7,713.48	4,928.34	0	30,786.44
2006 (\$)	9,301.32	5,870.43	0	50,946.60
Employment Rate (Employed15+/Population15+) 2001 (%)	38.92	10.90	16.67	77.78
2006 (%)	40.27	11.76	14.28	85.71
Participation Rate (Labour Force15+/Population 15+) 2001 (%)	52.75	11.64	23.78	88.89
2006 (%)	52.72	12.26	16.87	86.00
Percent. of 20+ Population with High School Certificate 2001 (%)	7.58	4.88	0	35.29
Percent. of 20+ Population with Bachelor Degree 2001 (%)	3.77	3.81	0	32.81
Percent. of 25+ Population with High School Certificate 2006 (%)	15.18	7.15	0	43.75
Percent. of 25+ Population with Bachelor Degree 2006 (%)	4.78	5.03	0	36.84
Percent. of population under age 4, 2001 (%)	10.72	3.54	0	20.4
2006 (%)	10.12	3.63	0	18.64

Source: Statistics Canada, Census of Population, 2001 & 2006; Census of Population, Custom tabulations for POR and POW; C-RERL (distances); AANDC, 2006.



On average, commuters make up just over 13 percent of those employed on Reserves. In some communities almost all employment is off-Reserve while in others all those who work, are employed on Reserve. Of the commuters, on average, slightly less than two thirds of them commute to employment in Urban areas in both years. Employment income is low, though increasing almost 20% between 2001-06. Labour force participation rates are about 15 percentage points lower than for the non-Aboriginal population and the low employment rates explain the relatively low per capita employment income. While an increasing percentage of the Reserve population is becoming educated, the average fraction of a Reserve community with a Bachelor's degree or higher was only 4.78 percent in 2006, up from 3.77 percent in 2001. High School completion nearly doubled, from 7 percent to 15 percent of the Reserve population 2001-06, though remaining well below the non-Aboriginal rate.

#### **4.2. Preparation and Analysis**

The data from the 2001 and 2006 Censuses, as well as the commuting data and the CWB data were cleaned, organized and merged to form a common data set. In total we have as our base data set 312 CSD Reserves for which we have complete information, including Census data, geographic variables and the CWB data. Preliminary scatter plots and bivariate analysis (correlations) were used to determine statistical outliers and investigate potential dependencies.

#### **4.3. Functional Relationship Definitions & Hypotheses**

For rural communities, the primary determinants of their economic well-being are well-documented (Henry and Barkley, 1997; Green and Myer, 1997; Cornell, 2001; Davis et al., 2003; Renkow, 2003; Polèse and Shearmur, 2005; Partridge and Chokie, 2006; Partridge et al., 2007a; Partridge et al., 2007b). Included in these determinants are

the size and nature of the economic base, the demographic characteristics of the population, the location of the community relative to concentrations of economic activity and an array of infrastructure and institutional characteristics, including governance.

#### 4.3.1. Main Model

While there are various ways of measuring economic well-being and economic outcomes, as described in the preceding Literature Review, we will use the Community Well-Being Index as our main indicator. Representing “Well-Being” by WB, our primary conceptual model may be represented as;

$$WB = f(\text{economic, demographic, geographic, governance}) \quad (\text{Eq.1})$$

That is, the socio-economic well-being of the residents of a community is influenced by local economic and social conditions such as the size of the community and its economic base, and labour force and population characteristics such as age structure and labour market participation. The location of the Reserve, especially relative to urban centres as concentrations of economic activity, will also be relevant. Urban centres serve both as markets and as distribution sites for a wide array of public and private services, they offer a skilled labour force and urban amenities.<sup>12</sup> Governance and other institutional characteristics are also important since quality institutions are necessary for sustained economic activity (Cornell, 2001; Hall et al. 2010).

Using the conceptual model represented in Eq. 1 as our basic framework, and given data and measurement constraints, we will estimate the empirical model:

$$CWB_t = \alpha + \beta_1 \text{DEMOG}_{t-1} + \beta_2 \text{ECON}_{t-1} + \beta_3 \text{GEOG} + \beta_4 \text{COMMUT}_{t-1} + \theta + \varepsilon \quad (\text{Eq. 2})$$

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<sup>12</sup> There is a well-developed literature demonstrating these relationships for rural areas in general (Ali et al. 2009; Berry 1970; Davis et al. 2003; Goetz et al. 2010; Partridge et al. 2010, 2007a, 2007b; Renkow and Hoover 2000). We are mapping the potential for these relationships onto rural Reserves.

Our dependent variable, CWB (community well-being), is the Community Well-Being Index identified in Chapter 3. This is a composite statistic, the average of four component indices, and available for the census year 2006. Subscript  $t$  is used to indicate either the current or lagged periods  $t-1$  for the variables.

On the other side of the equation are our independent variables. The DEMOG vector includes the total population on the Reserve in 2001, Reserve population growth between 2001 and 2006, and the proportion of the population over the age of 15. The over 15 population represents the labour resource on the Reserve, the people with the ability to earn income. With the exception of the population growth variable, which is measured from 2001 to 2006, the explanatory variables will be lagged to 2001 to mitigate direct statistical endogeneity. The estimated  $\beta_1$ 's will show the relationships between each of the demographic variables and the CWB. The expectation is that a higher proportion of the labour force in the 15+ age group will contribute positively to CWB, as will larger populations. Larger population size is generally expected to also be positively related to CWB inasmuch as people migrate to improve well-being. Population growth would reflect the same relationship except that in the case of Reserves, growth is more likely a reflection of natural increase rather than net migration, leaving the *ex ante* expectation ambiguous.

Conceptually, the ECON vector would include the employment rate (employed/population 15+), the labour force participation rate (employed plus unemployed/15+) and the percentage of the population with a high school diploma, and Bachelor's degree or higher. The expectation would be that the labour force participation rate, the employment rate and the percentage of the population with at least a Bachelor's

degree, will exert a positive influence on the CWB. However, practically these variables cannot be included in the regression because of the construction of the CWB average index: it already includes the set of labour force and education characteristics.

The location of the Reserve relative to urban centres will be very important to the economic performance of the Reserve for a number of reasons. Remoteness from markets, from information, from a skilled and professional labour force and higher educational facilities are expected to have a negative influence on CWB. Remoteness will directly affect the ‘cost’ associated with accessing employment opportunities off Reserve. Our set of Geographic variables measures the distances from the Reserve CSD and urban centres of various sizes. GEOG is comprised of the distances to the nearest urban centre, the nearest medium urban center, the nearest large urban centre, and the incremental distances. The estimated  $\beta_3$ 's will show the relationships between each of the geographic variables and the CWB.<sup>13</sup>

The variables of primary interest are those included in the COMMUT vector. The POW and POR data are used to compute an out-commuting rate. This rate is percentage of Reserve residents that are employed whose jobs are off-Reserve.<sup>14</sup> For 2001 we also have the commuting information separately for rural and urban destinations and for males and females. The estimated  $\beta_4$  coefficients of these variables will capture the influence of the percentage employed off-Reserve on Community Well-being. The *ex ante* expectations of the sign of the coefficient is ambiguous. A positive sign would indicate that a higher proportion of the jobs held by Reserve residents in off-Reserve (rather than

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<sup>13</sup> See Partridge et al. 2010 page 313, for a detailed description of the distance structure.

<sup>14</sup> “Employment” may be part-time or full-time, and place-of-work refers to the location of the ‘main’ occupation.

on-Reserve) locations is positively related to CWB. If, instead, a higher proportion on-Reserve is consistent with higher CWB, then the sign will be negative.

Finally, provincial dummy variables,  $\theta$ , are included to control for differences that are unobserved but may be due to different provincial government policies, programs or natural conditions. We have also used provincial level economic conditions of per capita employment growth and the employment rate as alternative representations of provincial fixed effects. Where provincial economic conditions are included, they are not lagged, but rather observed in 2006. It is expected that there will not be reverse causality because the Reserves are very small relative to the provinces. The error term is represented by  $\epsilon$ .

While governance and other institutions are acknowledged as important, our analysis does not explicitly focus on institutions due to data and definitional limitations. Further, since all Reserves operate under the *Indian Act* and there will be to some extent commonalities that are controlled for because our sample consists of only Reserves.

#### **4.3.2. Commuting Model**

Our secondary objective is to investigate the determinants of out-commuting. We present our conceptual model as:

$$C = f(\text{geographic, economic, community/destination characteristics}) \quad (\text{Eq.3})$$

Where C is the out-commuting rate.

That is, the primary determinants include distance, economic conditions in the commuting destinations (off-Reserve), approximated by provincial level characteristics, and Reserve labour force attributes. Demographic and community attributes such as housing conditions may also exert influences. This is consistent with the basic gravity model commonly applied to rural-to-urban commuting (Partridge et al. 2010, Thorsen and Gitlesen 1998, Ubøe 2004).

The empirical model of out-commuting is then represented by:

$$\%Out-Com_t = \alpha + \beta_1 GEOG + \beta_2 HUMCAP_t + \beta_3 DEMOG_t + \beta_4 HSG_t + \theta + \varepsilon \quad (\text{Eq. 4})$$

Our dependent variable is %Out-Com, the fraction of the employed workforce with jobs off-Reserve. GEOG contains the same set of distance variables as for the main model in Equation 2, and here we expect distance to negatively affect the out-commuting rate.

HUMCAP contains two education measures: the percentage of the population with high school completion and the percentage with a Bachelor's degree or higher. DEMOG contains the percentage of the population under four years old.

We use the characteristics (quality and quantity) of the housing stock on the Reserve (CWB Housing Score), to model the attractiveness of living on-Reserve and commuting off-Reserve as opposed to migrating off-Reserve, represented as HSG. It is expected that higher housing scores will positively impact out-commuting rates, since the option of living on-Reserve would be more attractive relative to moving to the employment site. As with the main model, we will use both the provincial dummies and the provincial employment rate to represent provincial fixed effects. It is expected that the provincial employment rate will positively influence the out-commuting rate.

Within the context of our empirical models, our primary research question is: Are Reserves with greater dependence on off-Reserve employment linkages better or worse off? On the one hand, commuting offers access to employment and income earning opportunities and urban amenities. On the other hand, commuting may adversely impact economic development on the Reserve. Secondly: Do education levels on the Reserve affect out-commuting rates? Is out-commuting positively related to higher on-Reserve educational levels?

## CHAPTER 5 RESULTS

Before conducting our econometric analysis we explore in a little more detail the simple correlations between the out-commuting rate and the CWB aggregate score and its components. Table 5.1 shows the simple pairwise correlations. The out-commuting rate has a correlation with the aggregate CWB score of .4215. In part, our analysis seeks to determine the nature of this positive relationship. The four individual indexes are highly correlated with each other, while the aggregate CWB index (which is the average of the 4 component scores) is not highly correlated with its components. The relatively low correlations of the average with its components are the result of the average exhibiting smaller variations across reserves than the components, as variations in the component indices offset each other. While individual indexes largely move together, the average will have less variation.

Table 5.1 Pairwise Correlations between Out-Commuting Rate and CWB Indexes

	Out-Comm. Rate	CWB Score: Income	CWB Score: Education	CWB Score: Housing	CWB Score: LF Activity	CWB Score: Aggregate
Out-Comm. Rt.	1.0000					
CWB Income	0.0489	1.0000				
CWB Education	0.0912	0.8255	1.0000			
CWB Housing	-0.0059	0.8965	0.8303	1.0000		
CWB LF Activity	-0.0664	0.9231	0.7993	0.8857	1.0000	
CWB Aggregate	0.4215	0.2802	0.4014	0.2579	0.0201	1.0000

Source: Census of Population, custom tabulations; AANDC, 2006.

We now present our empirical estimation results in two main parts, first the models for the determinants of Community Well-being, followed by results for the determinants of out-commuting.

### 5.1. Main results: CWB determinants

Our main results for the CWB determinants are presented in Table 5.2. As discussed above, we use 2001 values of explanatory variables that are time variant to

explain 2006 levels of CWB, to avoid direct statistical endogeneity. This includes the out-commuting rate, our variable of primary interest, as well as controls. In addition, we include provincial dummies to control for variations in CWB that are peculiar to the Reserve being located in a particular province. These province-specific effects include things like the transportation network, policies with respect to natural resources exploitation, policies or regulations to facilitate employment and policies related to the provision of public services to Aboriginal people. Finally, we include distance to the nearest urban centre (as well as incremental distances to medium and large size urban centres), also strictly exogenous variables, to represent the cost of remoteness, including commuting and the access to a range of public and private goods and services including information and jobs.

We begin with Model 1 (Table 5.2) by including only our variable of primary interest, the out-commuting rate from the Reserve, the fraction of Reserve employed persons whose jobs are off-Reserve. Our second model, Model 2 adds strictly exogenous explanatory variables, the various distance measures and the provincial dummies. All models are estimated using robust standard errors, and statistical significance is indicated at the 1%, 5% and 10% levels.



Table 5.2 Determinants of 2006 CWB Index

Independent Variables	Model 1 Coefficient (t-ratio)	Model 2 Coefficient (t-ratio)	Full Model Coefficient (t-ratio)
<b>Out-Commuting Rate, 2001</b>	<b>17.5621***</b> <b>(4.99)</b>	<b>10.4069***</b> <b>(3.52)</b>	<b>6.6056***</b> <b>(3.16)</b>
Distance to nearest Urban Centre		-0.0127*** (-3.06)	-0.0072** (-2.03)
Incremental Distance to nearest Medium Urban Centre		0.0159 (0.36)	0.0051 (0.12)
Incremental Distance to nearest Large Urban Centre		-0.0025 (-0.87)	-0.0005 (-0.2)
Total Population, 2001 ('000)			-0.4309 (-0.91)
Population growth rate, 2001-06			-0.4617*** (-3.2)
Percentage Pop. Over 15, 2001			78.0141*** (10.54)
Provincial Dummy Variables			
Newfoundland & Labrador		21.5882*** (9.89)	6.4665*** (2.71)
Prince Edward Island		22.0703*** (17.79)	16.5073*** (13.61)
Nova Scotia		12.9084*** (5.43)	10.1918*** (4.35)
New Brunswick		14.6029*** (7.94)	8.8248*** (5.36)
Quebec		12.3412*** (6.55)	8.1526*** (5.2)
Ontario		12.7861*** (7.57)	6.5545*** (3.95)
Manitoba		0.0539 (0.03)	-0.6414 (-0.54)
Alberta		1.6350 (0.93)	1.8695 (1.37)
British Columbia		12.2748*** (6.88)	2.2533 (1.26)
Constant	54.1385*** (82.31)	50.5762*** (33.74)	3.4785 (0.75)
N	289	289	287
Adj. R <sup>2</sup>	0.1366	0.4866	0.6752

Note: The Yukon, Northwest Territories and Nunavut are excluded from all Models. All models are estimated with robust standard errors. An Urban Centre as a Census Agglomeration Area (CA) or a Census Metropolitan Area (CMA), essentially a place with a core area population of 10,000 or more. The Adjusted R<sup>2</sup> (with Robust standard errors) are an approximation to the adjusted R<sup>2</sup> statistic that would occur if the (conditional) variance were constant. \*\*\* indicates significance at the 1% level, \*\* at the 5% and \* at the 10% level. For the provincial dummies, SK is the omitted province.

The results from Model 1 indicate that there is a positive relationship between the out-commuting rate on Reserves and the CWB, as already observed in the simple pairwise correlations. In Model 2, as the strictly exogenous variables are added, the out-commuting rate remains positive and significant at the 1% level, while the distance to the nearest urban centre has a negative influence (as expected). The effects of the two incremental distance variables are not statistically significant.

Our Full Model, Model 3, adds three control variables to Model 2: the total population, 2001 (representing market potential); the population growth rate (2001-2006); and the 2001 proportion of the population that is over the age of 15. The coefficient of the out-commuting rate, of 6.6, indicates that that at the mean out-commuting rate of 13% (0.13), an increase in this rate of 10 percentage points (to .23) would lead to an increase in the CWB score of .66 points. In perspective, given that the mean CWB score is 57, with a standard deviation of 10 points, this is a very small increase in the CWB, for a relatively large increase in the out-commuting rate. However, it is statistically significant at the 1% level of significance. The small size of the impact suggests that other Reserve characteristics are exerting a major influence on CWB. Distance to the nearest urban centre remains negative and statistically significant, however only at the 10% level.

Total population size is usually expected to be positively related to CWB, since it would represent the scope for realizing economies of size and scale that should translate into productivity and income gains, and job opportunities on-Reserve. Additionally, in the context of small, remote communities, critical size of populations would be required to support a range of public and private services. In this instance the sign of the coefficient is negative, though it is not statistically significant.

The population growth rate (between 2001 and 2006) has an *ex ante* ambiguous effect on CWB. Generally, where population growth occurs as a result of net population in-migration, higher growth rates identify communities/regions having attractive economic conditions and/or quality of life. The retention and attraction of population reflects the preferences for that community relative to others. In the case of Reserves, population growth is more likely to be the result of natural increase. Given the fixed land resource size of Reserves, the restrictions on who may reside there and the population pressures due to rapid growth, the negative sign of the coefficient is not unexpected. Higher population growth rates on Reserves are associated with a lower CWB. The coefficient is statistically significant at the 5% level. The value of the coefficient, 0.46 indicates that for every additional 10 percentage points in the population growth rate, the CWB will fall by almost .05 points, a very small, though statistically significant, impact.

The relative size of the labour force population (here represented by those over age 15) is positively related to CWB, as expected. The greater the share of the population that is of work force age (and thus the lower the dependency) the higher the CWB will be.

The coefficient of this variable is 78 indicating that a 10 percent increase in the percentage of the population over 15, would translate into an increase in the CWB of 7.8 points. Given that the mean value of the 2006 CWB is 57, and the standard deviation is 10.8, this would be a substantial change.

In the full model, the provincial dummy coefficients indicate that all provinces east of Manitoba have statistically significant higher CWB scores than Saskatchewan, the omitted province (used as the reference). Saskatchewan and Manitoba are the provinces with the highest percentages of their population of Aboriginal origin, 15.6% in

Saskatchewan and 16.7% in the latter (based on 2011 Statistics Canada data). These results suggest that the CWB scores on reserves are generally lower in the provinces with the highest concentrations of First Nations populations, even when controlling for remoteness from urban centres. This confirms the impression gained from the map of CWBs, Figure 4.1.

#### **5.1.1. Commuting to Rural vs. Urban Destinations**

There may be reason to believe that commuting to rural employment destinations contributes less to CWB than commuting to urban centres, particularly if we assume that the number, variety and wages are higher in urban centres. For this reason we include the 2001 out-commuting rate separately for urban and rural areas, as well as combined (for our Full Model) in Table 5.3.

The results are highly similar for both rural and urban commuting. However, the coefficient for the urban out-commuting rate is more than twice the size than that of the rural out-commuting rate, suggesting a larger contribution of urban employment to the CWB score (as expected).

We also investigated the differential contribution of male and female out-commuting rates to CWB (not shown). However, male and female out-commuting rates are highly correlated (0.89) such that no inference can be made about their relative contributions to the CWB.

Table 5.3 Determinants of 2006 CWB Index, Out-Commuting to Rural &amp; Urban Areas

Independent Variables	Model 1 Coefficient (t-ratio)	Model 2 Coefficient (t-ratio)	Full Model Coefficient (t-ratio)
<b>Out-Commuting Rate: Urban, 2001</b>	<b>10.1379***</b> (3.58)		<b>12.0616***</b> (4.2)
<b>Out-Commuting Rate: Rural, 2001</b>		<b>3.4446</b> (1.64)	<b>5.1825**</b> (2.34)
Distance to nearest Urban Centre	-0.0067* (-1.89)	-.0079** (-2.18)	-0.0066* (-1.88)
Incremental Distance to nearest Medium Urban Centre	-0.0035 (-0.08)	-0.0034 (-0.07)	0.0057 (0.14)
Incremental Distance to nearest Large Urban Centre	-0.0012 (-0.52)	-0.0007 (-0.31)	-0.0007 (-0.3)
Total Population, 2001('000)	-0.4721 (-0.84)	-0.4303 (-0.89)	-0.4487 (-0.88)
Population growth rate, 2001-06	-0.4999*** (-3.97)	-0.5264*** (-4.14)	-0.4435*** (-3.08)
Percentage Pop. Over 15, 2001	75.2990*** (9.08)	81.8856*** (10.86)	74.3689*** (9.44)
Provincial Dummy Variables			
Newfoundland & Labrador	7.0577*** (2.81)	5.6426** (2.3)	7.2977*** (2.96)
Prince Edward Island	16.4639*** (13)	15.8790*** (13.13)	16.8881*** (13.62)
Nova Scotia	10.0264*** (4.45)	10.0815*** (4.02)	10.2207*** (4.64)
New Brunswick	8.5488*** (4.99)	8.4403*** (5.15)	8.9464*** (5.26)
Quebec	8.2700*** (5.02)	7.8500*** (4.96)	8.4065*** (5.23)
Ontario	6.4766*** (3.74)	6.3358*** (3.76)	6.6681*** (3.98)
Manitoba	-0.8323 (-0.68)	-0.8375 (-0.7)	-0.6077 (-0.51)
Alberta	2.1534 (1.61)	1.9214 (1.4)	1.9924 (1.46)
British Columbia	3.0426* (1.77)	2.8037 (1.55)	2.3667 (1.32)
Constant	5.7243899 (1.13)	1.7216 (0.36)	5.6299 (1.15)
N	287	287	287
Adj. R <sup>2</sup>	0.6727	0.6636	0.6798

Note: The Yukon, Northwest Territories and Nunavut are excluded from all Models. All models are estimated with robust standard errors. An Urban Centre as a Census Agglomeration Area (CA) or a Census Metropolitan Area (CMA), essentially a place with a core area population of 10,000 or more. The Adjusted R<sup>2</sup> (with Robust standard errors) are an approximation to the adjusted R2 statistic that would occur if the (conditional) variance were constant. \*\*\* indicates significance at the 1% level, \*\* at the 5% and \* at the 10% level. For the provincial dummies, SK is the omitted province.

### 5.1.2. Interprovincial Differences

Thus far, simple provincial dummies have been used to control for provincial differences. In Table 5.4 we exploit more specific information about the economic conditions in the provinces to examine their effects. The Full Model from Table 5.2 is replicated in the first column of Table 5.4. Understandably the set of economic descriptors for the provinces are strongly related to each other. As a result, we utilize only one level variable in our final specifications, the provincial employment rate, and one change variable, the growth in provincial per capita employment income in alternative models Model 1 and 2 respectively, in Table 5.4.

Surprisingly both of these variables are negative and strongly statistically significant. The opposite sign would be expected if the Aboriginal labour force is integrated into the provincial labour market. A tighter labour market in the province and/or more robust growth should translate into higher CWB indices for Reserves. The counter-intuitive results are driven in large part by the relatively robust conditions in Alberta and to a lesser extent in Saskatchewan, where the CWB indices are lower than those in other provinces. The implication is that the Reserve FN population is not sharing proportionately in the good economic fortunes of the provinces, something that may be expected if we have a segmented or dual labour market.

Table 5.4 Determinants of 2006 CWB Index, Province-level Effects

Independent Variables	Full Model Coefficient (t-ratio)	Model 1 Coefficient (t-ratio)	Model 2 Coefficient (t-ratio)
<b>Out-Commuting Rate, 2001</b>	<b>6.6056***</b> <b>(3.16)</b>	<b>4.9177**</b> <b>(2.43)</b>	<b>4.6558**</b> <b>(2.30)</b>
Distance to nearest Urban Centre	-0.0072** (-2.03)	-0.0077** (-2.00)	-0.0086** (-2.09)
Incremental Distance to nearest Medium Urban Centre	0.0051 (0.12)	-0.014 (-0.29)	-0.0134 (-0.28)
Incremental Distance to nearest Large Urban Centre	-0.0005 (-0.2)	-0.0001 (-0.05)	0.0027 (1.31)
Total Population, 2001 ('000)	-0.4309 (-0.91)	-0.2996 (-0.60)	-0.2544 (-0.50)
Population growth rate, 2001-06	-0.46167*** (-3.2)	-0.5786*** (-4.12)	-0.5648*** (-3.76)
Percentage Pop. Over 15, 2001	78.0141*** (10.54)	82.1992*** (13.36)	85.3496*** (13.89)
Provincial Employment Rate, 2006		-50.0880*** (-3.78)	
Provincial Per capita Empl.Income Change, 2001-06			-16.0751* (-2.41)
Provincial Dummy Variables			
Newfoundland & Labrador	6.4665*** (2.71)		
Prince Edward Island	16.5073*** (13.61)		
Nova Scotia	10.1918*** (4.35)		
New Brunswick	8.8248*** (5.36)		
Quebec	8.15256*** (5.2)		
Ontario	6.5544*** (3.95)		
Manitoba	-0.6414 (-0.54)		
Alberta	1.8695 (1.37)		
British Columbia	2.2533 (1.26)		
Constant	3.4785 (0.75)	35.5110*** (3.22)	4.645 (0.93)
N	287	287	287
Adj. R <sup>2</sup>	0.6752	0.6062	0.5955

Note: The Yukon, Northwest Territories and Nunavut are excluded from all Models. All models are estimated with robust standard errors. An Urban Centre as a Census Agglomeration Area (CA) or a Census Metropolitan Area (CMA), essentially a place with a core area population of 10,000 or more. The Adjusted R<sup>2</sup> (with Robust standard errors) are an approximation to the adjusted R<sup>2</sup> statistic that would occur if the (conditional) variance were constant. \*\*\* indicates significance at the 1% level, \*\* at the 5% and \* at the 10% level. For the provincial dummies, SK is the omitted province.

The descriptive statistics for provincial FNs, as well as the maps of Reserve distribution and CWB (Figure 4.1), suggest that the Prairie provinces may have different underlying challenges. For this reason we estimate models separately for the three Prairie provinces, and then the other seven provinces. In the former model, Saskatchewan is still the omitted province; for the latter, Prince Edward Island is omitted. The results are presented in Table 5.5, where the Full Model from Table 5.2 is replicated for comparison.

Unlike the Full Model, including only the three Prairie provinces results in neither the distance to the nearest urban centre nor any of the other two distance measures, being statistically significant. Similarly, two of the population measures are now not statistically significant (population size and growth rate), but the fraction of the population over the age of 15 remains positive and significant. Further: the out-commuting rate is not significant. Clearly the drivers of the CWB score are somewhat different for these three provinces than for Canada as a whole.

For the remaining 7 provinces combined, the coefficients of the dependent variables are not unlike those in the Full Model: distance, population size and population growth rate all have statistically significant coefficients. For the Prairie provinces, Alberta is generally better off in terms of the CWB, and Manitoba is worse off. In the case of the non-prairie provinces, relative to PEI, all of the other provinces are worse off. We offer the caveat, that in limiting consideration to the Prairie provinces our number of observations has fallen to 139 so that we have lost significant degrees of freedom, and these coefficients should be interpreted with caution.



Table 5.5 Determinants of 2006 CWB Index, Prairie Provinces and Rest of Canada

Independent Variables	Full Model Coefficient (t-ratio)	Prairie Model Coefficient (t-ratio)	Other Prov. Model Coefficient (t-ratio)
<b>Out-Commuting Rate, 2001</b>	<b>6.6056***</b> <b>(3.16)</b>	<b>2.756</b> <b>(0.79)</b>	<b>9.7002***</b> <b>(3.99)</b>
Distance to nearest Urban Centre	-0.0072** (-2.03)	-0.0051 (-0.97)	-0.0083* (-1.80)
Incremental Distance to nearest Medium Urban Centre	0.0051 (0.12)	0.0605 (1.63)	-0.0664 (-0.90)
Incremental Distance to nearest Large Urban Centre+--	-0.0005 (-0.2)	0.0021 (0.65)	-0.0009 (-0.28)
Total Population, 2001 ('000)	-0.4309 (-0.91)	-1.0532 (-1.59)	0.4213 (0.75)
Population growth rate, 2001-06	-0.4617*** (-3.2)	-0.0618 (-0.04)	-0.4000*** (-3.09)
Percentage Pop. Over 15, 2001	78.0141*** (10.54)	95.5905*** (7.89)	65.3620*** (7.25)
Provincial Dummy Variables			
Newfoundland & Labrador	6.4665*** (2.71)		-8.8275*** (-3.97)
Prince Edward Island	16.5073*** (13.61)		
Nova Scotia	10.1918*** (4.35)		-7.3077*** (-3.61)
New Brunswick	8.8248*** (5.36)		-7.9969*** (-5.57)
Quebec	8.1526*** (5.2)		-10.3079*** (-5.57)
Ontario	6.5545*** (3.95)		-9.2778*** (-5.57)
Manitoba	-0.6414 (-0.54)	-0.7873 (-0.63)	
Alberta	1.8695 (1.37)	2.4364 (1.51)	
British Columbia	2.2533 (1.26)		-14.3568*** (-8.33)
Constant	3.4785 (0.75)	-7.439 (-1.01)	28.4192*** (4.27)
N	287	139	148
Adj. R <sup>2</sup>	0.6752	0.4316	0.4698

Note: The Yukon, Northwest Territories and Nunavut are excluded from all Models. All models are estimated with robust standard errors. An Urban Centre as a Census Agglomeration Area (CA) or a Census Metropolitan Area (CMA), essentially a place with a core area population of 10,000 or more. The Adjusted R<sup>2</sup> (with Robust standard errors) are an approximation to the adjusted R<sup>2</sup> statistic that would occur if the (conditional) variance were constant. \*\*\* indicates significance at the 1% level, \*\* at the 5% and \* at the 10% level. For the provincial dummies, SK is the omitted province for the Prairie provinces; for the rest of Canada, British Columbia is the omitted province.

## 5.2. Out-commuting and Education on Reserve Communities

Our results are generally supportive of the hypothesis that out-commuting contributes positively to community well-being on Reserves. Having already controlled for distance to urban centres, we explore what else may contribute to higher out-commuting rates. A potential determinant of out-commuting is the education levels of the Reserve populations, to the extent that higher education levels will increase the ability of Reserve residents to participate in more diverse and higher-paying off-Reserve labour markets. Indeed as the literature, and the theoretical models suggest, education is frequently seen as a major influence in the economic success of Aboriginal populations. For these reasons we explore the relationship between the out-commuting rate as the dependent variable and various measures of education attainment as explanatory variables. While education is the variable of main interest, we control for a range of other influences. The results are presented in Table 5.6.

Model 1 includes only completely exogenous variables (distances and provincial dummies), along with two measures of education attainment, the percentage of the population ages 25+ that has a high school certificate as the highest level of education attainment, and the percentage of the population that has a University Degree or higher.<sup>15</sup>

The explanatory variables are not lagged as reverse causality is not expected to be a problem. Both of the education variables are positive in sign though only high school completion is statistically significant. The coefficient implies that for every additional 10 percentage points in high school completion rates, the out-commuting rate would increase

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<sup>15</sup> A number of other education variables, including lagged values were examined. These two were selected as the most informative for conceptual and practical reason.

by 8 percentage points, a large effect. The provincial dummies indicate that the out-commuting rate is significantly lower in Nova Scotia and higher in British Columbia.

Model 2 in Table 5.6 is a re-estimation of Model 1, but with the provincial dummies being replaced by the provincial employment rate. While the latter is not statistically significant, it is positive, unlike the sign in the models for CWB. In Model 2, high school completion has an even larger coefficient and remains significant at the 1% level. In addition, while distance to the nearest urban centre is not significant, distance to a large urban centre (population 100,000+) is negative and statistically significant. Access to employment in a metropolitan centre is important for the out-commuting rate, consistent with other findings that in the Canadian setting, access to the range and variety of employment opportunities in large metropolitan areas is an important influence in commuting behavior (Partridge et al. 2010).

In Model 3, an additional demographic variable is added to reflect the potential effects of small children at home in terms of out-commuting rates. The percentage of the population under the age of 4 years is added to reflect at-home obligations. Indeed including this variable adds substantially to the explanatory power of the model and has the expected negative sign, significant at the 1% level. The provincial employment rate is now significant and positive, while distance to the nearest large urban centre remains negative and significant. High school completion remains positive and significant, though with a somewhat reduced coefficient signaling some correlation (.52) between the percentage under 4 years and high school completion rates.

Table 5.6 Determinants of 2006 Out-Commuting Rates

Independent Variables	Model 1 Coefficient (t-ratio)	Model 2 Coefficient (t-ratio)	Model 3 Coefficient (t-ratio)	Model 4 Coefficient (t-ratio)
Distance to nearest Urban Centre	-0.0001 (-1)	-0.0001 (-1.07)	0.0000 (-0.37)	-0.0001 (-0.66)
Incremental Distance to nearest Medium Urban Centre	-0.0007 (-0.64)	-0.0005 (-0.54)	-0.0008 (-0.91)	-0.0012 (-1.39)
Incremental Distance to nearest Large Urban Centre	-0.0001 (-1.4)	-0.0002*** (-3.15)	-0.0001** (-2.33)	-0.0001** (-2.39)
<b>% Population (25+) with a High School Diploma, 2006</b>	<b>0.8422*** (3.67)</b>	<b>1.0681*** (5.38)</b>	<b>0.6658*** (3.16)</b>	<b>0.6294*** (2.97)</b>
<b>% Population (25+) with a Bachelor's Degree or higher, 2006</b>	<b>0.4824 (1.35)</b>	<b>0.4198 (1.18)</b>	<b>0.3149 (0.93)</b>	<b>0.3661 (1.05)</b>
Provincial Employment Rate, 2006		0.2659 (0.76)	0.7494** (2.32)	0.6583** (2.03)
% Population Under 4 years old, 2006			-1.9177*** (-4.15)	-1.8461*** (-3.94)
CWB Housing Score, 2006				-0.0003 (-0.48)
Provincial Dummy Variables				
Newfoundland & Labrador	-0.056 (-1.04)			
Prince Edward Island	-0.0467 (-1.39)			
Nova Scotia	-0.1054** (-2.4)			
New Brunswick	-0.0724 (-1.14)			
Quebec	-0.0045 (-0.11)			
Ontario	-0.0161 (-0.41)			
Manitoba	0.0199 (0.43)			
Alberta	0.0447 (0.91)			
British Columbia	0.1067** (2.54)			
Constant	-0.0029 (-0.05)	-0.1623 (-0.66)	-0.229 (-1.03)	-0.1557 (-0.69)
N	290	290	288	287
Adj. R <sup>2</sup>	0.2056	0.1773	0.2465	0.2315

Note: The Yukon, Northwest Territories and Nunavut are excluded from all Models. All models are estimated with robust standard errors. An Urban Centre as a Census Agglomeration Area (CA) or a Census Metropolitan Area (CMA), essentially a place with a core area population of 10,000 or more. The Adjusted R<sup>2</sup> (with Robust standard errors) are an approximation to the adjusted R<sup>2</sup> statistic that would occur if the (conditional) variance were constant. \*\*\* indicates significance at the 1% level, \*\* at the 5% and \* at the 10% level. For the provincial dummies, SK is the omitted province.

Finally, Model 4 represents our Full Model of out-commuting where we add an additional consideration to reflect the attractiveness of the Reserve in terms of the housing stock quantity and quality. From a policy perspective, if out-commuting were considered a desirable strategy for First Nations on Reserve to access off-Reserve employment, housing on the Reserve may be very important. Along with the aggregate CWB score computed by AANDC, separate component scores are calculated, including a Housing score that reflects both quantity and quality of housing. The Housing score in the Full model is not statistically significant. Most of the other variables retain their signs and significance. It is likely that the measure of housing does not adequately reflect attributes that may increase the desirability of the Reserve as a place to live.

### **5.3. Summary**

Our estimated relationships provide support for the expectation that for Canada's FN Reserve residents, CWB is positively, statistically significantly affected by Reserve residents accessing off-Reserve employment, though the size of the impact is small. Commuting to urban destinations has a somewhat greater impact in this regard, than commuting to rural off-Reserve destinations. Remoteness and population growth exert negative influences while the proportion of the population over the age of 15 is positively related.

Provincial differences show that provinces east of Manitoba have higher CWB scores relative to Saskatchewan. Using provincial employment rates, and provincial employment income growth rates instead of provincial dummies yields the counter-intuitive result that better provincial economic outcomes are not associated with higher Reserve CWB scores, indicating other barriers to participation in the economy for First Nations living on Reserves. However, a tighter provincial labour market, as represented

by a higher provincial employment rate, positively influences out-commuting from Reserves. Negative influences are exerted by the proportion of the population less than 4 years old, and remoteness from a metropolitan area. Housing quantity and quality are not found to influence out-commuting rates, though additional research is required.

## CHAPTER 6

## POLICY IMPLICATIONS

Improving the socio-economic outcomes of First Nations in Canada is on the policy agenda of all levels of government. Among this population, First Nation residents on Reserves are most urgently in need of improvements. Realisation of that improvement is a complex and historically challenging problem, with no single or simple solution. To some extent, the migration of First Nations peoples to urban centres is likely to result in improved economic outcomes, at least in the long run. Even though adjustment may be slow, economic opportunities are more readily available in urban centres or other off-Reserve locations with growth potential.

In a spatial equilibrium framework, labour and population would reallocate from Reserves to off-Reserve locations where income earning potential is greater, until spatial equilibrium is reached where individuals are indifferent between remaining where they are and moving. At that point, no further migration would be expected. Given the combination of economic returns, quality of life considerations and moving costs nothing more would remain to be gained from moving. This equilibrium conditions does not seem to have been reached in the instance of Canadian First Nations, as is seen from their significantly inferior socio-economic outcomes on and off-Reserve relative to non-Aboriginal communities.

Policy interventions which improve education and health of Reserve populations are having some successes, mostly in improving the geographic and occupational mobility of individuals through their increased migration to urban centres. Out-migration of the best educated, however, will often leave the Reserve worse off.

The Canadian federal government's Framework for Economic Development emphasizes on-Reserve economic development. While this may be an appropriate and productive strategy for some Reserves, it is not a complete or even viable option for many small, remote, resource poor Reserves, thus it has limited potential.

However, especially where Reserves are small and remote from markets and resources, improvement in the well-being of Reserve residents might also be achieved through increased integration with the rest of the economy through commuting to off-Reserve employment. Initiatives that allow First Nations to reside on Reserves and at the same time access employment off-Reserve may be a means of maintaining their culture and traditions while still engaging in the market economy. Transportation and communication, as well as other explicit policies may be useful to commuting while maintaining Reserve residence. Policies such as transportation subsidies or allowances may be considered, as well as better information and communication about opportunities.

Our empirical results underscore the relationship between education, particularly high school completion and out-commuting to employment opportunities. 'People-based' policies that improve education levels of the Reserve population will increase the mobility of the Reserve populations in terms of both migration to off-Reserve locations and commuting to off-Reserve employment while continuing their residence on-Reserve. Either way, improving education levels has positive pay-offs.

Into the foreseeable future, the full range of policies, on- and off-Reserve, people-based and place-based will be needed. In this portfolio of policies, the support or facilitation of off-Reserve employment while maintaining their Reserve residence should be considered. Innovative ways to facilitate work relationships that include extended



periods of employment off-Reserve (in addition to daily commutes) would be another way to support off-Reserve commuting. Examples may include high quality child care facilities on-Reserve and improved communications with families while off-Reserve. Further, for an off-Reserve employment strategy to be viable, Reserves must be attractive places to live and be accessible through better connective infrastructure. This would suggest high quality and ample housing on Reserves. In all cases improving school retention rates, at least to the high school completion level is essential.

Several areas of Future Research may be identified to build the base of evidence from which policy may be designed. First, a more explicit comparison with rural communities in general may be useful. Although there is a rich literature on rural communities and the integration of rural residents into the broader economy, a more specific comparison may be useful to highlight similarities and differences. Second, while it would be generally agreed that on-Reserve Governance is vitally important, measures of governance need to be further explored so that these may be rigorously included in empirical work. Third, there may be gender differences to be explored in the off-Reserve employment participation, inasmuch as there is established gender segregation generally and occupations are not equally distributed on and off Reserve. Finally going forward more recent data should be included to see how the pattern may change over time.

## REFERENCES

- Aboriginal Affairs and Northern Development Canada. "The Community Well-Being (CWB) Index: Methodological Details." N.p., n.d. Web. 12 Mar. 2013. <<https://www.aadnc-aandc.gc.ca/eng/1100100016585/1100100016598>>.
- Aboriginal Affairs and Northern Development Canada. "THE INDIAN RESERVE LAND BASE IN CANADA." N.p., n.d. Web. 07 Mar. 2013. <<http://www.aadnc-aandc.gc.ca/eng/1100100034846/1100100034847>>.
- Ali, K., Olfert, M.R. and Partridge, M.D. 2009. Urban Footprints in Rural Canada: Employment Spillovers by City Size. *Regional Studies* 45(2): 239-60.
- Battiste, M. 2000. Reclaiming Indigenous Voice and Vision. Vancouver: UBC.
- Berry, B.J.L. 1970. Commuting patterns, labor market participation and regional potential. *Growth and Change* 1: 3-10.
- Bolton, R. 1992. 'Place Prosperity vs People Prosperity' Revisited: An Old Issue with a New Angle. *Urban Studies* 29(2): 185-203.
- Borck, R. and Wrede, M. 2009, "Subsidies for Intracity and Intercity Commuting". *Journal of Urban Economics* 66: 25-32.
- Boyles, B., Brinton, E., Dunning, A., Mathias, A. and Sorrell, M. 2006. Native American Transit: Current Practices, Needs, and Barriers. *Journal of the Transportation Research* 103-110.
- Canada Parliament Legislative Assembly, 1863. "Journals of the Legislative Assembly of the Province of Canada. Appendix 21."
- Cairns, A. 2000. Citizen Plus: Aboriginal Peoples and the Canadian State. Vancouver: UBC Press.
- Cebula, R.J. and Belton, W.J., Jr. 1994. Voting with One's Feet: An Empirical Analysis of Public Welfare and Migration of the American Indian, 1985-1990. *American Journal of Economics and Sociology* 53(3): 273-80.
- Chokie, M. and Partridge, M. D. 2006. Poverty Dynamics in Canadian Communities: A place Based Approach. *Growth and Change*: 39(2) 313-340.
- Cornell, S. 2001. Enhancing Rural Leadership and Institutions: What Can We Learn from American Indian Nations? *International Regional Science Review* 24(1): 84-102.
- Davis, E., Connolly, L.S. and Weber, B.A. 2003. Local Labor Market Conditions and the Jobless Poor: How Much Does Local Job Growth Help in Rural Areas? *Journal of Agricultural and resource Economics* 28: 503-18.
- Durbin, A. 2009. "Canada's Response to the On-Reserve Housing Crisis: A Study of the Kelowna Accord." Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health 7(2). Web. <<http://www.pimatisiwin.com/online/wp-content/uploads/2010/jan/02Durbin.pdf>>.
- Eliasson, K., Lindgren, U. and Westerlund, O. 2003. Geographical labour mobility: Migration or commuting? *Regional Studies* 37: 827-837.

- Flanagan, T. 2008. *First Nations? Second Thoughts*, 2nd Edition. Montreal: McGill-Queen's University Press, 2008.
- Frideres, J., S. 2008. *Aboriginal Peoples in Canada*, 8th Edition. Toronto: Pearson Education Canada.
- Fujita, M. and Krugman, P. 2004. "The new economic geography: past, present and the future". *Papers in Regional Science* 83: 139-164.
- Gerald Taiaiake, A. 2008. *Peace, Power, Righteousness: An Indigenous Manifesto* (2nd Edition). Toronto: Oxford University Press.
- Gallaway, L. E. and Vedder, R. K. 1971. Mobility of Native Americans. *The Journal of Economic History* 31: 613-649.
- Glaeser, E. L. and Kohlhase, J. E. 2004, "Cities, Regions and the Decline of Transport Costs." *Papers in Regional Science* 83(1): 197-228.
- Goetz, Stephan J., Yicheol Han, Jill Findeis and Kathryn J. Brasier. 2010. *US Commuting Networks and Economic Growth: Measurement and Implications for Spatial Policy*. Growth and Change (Special Issue on Best Practices in Rural Development and Policy) forthcoming.
- Green, M.B. and Meyer, S.P. 1997. An overview of commuting in Canada with special emphasis on rural commuting and employment. *Journal of Rural Studies* 13: 163-175.
- Gruber, S. 2010. "To Migrate or to Commute?" *Review of Economic Analysis* 2: 110-134.
- Gutiérrez-i-Puigarnau, E. and Van Ommeren, J., N. 2010. "Labour supply and commuting", *Journal of Urban Economics* 68: 82-89.
- Habibis, D. 2011. A Framework for Reimagining Indigenous Mobility and Homelessness, *Urban Policy and Research* 29: 401-414.
- Hall, J. C., Sobel, R., and Crowley, G. R. 2010. 'Institutions, capital and growth', *Southern Economic Journal*, 77(2), 385-405
- Henry, M.S., Barkley, D.L. and Bao, S. 1997. The hinterland's stake in metropolitan growth: Evidence from selected southern regions. *Journal of Regional Science* 37: 479-501.
- Indian Country Today Media Network.com, 2013. "The Idle No More Movement for Dummies (or, 'What The Heck Are All These Indians Acting All Indian-Ey About?') - ICTMN.com." N.p., n.d. Web. 08 Mar. 2013.  
<<http://indiancountrytodaymedianetwork.com/2013/01/16/idle-no-more-movement-dummies-or-what-heck-are-all-these-indians-acting-all-indian-ey>>.
- Johnson, T.G. 2007. Place-Based Economic Policy: Innovation or Fad? *Agricultural and Resource Economics Review* 36: 1-8.
- Krugman, Paul. 1991. Increasing Returns and Economic Geography. *Journal of Political Economy* 99: 483-99.
- Lawrence, B. 2004. "Real" Indians and Others: Mixed-Blood Urban Native Peoples and Indigenous Nationhood. Vancouver: UBC Press.
- Little, M. 2005. *If I Had a Hammer: Retraining That Really Works*. Vancouver: UBC Press.

- Malcolm Wiener Center for Social Policy. 2008. *The State of the Native Nations: Conditions under U.S. Policies of Self-Determination*. New York: Oxford University Press.
- McMillan, A., D. and Yellowhorn, E. 2004. *First Peoples in Canada*. Vancouver: Douglas & McIntyre Publishing.
- McPherson, R. 2003. *New Owners in Their Own Land: Minerals and Inuit Land Claims*. Calgary: University of Calgary Press.
- Miller, J., R. 2009. *Compact, Contract, Covenant: Aboriginal Treaty-Making in Canada*. Toronto: University of Toronto Press.
- Milloy, J., S., 2009. *Indian Act colonialism: a century of dishonour, 1869-1969*. National Centre for First Nations Governance.
- Mitchell, C.J. 2005. Population change and external commuting in Canada's rural and small town municipalities. *Canadian Journal of Regional Science* 28: 461-486.
- Olfert, M.R., Partridge, M., Berdegue, J., Escobal, J., Jara, B. and Modrego, F. forthcoming. Places for Place-Based Policies. *Development Policy Review*.
- Olfert, M.R. and Stabler, J.C. 1998. Spatial dimensions of rural, gender specific labour force commuting patterns. *Australasian Journal of Regional Studies* 4: 253-274.
- Partridge, M.D., Bollman, R.D., Olfert, M.R. and Alasia, A. 2007a. Riding the wave of urban growth in the countryside: Spread, backwash, or stagnation? *Land Economics* 83: 128-152.
- Partridge, M.D., Olfert, M.R. and Alasia, A., 2007b. Canadian Cities As Regional Engines of Growth: Agglomeration and Amenities. *The Canadian Journal of Economics* 40(1): 39-68
- Partridge, M.D., Ali, M. Kamar Ali and Olfert, M.R. 2010. Rural-to-Urban Commuting: Three Degrees of Integration. *Growth and Change* 41(2): 303-35.
- Partridge, M.D. and Olfert, M.R. 2009. North American Rural-Urban Evolution and Government Policy Response, in *Globalization and the Rural-Urban Divide* ed. M Gopinath and H. Kim. Seoul: Seoul National University Press.
- Peters, E. 2007. *Urban Reserves*. Department of Geography, University of Saskatchewan.
- Polèse, M and Shearmur, R. 2006. Why some regions will decline: A Canadian case study with thoughts on local development strategies. *Papers in Regional Science* 85: 23-46.
- Prout, S. and Howitt, R. 2009. Frontier imaginings and subversive Indigenous spatialities, *Journal of Rural Studies* 25(4) 396-403.
- Renkow, M. 2003. Employment growth, worker mobility, and rural economic development. *American Journal of Agricultural Economics* 85: 503-513.
- Renkow, M. and Hoover, D. 2000. Commuting, migration, and rural-urban population dynamics. *Journal of Regional Science* 40: 261-287.

- Richard, J., Hove, J. and Afolabi, K. 2008. "Understanding the Aboriginal/Non-Aboriginal Gap in Student Performance" C.D. Howe Institute Commentary, No. 276, Available at [http://www.cdhowe.org/pdf/commentary\\_276.pdf](http://www.cdhowe.org/pdf/commentary_276.pdf).
- Richards, J., and Vinning, A., 2004. Aboriginal off-Reserve Education. *C.D. Howe Institute Commentary*, No. 198.
- Rouwendal, J. 1999. Spatial job search and commuting distances. *Regional Science and Urban Economics* 29: 491-517.
- Satzewich, V. and Wotherspoon, T. 2000 First Nations: Race, Class and Gender Relations. Regina: Canadian Plains Research Center.
- Scott, C. 2001. Aboriginal Autonomy and Development in Northern Quebec and Labrador. Vancouver: UBC Press.
- Sharpe, A., Arsenault, J., Lapointe, S. and Cowan, F., 2009. The Effect of Increasing Aboriginal Educational Attainment on the Labour Force, output and the Fiscal Balance. Ottawa, Ont.: Centre for the Study of Living Standards.
- Sharpe, A., Jean-Francois A., and Simon L., 2007. The Potential Contribution of Aboriginal Canadians to Labour Force, Employment, Productivity, and Output Growth in Canada, 2001-2017. Ottawa, Ont.: Centre for the Study of Living Standards.
- Stanley, G. F., G. The First Indian "Reserves" in Canada, *Revue d'histoire de l'Amérique française*, vol. 4, n° 2, 1950, p. 178-210.
- Stiglitz, J., E., Sen, A., and Fitoussi, J., 2009. Report by the Commission on the Measurement of Economic Performance and Social Progress.
- Statement of Andrew Lee, Executive Director, The Harvard Project on Indian Economic Development, John F. Kennedy School of Government, Harvard University Before the Committee on Indian Affairs United States Senate, July 18, 2001.
- Statistics Canada, 2011. "Aboriginal Peoples in Canada: First Nations People, Métis and Inuit." *Aboriginal Peoples in Canada: First Nations People, Métis and Inuit*. N.p., n.d. Web. 10 June 2013. <<http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/fogs-spg/Pages/ProvinceSelector.cfm?lang=E&level=2>>.
- Statistics Canada. 2009. 2006 Census: Aboriginal Peoples in Canada in 2006: Inuit, Métis and First Nations, 2006 Census: First Nations people. Available at: <http://www12.statcan.ca/census-recensement/2006/as-sa/97-558/p16-eng.cfm>. Accessed June 28, 2013.
- Statistics Canada, 2010. "Aboriginal Statistics at a Glance." Aboriginal Statistics at a Glance – Introduction. n.d. Web. 12 July 2012. <<http://www.statcan.gc.ca/pub/89-645-x/89-645-x2010001-eng.htm>>.
- Statistics Canada, 2011. "Information on Census Subdivision (CSD)." N.p., n.d. Web. 08 Mar. 2013. <<http://www12.statcan.gc.ca/census-recensement/2006/ref/dict/geo012a-eng.cfm>>.
- Taylor, J, and Bell, M. 2004. Population mobility and indigenous peoples in Australasia and North America. London: Routledge.

The 2011 Status Report of the Auditor General of Canada, Chapter 4, 2011 Office of the Auditor General of Canada, Ottawa, Ontario.

The Manitoban, 2013. "Idle No More: An Overview." N.p., n.d. Web. 08 Mar. 2013. <<http://www.themanitoban.com/2013/02/idle-no-more-an-overview/14020/>>.

Thorsen, I. and Gitlesen, J.P. 1998 Empirical evaluation of alternative model specifications to predict commuting flows. *Journal of Regional Science* 38: 273-292.

Ubøe, J. 2004. Aggregation of gravity models for journeys to work. *Environment and Planning (A)* 36: 715-729.

University of British Columbia, Indigenousfoundations.arts.ubc.ca., "Government Policy: Bands." n.d. Web. 14 May 2013.

<<http://indigenousfoundations.arts.ubc.ca/home/government-policy/the-indian-act/bands.html>>.

UNDP: Human Development Report 1990. 1990. Oxford: Oxford University Press.

UNWCED: United Nations World Commission on Environment and Development (1987). *Our Common Future (Brundtland Report)*. Oxford: Oxford University Press.

Van Ommeren, J., N. and Gutiérrez-i-Puigarn, E. 2011. "Are workers with a long commute less productive? An empirical analysis of absenteeism." *Regional Science and Urban Economics* 41: 1-8.

Vinje, D.L. 1996. Native American Economic Development on Selected Reservations: A Comparative Analysis. *American Journal of Economics and Sociology* 55(4): 427-42.

Widdowson, F. and Howard, A. 2008. *Disrobing the Aboriginal Industry: The Deception Behind Indigenous Cultural Preservation*. Montreal: McGill-Queen's University Press.

Winnick, L. 1966. Place Prosperity vs People Prosperity: Welfare Considerations in the Geographic Redistribution of Economic Activity in: *Real Estate Research Program, University of California at Los Angeles, Essays in Urban Land Economics in Honor of the Sixty-fifth Birthday of Leo Grebler*: 273-283.

World Bank. 2009. *Reshaping Economic Geography*. Washington, D.C.

Wuttunee, W. 2004. *Living Rhythms: Lessons in Aboriginal Economic Resilience and Vision*. Montreal: McGill-Queen's University Press.