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THE EFFECT OF INCREASING ABORIGINAL EDUCATIONAL ATTAINMENT ON THE LABOUR FORCE, OUTPUT AND THE FISCAL BALANCE

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The Effect of Increasing Aboriginal Educational Attainment on the Labour Force, Output and the Fiscal Balance

Abstract

Investing in disadvantaged young people is one of the rare public policies with no equity-efficiency tradeoff. Based on the methodology developed in Sharpe, Arsenault and Lapointe (2007), we estimate the effect of increasing the educational attainment level of Aboriginal Canadians on labour market outcome and output up to 2026. We build on these projection to estimate the potential effect of eliminating educational and social gaps between Aboriginal and non-Aboriginal people on government spending and government revenues using population and economic projections to 2026.

Résumé

Investir pour assurer un meilleur avenir aux jeunes désavantagés est l'une des rares politiques publiques qui n'implique pas de compromis entre équité et efficacité. Avec comme fondement la méthodologie développée par Sharpe, Arsenault et Lapointe (2007), ce rapport estime les bénéfices potentiels prenant la forme de meilleurs résultats sur le marché du travail et un niveau de production accrue. Ces projections servent alors de base pour une estimation des effets de l'élimination des écarts éducationnels et sociaux-économique sur les dépenses et revenues gouvernementaux. Des projections de population et de variables économiques jusqu'à 2026 sont mises à profit.

The Effect of Increasing Aboriginal Educational Attainment on the Labour Force, Output and the Fiscal Balance

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Executive Summary

Canada's Aboriginal population is in crisis. In 2007, the National Council of Welfare concluded that, "To date, no governmental response has made major inroads into the issues" faced by Aboriginal people. Improving the social and economic well-being of the Aboriginal population is not only a moral imperative; it is a sound investment which will pay substantial dividends in the coming decades. Aboriginal education must be a key component in any such effort.

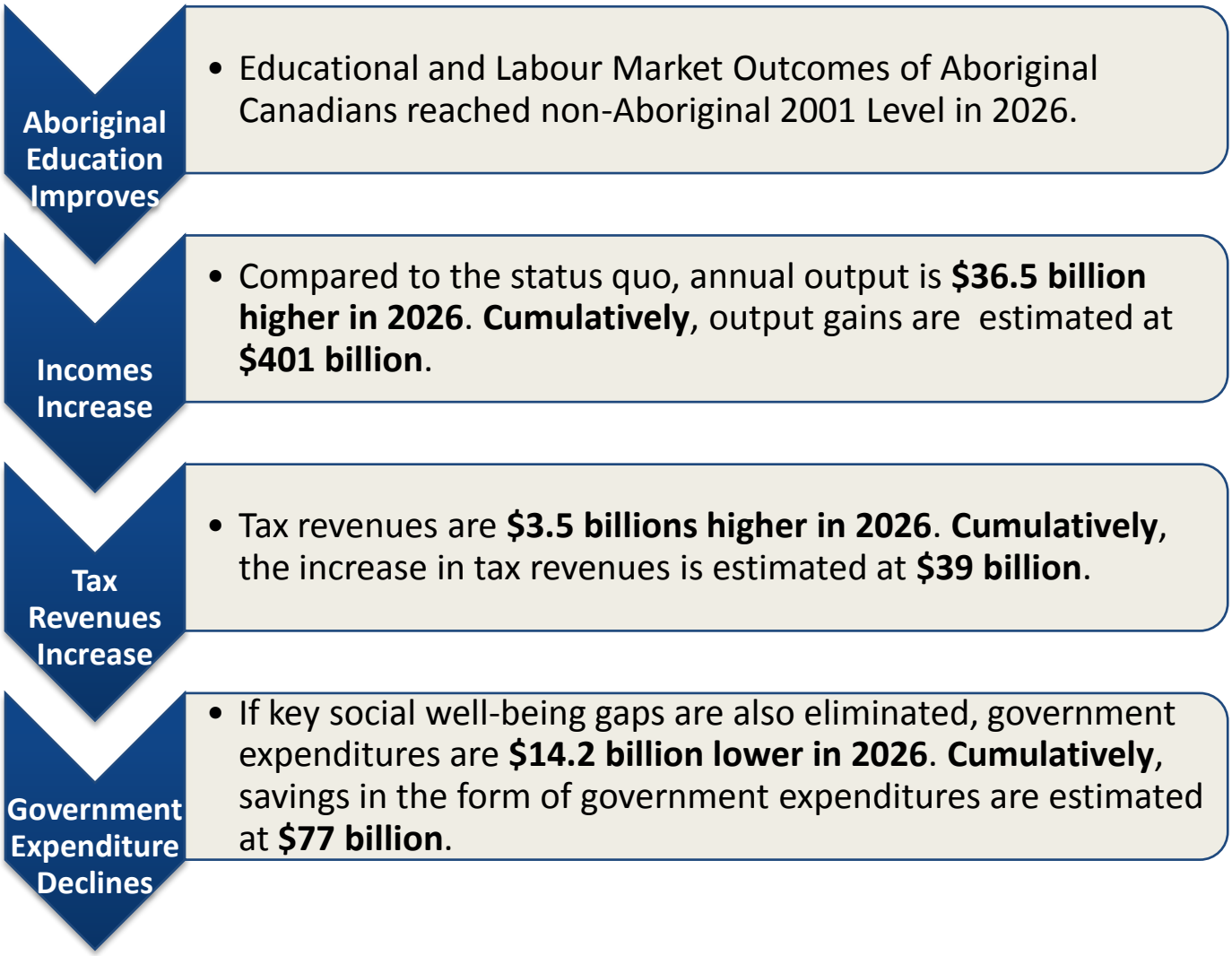
In 2007, the CSLS published a first report setting out the potential contribution of the Aboriginal population to Canadian labour force, output and productivity using 2001 Census data. This report represents not only an update to this earlier report, but it also seeks to provide policy makers with additional incentive to prioritize Aboriginal education by thoroughly quantifying the fiscal benefits associated with improved Aboriginal social and economic well-being.

The report is divided into seven main sections. After a brief discussion of the motivation for and the methodology of the report, the second section draws a portrait of the Aboriginal population in 2006, with particular emphasis on recent developments and the issues of data comparability. The third section discusses the population projection scenarios to 2026, both for the Aboriginal and overall populations. The fourth section examines the Aboriginal population's potential contribution to the Canadian labour force. The fifth section provides projections of income for Aboriginal Canadians in 2026 and its implications for Canadian output and productivity given different levels of increase in Aboriginal educational attainment. The sixth section builds on the methodology developed for the Royal Commission on Aboriginal People to estimate the fiscal impact of increased social and economic Aboriginal well-being. The seventh section concludes.

Key Highlights

Exhibit A succinctly summarizes key results. It shows the gains to the Canadian economy and Canadian economy of improved educational and labour market outcomes in terms of income and tax revenues. It also provides an estimate of the magnitude of the costs in terms of government expenditures associated to the existence of a variety of social gaps between Aboriginal and non-Aboriginal Canadians.

Exhibit A: The Effects of Improving Aboriginal Educational and Labour Market Outcomes and Aboriginal Social Well-Being in Canada



Additional key highlights from the reports are:

- In 2006, the CSLS estimates that the Aboriginal identity population made up 4.0 per cent of the Canadian population, with 1,311,200 persons.
- In 2006, 26.3 of the Aboriginal population lived on reserves. Of that number, 97.5 per cent were North American Indians.
- The Aboriginal population is much younger than the average Canadian, with a median age in 2006 of only 26.5 years, compared to 39.5 years for all Canadians.
- Aboriginal Canadians aged 15 and over have a much lower educational attainment than their non-Aboriginal counterparts with 43.7 per cent not

holding any certificate, diploma or degree in 2006, compared to 23.1 per cent for other Canadians.

- Between 2001 and 2006, the proportion of Aboriginal holding a university degree increased 1.4 percentage points. This increase held for both the North American Indian population as a whole (1.1 percentage points) and the on-reserve population in particular (0.7 percentage points). These improvements are far from negligible.
- The labour market outcomes for Aboriginal Canadians are significantly inferior to the Canadian average. In 2006, Aboriginal Canadians had a higher unemployment rate, a lower participation rate, and a lower employment rate.
- In 2006, the latest year for which Aboriginal employment income data is available, Aboriginal Canadians had much lower incomes than non-Aboriginal Canadians.
- Aboriginal people with a high school diploma or higher had significantly better labour market outcomes, both in absolute terms and relative to non-Aboriginal Canadians than those who did not.
- In 2026, using the medium growth projection for Aboriginal and the General population, the Aboriginal population is projected to make up 4.6 per cent of the Canadian population.
- Assuming no improvements in labour market outcomes, the Aboriginal population is expected to account for 7.4 per cent of working age population growth, 12.7 per cent of labour force growth, and 11.3 per cent of employment growth between 2006 and 2026 in Canada. This high contribution is attributable to high population growth relative to the non-Aboriginal population - especially in younger age groups which tend to have high participation and employment rates.
- If the Aboriginal population's employment and participation rates reach 2006 non-Aboriginal levels by 2026, it is projected that the Aboriginal population will account for 19.9 per cent of labour force growth and 22.1 per cent of employment growth between 2006 and 2026.
- If Aboriginal Canadians were, by 2026, able to increase their level of educational attainment to the level of non-Aboriginal Canadians in 2001, the average annual GDP growth rate in Canada would be up to 0.030 percentage points higher, or an additional cumulative $179 billion (2006 dollars) over the 2001-2026 period.
- If, in addition, the Aboriginal/non-Aboriginal employment rate gap and employment income gap at each level of educational attainment were eliminated, the potential contribution of Aboriginal Canadians to Canadian GDP over the 2001-2026 period would increase to $401 billion, or up to a 0.068 percentage points increase in annual average output growth rate. This potential, however, is unlikely to be fully realized in such a short period of time since older Aboriginal Canadians are not likely to go back to school and

reach the 2001 level of non-Aboriginal Canadians by 2026. Still, these estimates show the potential gain that could be realized.

- The potential contribution of Aboriginal Canadians to labour productivity growth in Canada is up to 0.027 percentage point per year if all the education, employment and earnings gaps with non-Aboriginal Canadians are eliminated by 2026. The potential contribution attributable only to the elimination of the educational attainment gap is up to 0.011 percentage point per year.
- The fiscal cost of the Aboriginal population's above average use of government services related to subpar levels of social well-being was an estimated $6.2 billion in fiscal year 2006. Assuming the fiscal cost grows at the same rate as the Aboriginal population, it is expected to increase to $8.4 billion (2006 dollars) in 2026
- Should the Aboriginal population's levels of educational attainment and labour market outcomes reach non-Aboriginal 2006 levels, federal and provincial governments would benefit from an a total of $3.5 billion (2006 dollars) in additional tax revenue in the year 2026.
- Considering both fiscal savings and increased tax revenues, the government balance would improved by $11.9 billion (2006 dollars) in Canada in 2026. It is estimated that the cumulative benefit for the consolidated Canadian government of increased Aboriginal education and social well-being is up to $115 billion over the 2006-2026 period.

A Portrait of the Aboriginal Population

In 2006, the Aboriginal population of Canada reached 1.3 million people. North-American Indian's represent the largest group (61 per cent) followed by the Métis (31 per cent) and the Inuit population (4 per cent). Canada's three major Aboriginal groups share important characteristics relative to the non-Aboriginal population, particularly low levels of education, a much younger demographic structure, and poor labour outcomes.

Compared to non-Aboriginal Canadians, Aboriginal Canadians are significantly less likely to hold a job. In 2006, the Aboriginal employment rate was 53.7 per cent, nine percentage points lower than the non-Aboriginal population. The on-reserve Aboriginal population fared particularly poorly with an employment rate of 39.3 per cent. In other words, less than two in five of the Aboriginal Canadians who lived on reserve and were older than fourteen had a job. Nonetheless, some progress has been made over the past ten years. Since 1996, the Aboriginal employment rate has grown 9.5 percentage points compared to non-Aboriginal employment rate growth of only 6 percentage points.

An important portion of the employment rate gap can be attributed to lower educational attainment among the Aboriginal population than among the non-Aboriginal population. Aboriginal Canadians are less much less likely than non-Aboriginal people to either earn a high school diploma or a post secondary certificate. In 2006, 23 per cent of non-Aboriginal Canadians over the age of 14 had not yet completed high school. Among

Aboriginal people, the high school non-completion rate was 44 per cent. Among North-American Indians, it stood at 48 per cent, or over twice the non-Aboriginal level. University completion rates are similarly bleak. In 2006, 8.6 per cent of Aboriginal people and 8.0 per cent of North American Indian over the age of 14 held a university degree. The non-Aboriginal rate was nearly three times higher at 24 per cent. Like the employment rate, however, progress has been made. In 2001, the high school non-completion rate was 48 per cent for Aboriginal Canadians (four percentage points higher than in 2006) and the non-completion rate for North American Indians was 51 per cent (three percentage points higher than in 2006).

Finally, on average, Aboriginal people earn much less than non-Aboriginal people. In 2005 Aboriginal Canadians who worked full time, full-year earned on average $37,416 per year. By comparison, non-Aboriginal Canadians who worked full-time, full-year in 2005 earned $51,505. Non-Aboriginal workers who were employed part-time or part-year earned on average $20,978, compared to an average of only $14,438 for their Aboriginal counterparts. Much of this earnings gap – roughly thirty per cent according to this report's econometric decomposition – can be solely attributed to differences in the level of educational attainment. Other factors include region of work, marital status and an unexplained factor which has sometime be interpreted as potential discrimination in the literature but is more aptly defined as the portion of the gap not explained by the variables included in the analysis. This unexplained variance could be the result of factors not capture in the analysis (e.g. differences in the quality of education, emphasis on living off the land beyond the region of work variable included, etc.)

While the Aboriginal population's below average labour force and educational outcomes lead to lower Canadian output and productivity today, they also highlight the fact that the Aboriginal population of Canada possesses substantial untapped potential. Indeed, because the Aboriginal population lags so far behind the non-Aboriginal population in terms of economic and social indicators, the marginal return on an investment in Aboriginal education is potentially higher than the marginal return associated with investment in more privileged groups.

Potential Contribution of the Aboriginal population

Between 2006 and 2026, the Aboriginal population is expected to grow more than twice as fast the non-Aboriginal population after accounting for compounding (1.43 per cent per year compared to 0.73 per cent per year). The North-American Indian population is expected to grow even faster at 1.55 per cent per year. Rapid Aboriginal population growth underscores the need to target Aboriginal education. Clearly, with the Aboriginal population share growing rapidly, the impact of this population on the Canadian economy will grow accordingly. Policy makers will have a key role in determining whether Aboriginal labour market and educational outcomes will stagnate – resulting in an increasing drag on Canadian output, productivity and labour force growth – or whether Canada can capitalize on the Aboriginal population's vast potential, resulting in greater output, greater productivity and, as a result, improved well-being for all Canadians.

Contribution to labour force growth

To estimate the potential contribution of the Aboriginal population to labour force and employment growth, age-specific employment and participation rates in 2006 are applied to the projected working-age population in 2026. At the national level, the projection is divided into eight age groups: 15-19, 20-24, 25-34, 35-44, 45-54, 55-64 and 65 and over. It is further sub-divided using four Aboriginal identity categories: North-American Indians living on reserves, North American Indians living off reserves, the Métis population and the Inuit population. Projections are made assuming Aboriginal age-specific employment and participation rates remain constant (Scenario A), reach the midpoint between 2006 Aboriginal and 2006 non-Aboriginal participation and employment rates (Scenario B) or reach 2006 non-Aboriginal levels (Scenario C). The provincial projections are less detailed as they do not account for projected changes in Aboriginal age structure and projected changes in the relative weights of the various Aboriginal subgroups.

Even if the age-specific employment and participation rates of the Aboriginal population do not change between 2006 and 2026, the Aboriginal population still accounts for a disproportionally large share of employment and labour force growth. Indeed, assuming age-specific Aboriginal participation and employment rates remain unchanged (Scenario A), the Aboriginal population labour force is projected to grow by 187,196 persons (12.96 per cent of total labour force growth) and Aboriginal employment would grow by 155,857 (11.29 per cent of total employment growth). This large contribution is explained by two key factors. First, the Aboriginal working-age population is growing faster than the non-Aboriginal working-age population (1.81 per cent per year from 2006 to 2026 compared to 0.90 per cent per year). Second, relative to the non-Aboriginal population, growth in the Aboriginal working-age population is concentrated in younger age groups which tend to have higher participation and employment rates.

If the 2006 age-specific employment and participation rate gap were closed by 2026 (Scenario C), the Aboriginal contribution to employment and labour force growth would be considerably higher. Should this scenario materialize the contribution of the Aboriginal population to labour force and employment growth would be roughly 320,000 and 347,000 respectively, accounting for 20.0 percent of labour force growth and 22.1 per cent of employment growth.

North American Indians in general and North American Indians living on reserves in particular are the largest potential contributors to labour force and employment growth in both absolute and relative terms. The on-reserve Aboriginal population is expected to contribute up to 156,000 persons to labour force growth and 170,000 persons to employment growth, or nearly half of the total Aboriginal contribution. High on-reserve North American labour force and employment growth is driven by rapid population growth and a high potential for catch-up.

This report also found that Aboriginal labour force and employment growth is most important for Western Canada –especially for Manitoba and Saskatchewan. In all three scenarios, over seventy per cent of both Aboriginal employment and labour force growth is concentrated in the four Western provinces. In Manitoba, the Aboriginal population is expected to contribute roughly between forty and sixty per cent of both labour force and employment growth. In Saskatchewan, because non-Aboriginal labour force and employment growth is projected to be negative, growth can be entirely attributed to the Aboriginal population. Given the importance of Aboriginal Canadians to labour force and employment growth in these two provinces, it is imperative that their level of education increase or else Manitoba and Saskatchewan could be left with a large wave of new entrants to the labour market that do not possess the necessary skills or education to thrive in the new economy.

Contribution to output and productivity growth

To estimate the Aboriginal population's potential contribution to output and productivity growth, this report draws on a methodology used in a previous CSLS report. The methodology used to estimate Aboriginal GDP and productivity to 2026 is summarized in Box 1.

Box 1: Summary of the Methodology

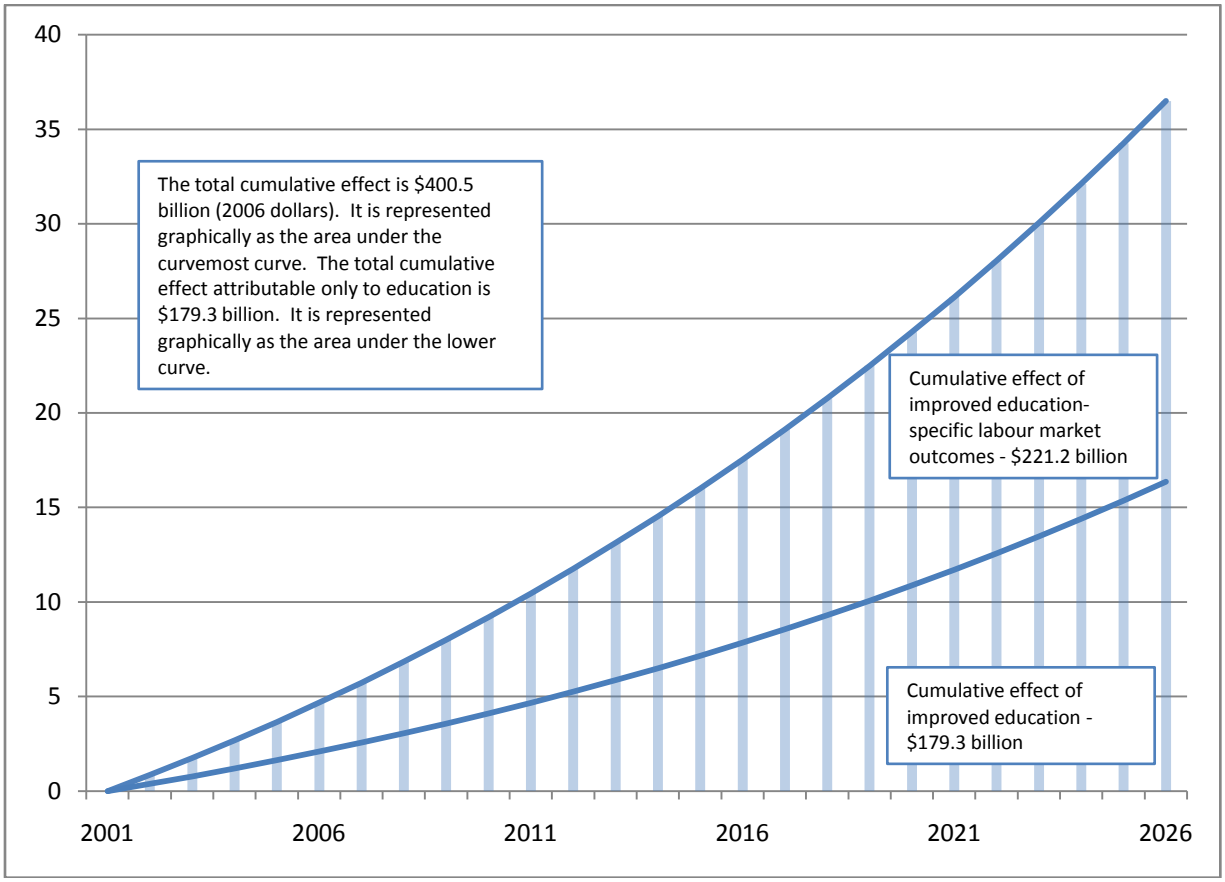
In order to make projections of Aboriginal income and productivity to 2026, a general methodology was developed and is outlined below.

- The Aboriginal and non-Aboriginal populations in 2001 are divided into educational attainment categories based on the highest level of schooling they achieved, and shares of the population for these two populations in each educational category were calculated.
- The shares of the Aboriginal population in each educational category (chosen according to the scenario) are then applied to the total working age Aboriginal population in 2001 and 2026 to find the absolute number of Aboriginal persons of working age in each educational category in 2001 and 2026.
- The working age Aboriginal population in each educational category is then multiplied by the category's corresponding employment rate (chosen according to the scenario) to find the number of Aboriginal employed in each category.
- The number of Aboriginal employed is then multiplied by the average employment income in each educational category (once again, chosen according to the scenario) to obtain the aggregate income for that category.
- Total income of the Aboriginal population in 2026 is calculated by summing up the incomes of each educational category. Total Canadian GDP is calculated from this information.

Ten scenarios were considered. The first (Scenario 1) is a base scenario which assumes no improvement in Aboriginal educational attainment, no improvement in education-specific Aboriginal employment rates, and only average increases in employment income for Aboriginal Canadians. The results from other scenarios are compared to the base scenario to determine the increase in GDP and productivity

attributable solely to assumed increases in education and education-specific labour market outcomes. Scenario 10 - the best case scenario - assumes the level of educational attainment and employment of the Aboriginal population will reach 2001 non-Aboriginal levels by 2026, and assumes that Aboriginal average earnings at each educational level will reach parity with that of non-Aboriginal Canadians by 2026.

Chart 1: The Cumulative Effect on Output of Increased Aboriginal Educational Attainment and Education-Specific Labour Market Outcomes, Millions of 2006 dollars, 2001-2026



The results are unambiguous. If the Aboriginal population's level of education and education-specific labour market outcomes increase, both Canadian output and productivity will increase substantially. If all of scenario 10's assumptions came to pass, Canadian annual productivity growth would increase by 0.033 percentage points over the 2001-2026 period. This would translate into an increase in productivity of $922 ($2006) in 2026. Output growth would increase by 0.068 percentage points per year, equivalent to an absolute increase in GDP in 2026 of $36.5 billion ($2006). Over the entire 2001 to 2026 period, the cumulative effect on GDP of increased Aboriginal education and labour market outcomes is an estimated $401 billion.

While reaching the most optimistic projection may be difficult, it should not be seen as an unreachable target. First, this methodology does not account for increased educational attainment among the non-aboriginal Canadian population. If the level of

educational attainment of the Aboriginal population reaches parity with non-Aboriginal people by 2026 (instead of merely reaching the 2001 level as was assumed in the most optimistic scenario), the economic impact would be even greater than estimated in this report since non-Aboriginal educational attainment will undoubtedly increase over the next twenty years. Second, this methodology ignores the dynamic effect increased educational attainment will have on Aboriginal leadership. A stronger Aboriginal leadership will be better equipped to provide both social and economic guidance to the Aboriginal community. Finally, while job opportunities are currently scarce on Aboriginal reserves, increased educational attainment will provide the on-reserve Aboriginal population with skills needed to exploit the many economic opportunities available on reserves. Many First Nations reserves, for example, are located in or near major urban centres and many others are rich in natural resources.

Potential Effect of Increased Aboriginal Economic and Social Well-Being on Public Sector Balance Sheets

In its 2007 report, the CSLS reviewed the strong relationship between education and indicators of social well-being. It found that educational attainment was not only a key driver of the labour market participation rate, the employment rate and income, but was also a key determinant of social well-being. Therefore, an increase in the educational attainment of Canada's Aboriginal people will not only result in a boost to Canada's GDP and productivity, but should also increase government tax revenues and reduce government expenditures for programs aimed at improving standards of living, providing adequate health care and preventing crime.

This report applies a thorough methodology to estimate the impact of increased Aboriginal economic and social well-being on consolidated government's fiscal balance in Canada. Both government expenditures targeted at the general population and expenditures specifically targeted towards Aboriginal people were examined. The Aboriginal share of general government expenditures was calculated using three variables: total expenditures in program areas; the Aboriginal population share (APS); and the Aboriginal level of use (LOU). The APS measures the share of the Aboriginal population among the client population of a particular program (e.g. the share of Aboriginal in the population aged 18 and over for expenditures on adult prisons). The LOU measures the rate at which the Aboriginal client population uses a service relative to the non-Aboriginal client population (e.g. the LOU would be two if Aboriginal people are twice as likely to be incarcerated). Expenditures or programs specifically targeting Aboriginal groups were simply added to the total. Most of these programs are federal programs for First Nation reserves. Our final estimates of excess expenditure were adjusted for differences in age structure between the Aboriginal and non-Aboriginal populations using a methodology developed by Bert Waslander.

Five program areas were considered, and each underlined the dismal conditions facing many Aboriginal communities. High expenditures on family and child services indicated a high level of family breakdown among the Aboriginal population. As a result a disproportionate number of Aboriginal children are taken from their families and put in

state care. High expenditures on healthcare result were the result of high rates of injury and illness among Aboriginal Canadians. High expenditures on crime prevention and rehabilitation followed from high crime and incarceration rates among Aboriginal people. Finally, high expenditures on both transfer payments and social housing was the direct result of elevated poverty among Aboriginal people.

In 2006, excess expenditure by all levels of the Canadian government on the five program areas under analysis was $6.2 billion. Of this sum, $1 billion was attributable to transfer payments, $2 billion to persons and property, $1.2 billion to child and family services and $300 million to social housing. If these expenditures grow at the same rate as the Aboriginal population, excess expenditure on Aboriginal Canadians will be $8.4 billion in 2026. Furthermore, if the Aboriginal/non-Aboriginal program expenditure gap is closed at a constant rate, the cumulative savings to all levels of Canadian government will be $77 billion from 2006 to 2026.

In addition to a decrease in program expenditure, Canadian governments will also benefit from an increase in tax revenue should the economic and social conditions of the Aboriginal population improve. Building on our estimate of potential GDP increase, it is possible to estimate the potential increase in government tax revenue attributable to improved Aboriginal educational attainment and education-specific labour market outcomes. In a nutshell, the overall tax rate is applied to potential increases in Aboriginal earnings, and an adjustment is made for the tax status of Registered Indians living on reserves.

It is estimated that if Aboriginal education and education-specific labour market outcomes reach 2001 non-Aboriginal levels by 2026, all levels of the Canadian government will incur an increase in total tax revenue of $3.5 billion in 2026 ($2006). If this figure grows at a constant rate between 2001 and 2026, the cumulative increase in tax revenue over the period is an estimated $39 billion ($2006).

Adding the effect of decreased program expenditure and increased tax revenue generates the total impact on public sector balance sheets. In 2026, the effect of improved Aboriginal social and economic well-being on government balance sheets is estimated at $11.9 billion ($2006). The cumulative effect on government balance sheets is estimated at roughly $115 billion for the 2006-2026 period. It should be emphasized, however, that these fiscal savings cannot be realized only through more and better education. In particular, if expenditures on health services, family and child services, housing, crime and transfers to persons are to be reduced, significant investment in these areas may be needed in the transition period.

Conclusions and Avenues of Future Research

In addition to updating the potential contribution of Canada’s Aboriginal population to output and productivity, this report includes a detailed decomposition of the potential Aboriginal contribution to labour force growth. It also confirms the particular role of education in improving Aboriginal incomes through an econometric analysis.

Moreover, it significantly strengthens the case for additional investment in Aboriginal education by estimating the effect of substandard Aboriginal social and economic well being on public sector balance sheets.

The key message, however, remains the same as in the earlier CSLS study: investing in Aboriginal education will not only benefit the Aboriginal population itself, but will also benefit Canadian governments, and, by extension, the entire Canadian population. Increased output will drive up productivity which is the key driver of our standard of living. Furthermore, decreased government cost and increased government revenue will provide Canadian government with the fiscal flexibility needed to cut taxes, increase services or reduce debt.

It should be noted that the lack of a more frequent survey tracking education trends of the Aboriginal population at a detailed level make it difficult to conduct timely analysis of the situation. The development of specific survey or of over-sampling Aboriginal people in existing survey could help enhance the quality and timeliness of Aboriginal education analysis and provide valuable input to the policy development process.

This report opens a number of opportunities for future research.

- Most obvious is the continuous monitoring and updating of the potential contribution of Aboriginal Canadians to the national economy. The new 2006 census micro data files should be available in late 2009 and will provide an opportunity to assess the progress of Aboriginal Canadians since 2001 at a more detailed level and adjust projections of their future potential contribution.

- Another possible research direction is the development of forecasts for non-Aboriginal educational attainment so that the potential contribution of Aboriginal Canadians in the case where they actually bridge the gap and reach educational parity with non-Aboriginal Canadians can be assessed. This analysis has the potential to significantly increase the projected contribution of Aboriginal Canadians to Canadian economic growth.

- Provincial labour market projections adjusting for age and Aboriginal identity could be developed to shed light on the importance of relative importance of Aboriginal to different parts of the country.

- Gender-based labour market and output projections could be developed, including an econometric analysis, providing new insights on the gender gaps existing among the Aboriginal population.

- Another avenue would be to adjust output projections to account for differences in current and future age structures between Aboriginal and non-Aboriginal population, as was done for labour market projections.

- Exploring the potential interaction between education and fertility could provide interesting insights into the very long-term effects of education.

- An in-depth analysis of the implications of our findings in terms of the flow of new Aboriginal graduates needed by age group would help bring this analysis one step closer to policy development.

- Another interesting opportunity lies in the new Labour Force Survey which now includes a question about Aboriginal identity. LFS estimates could be uses to update and monitor the progress of Aboriginal Canadians in-between censuses. The relatively small sample size, however, may make it inadequate for in-depth analysis.

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The Effect of Increasing Aboriginal Educational Attainment on the Labour Force, Output and the Fiscal Balance[1]

I. Introduction

A. Motivation

Canada faces two major long-term economic challenges: reviving our lackluster rate of labour productivity growth and dealing with slower labour force growth arising from the retirement of the baby boom generation. Moreover, Canada has historically struggled to maintain a balanced budget. The closing of the education gap between Aboriginal peoples and the overall Canadian population can contribute significantly to meeting these economic and fiscal challenges.

Productivity growth is important as it is the most important driver of increases in our standard of living (Sharpe, 2007a). The higher the productivity growth, the greater are the potential for real income gains. A failure of Canada's productivity growth to keep pace with that of other countries will see a relative decline in our standard of living.

Two stylized facts stand out from labour productivity development in the Canadian and US business sectors up to 2008. First, output per hour growth in Canada, at less than 1.0 per cent since 2000, has been significantly lower than the pace experienced in the second half of the 1990s (Arsenault and Sharpe, 2008). Second, since the year 2000, productivity growth in Canada has been one quarter the rate experienced in the United States (Chart 1: Panel A). Post-2000 trends have thus lead to a large increase in the Canada-US labour productivity gap, and have contributed to a significant loss of competitiveness for Canadian industry. A key driver of productivity growth is human capital. Increasing the average educational attainment of Aboriginal peoples, especially youth, would therefore boost aggregate productivity growth in this country.

Economic growth, or real output growth, is determined by productivity growth and labour force growth. Slower labour force growth therefore reduces potential output growth, with important implications for society. Indeed, as David Dodge (2007), Governor of the Bank of Canada, recently noted in a speech:

> "The projected decline in the growth of trend labour input has real consequences for the conduct of monetary policy. Declining growth in trend labour input implies lower growth of potential output. And if the

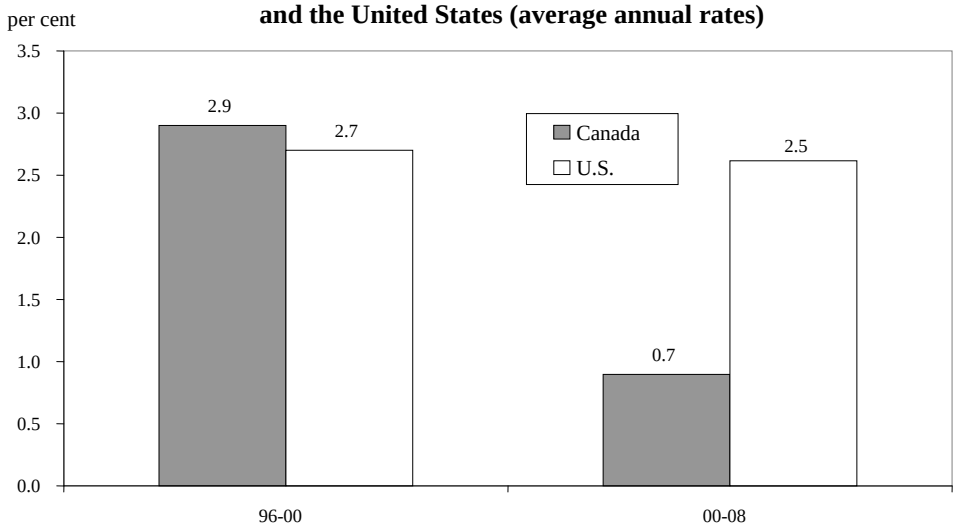
[1] The authors would like to thank Kathleen Keenan, Director General of the Education Branch at Indian and Northern Affairs Canada, for the support of this project. We would also like to thank Lars Osberg and Neil Yates for useful comments and suggestions. This paper is based on a earlier version presented at the 2008 Annual CEA Meeting in Vancouver

trend rate of productivity growth remains unchanged, this means that inflationary pressures can begin to build at a lower rate of economic growth."

In addition to the inflationary implications, falling labour force growth will mean that a smaller share of the population will be employed and hence able to support the non-employed through taxes. The rising dependency ratio, particularly in relation to health spending, has important implications for the fiscal position of governments.

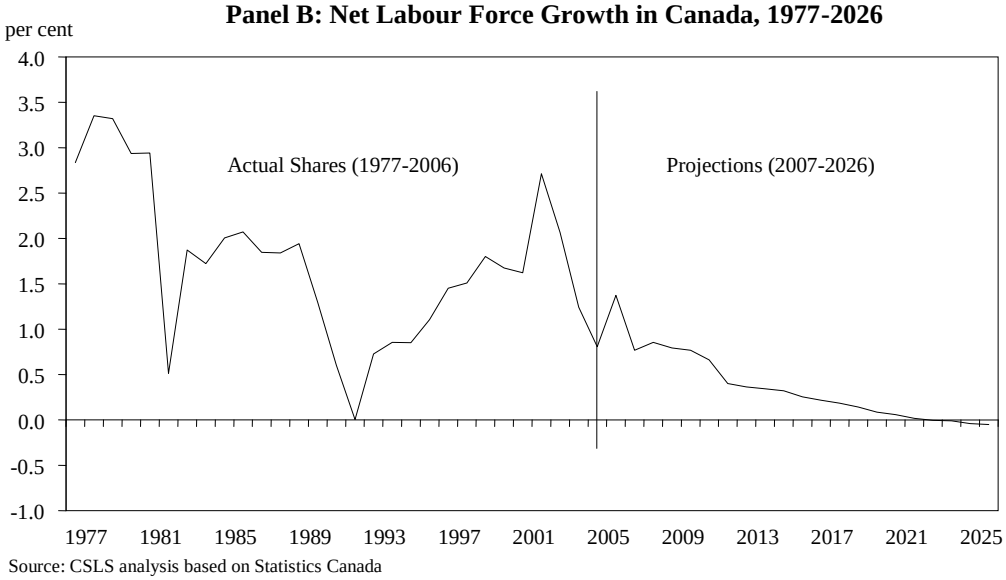
Chart 2: Productivity and Labour Force Growth in Canada

Panel A: Business Sector Output per Hour Growth in Canada and the United States (average annual rates)



Source : Statistics Canada and Bureau of Labor Statistics. Note: Only first three quarters for 2008.

Panel B: Net Labour Force Growth in Canada, 1977-2026



Source: CSLS analysis based on Statistics Canada

In the short to medium term, labour force growth varies with the business cycle, falling in recession and rising in expansions. From a longer term perspective, labour force growth is determined by the demographic structure of the population and net international migration. The imminent retirement of the baby boom cohorts will see labour force growth fall from its current level of around 200,000 per year to zero over the next 15 years (Chart 2: Panel B).

The labour force participation rate is directly related to the level of educational attainment of the population. The more education one has the more one participates in the labour market as one has more employment opportunities and greater earnings potential. Increasing the education attainment of the Aboriginal population of Canada will therefore increase the participation rate of Aboriginal peoples and offset some, but certainly not all, of the projected decline in labour force growth. This is particularly true in Western Canada, especially Saskatchewan and Manitoba, where the share of Aboriginal peoples in the population is well above the national average.

Raising the educational attainment of Aboriginal people in Canada is not a novel policy objective. In fact, it has already been the center of much discussion, debate and research. Yet, the fundamental problem remains and the topic continues to raise serious questions. In the 2008 Speech From the Throne, the Government of Canada confirmed that Aboriginal education was still the key to improving the economic condition of Aboriginal Canadians:

> "Our mining and resource sectors present extraordinary opportunities across Canada, and our Government will help move forward by providing a single window for major project approvals. With these increased opportunities for employment, our Government will continue to foster partnerships that help Aboriginal people get the skills and training to take advantage of these job prospects in the North and across Canada."

In the spirit of the government's emphasis on skills and training, this report shows the significant potential benefits for Canada of improving the overall level of education of its Aboriginal people. It builds on a previous report from the CSLS (Sharpe, Arsenault and Lapointe, 2007). It is also similar in nature to a report by Clatworthy (2009) which focused primarily on the Registered Indian population.

B. Structure of the Report

This report assesses the potential of the Aboriginal population in meeting the two major challenges facing the Canadian economy outlined above. The report focuses on the potential impact on income and productivity and the fiscal balance given increased educational attainment and increased levels of social-well being among the Aboriginal population.

The current section established the motivation for this report. The next section draws a portrait of the Aboriginal population in 2006, with particular emphasis on recent

developments and the issues of data comparability with earlier censuses The third section discusses the population projection scenarios for 2026, both for the Aboriginal and overall populations. The fourth section examines the Aboriginal population's potential contribution to the Canadian labour force. The fifth section provides projections of income for Aboriginal Canadians in 2026 and its implications for Canadian output and productivity given different levels of increase in Aboriginal educational attainment. The sixth section borrows from methodology developed for the Royal Commission on Aboriginal People to estimate the total fiscal impact of increased Aboriginal social and economic well-being. The seventh section offers directions for future research and concludes.

II. A Portrait of Aboriginal Canadians in 2006

In this section, the report uses data from the 2006 Census of Canada to draw a recent portrait of the major characteristics of Aboriginal Canadians. It also tracks the progress made by Aboriginal on some key metrics by comparing recent data to that of previous censuses. Despite some progress, Aboriginal Canadians are still much less educated than the Canadian average, they are less much likely to find employment, and they are much more concentrated in rural areas (including on-reserves). This section first examines Aboriginal population growth and area of residence. It then turns to trends in educational attainment and labour market outcomes for Aboriginal Canadians relative to Non-Aboriginal Canadians.

A. Aboriginal Population in Canada

The Census is the most important source of detailed information on Aboriginal Canadians. Labour market data and unadjusted population counts for the reference week of 2006 have already been released. Complete employment income data for 2005 and adjusted population counts, which are of particular importance for aboriginal populations for which incomplete enumeration is a sizeable problem, are yet to be published. The data used in this section are largely drawn from the 2006 Census tabulations available as of December 2008. The release of employment income data and of micro-data files expected in late 2009 will allow for a more detailed portrait of Aboriginal Canadians.

As noted above, one issue related to Census data is population underestimation particular to Aboriginal populations. In addition to general undercounting issues,[2] Statistics Canada officials often run into additional problems when trying to enumerate reserves. For example, in 2006, they were unable to completely enumerate 22 reserves. This was down from 30 reserves in 2001 and 77 reserves in 1996. The official Census data are not adjusted for this collection issue. Nonetheless, adjusted estimates which take into account non-enumerated reserves for the 1996 and 2001 censuses were provided in Statistics Canada's *Projections of the Aboriginal Populations*.

The difference between adjusted and unadjusted counts is much large for North American Indians, with an estimated undercount of 22.5 per cent in 1996 compared to only 3.8 per cent for the total population (Summary Table 1). In the same year, the difference between adjusted and unadjusted counts was much smaller for Métis (4.9 per cent) and the Inuit population (4.7 per cent). The same pattern emerged in 2001, with undercounting primarily affecting the North American Indian population.

In this section, we first provide a picture of the aboriginal population in relation with the overall population in Canada using adjusted estimates as a basis for our

[2] In 1996, the Census estimate of total population was about 3 per cent lower than the adjusted population estimate that takes account of undercounting. The unadjusted 20 per cent sample used to derive detailed socio-demographic data provided a total population estimate about 4 per cent lower than adjusted counts as it also excludes individuals in institutions.

analysis.[3] We then follow up with a detailed breakdown of the Aboriginal population in Canada using unadjusted census counts.

Summary Table 1: Unadjusted and Adjusted Population Counts in Canada, 1996, 2001 and 2006

		1996	2001	2006
Total Population	Unadjusted	28,528.1	29,639.0	31,241.0
	Adjusted	29,610.8	31,021.3	32,447.5
	Difference (per cent)	3.8	4.7	3.9
Aboriginal	Unadjusted	799.0	976.3	1,172.8
	Adjusted	904.3	1,066.5	1,311.2
	Difference (per cent)	13.2	9.2	11.8
North American Indian	Unadjusted	529.0	608.9	698.0
	Adjusted	648.0	713.1	835.9
	Difference (per cent)	22.5	17.1	19.8
Métis	Unadjusted	204.1	292.3	389.8
	Adjusted	214.2	305.8	409.1
	Difference (per cent)	4.9	4.6	5.0
Inuit	Unadjusted	40.2	45.1	50.5
	Adjusted	42.1	47.6	53.0
	Difference (per cent)	4.7	5.6	5.0

Source: Unadjusted counts for 1996: Product No. 93F0025XDB96002. Unadjusted counts for 2001 and 2006: Census Aboriginal profile for Canada. Adjusted counts for 1996 and 2001: Statistics Canada (2005a). Adjusted counts for 2006 were obtained by multiplying the adjusted counts in 1996 by growth rates which appeared in The Daily of January 15 2008 and which reflect adjustments made for incomplete enumeration. The 2006 estimate for total population rely on official 2006 census growth rates published in Martel and Malenfant (2008).
Notes: Data for all three censuses are based on a 20 per cent sample as to obtain Aboriginal identity data. This sample excludes institutional residents, which explains about a quarter of the undercount at the national level. Unadjusted counts for Aboriginal Canadians include "Multiple aboriginal response" and "Aboriginal response not included elsewhere", which includes individuals who identified themselves as Registered Indians and/or Band members without Aboriginal identity response (the number of individuals in these two categories was about 25,000 in 1996, 30,000 in 2001 and 34,000 in 2006). In the adjusted counts, these individuals are allocated to one of the three Aboriginal groups.

i. The Aboriginal population in Canada

In 2006, the Census indicated that 1,172,790 individuals identified themselves as Aboriginal Canadians, up from 976,305 in 2001 and 799,010 in 1996 (Statistics Canada, 2008). The adjusted counts, however, suggest that in 1996 more than 105,000 Aboriginal Canadians were not included due to general undercount and incompletely enumerated reserves. For 2006, using the growth rates of Aboriginal populations in reserves that were enumerated in both 1996 and 2006, the CSLS estimates that more than 138,000 Aboriginal Canadians were not included in the 2006 Census count. This increase was primarily due to an increase in the Aboriginal population, rather than to narrower Census coverage in 2006. Including these individuals, it is estimated that 1,311,200 Aboriginal Canadians lived in Canada in 2006 (Summary Table 2).

[3] We estimate 2006 adjusted counts by applying the 1996-2006 population growth rates from the 2006 Census (which exclude individuals on reserves that were not enumerated in either 1996 and 2006) to 1996 adjusted counts.

The Aboriginal population is classified into three groups: North American Indians, Métis and Inuits. In the Census, these are referred to as Aboriginal Identity groups. Individuals are asked to self-identify when completing the questionnaire. Two problems arise: some choose to identify as belonging to more than one group, and some individuals stating that they have registered Indian status do not identify any group. The adjusted counts deal with these issues. Using the 1996 adjusted estimates as a basis, it is estimated that in 2006 there were 835,900 North American Indians (63.8 per cent of total Aboriginal population), 409,100 Métis (31.2 per cent), and 53,000 Inuits (4.0 per cent).

Summary Table 2: Population Growth by Identity Group, per cent unless otherwise noted, 1996-2006

	Total Population	Non-Aboriginal	Aboriginal	North American Indian	Métis	Inuit
Population (in thousands)						
1996	29,610.8	28,706.7	904.3	648.0	214.2	42.1
2001	31,021.3	29,954.5	1,066.5	713.1	305.8	47.6
2006	32,447.5	31,136.3	1,311.2	835.9	409.1	53.0
Population Growth (per cent)						
1996-2001	4.8	4.3	17.9	10.0	42.8	13.1
2001-2006	4.6	3.9	22.9	17.2	33.8	11.3
1996-2006	9.6	8.5	45.0	29.0	91.0	26.0
Share of Total Population (points)						
1996	100.0	96.9	3.1	2.2	0.7	0.1
2001	100.0	96.6	3.4	2.3	1.0	0.2
2006	100.0	96.0	4.0	2.6	1.3	0.2
Share of Aboriginal Population (points)						
1996	-	-	100.0	71.7	23.7	4.7
2001	-	-	100.0	66.9	28.7	4.5
2006	-	-	100.0	63.8	31.2	4.0
Contribution to Total Pop. Growth (points)						
1996-2001	100	88.5	11.5	4.6	6.5	0.4
2001-2006	100	82.9	17.2	8.6	7.2	0.4
1996-2006	100.0	85.6	14.3	6.6	6.9	0.4
Contribution to Abor. Pop. Growth (points)						
1996-2001	-	-	100.0	40.1	56.5	3.4
2001-2006	-	-	100.0	50.2	42.2	2.2
1996-2006	-	-	100.0	46.2	47.9	2.7

Source: Statistics Canada (2005a), 1996 and 2001 Census of Population Adjusted Counts (July 1st). For estimates of Aboriginal population in 2006, growth rates which appeared in The Daily of January 15 2008 were used as they reflect adjustments made for incomplete enumeration. The 2006 estimate for total population rely on official 2006 census growth rates published in Martel and Malenfant (2008). The non-Aboriginal population in 2006 is calculated as a residual, and its growth rate is consistent with that published in the Daily of January 15 2008.

In 1996, the total Aboriginal population stood at 904,300, which represented 3.1 per cent of the total population. By 2006, it had grown 45.0 per cent to reach 1,311.2

thousands persons. Considering that the total Canadian population grew only 9.6 per cent over the same period, Aboriginal Canadians accounted for 14.3 per cent of total Canadian population growth, an astonishing proportion given their low relative weight in the overall population. Consequently, the share of the total population accounted by the Aboriginal population increased from 3.1 per cent in 1996 to 4.0 in 2006 (Summary Table 2).

The North American Indian population was 648,000 in 1996 and experienced 29.0 per cent growth over the 1996-2006 period to reach 835,900 in 2006. The Métis community was estimated to have a population of 214,200 in 1996 rising to 409,100 in 2006, 91.0 per cent growth over the decade. The Inuit population grew to 53,000 in 2006 from 42,100 in 1996, a total growth of 26.0 per cent over the 1996-2006 period.

At first glance, the 91 per cent growth in the Métis population between 1996 and 2006 may seem odd. Even though the Aboriginal population is in general younger and more fertile than the non-Aboriginal population, these facts alone cannot fully account for the faster growth in the Métis population. Indeed, the growth in Métis population was more than ten times that of non-Aboriginal Canadians and three times that of the North American Indian and Inuit populations. The main driver of population growth among Métis people appears to be the large increase in self-identification (Sharpe, Arsenault and Lapointe, 2007). Historic rights of Métis have been increasingly recognized, which has contributed to this massive increase in the number of persons self-identifying as Métis.[4] Even though such a development is encouraging in that it means that Métis people feel increasingly secure and justified in identifying themselves as Métis, it does introduce important distortions when one is trying to capture trends in the Aboriginal population over time. This is not a significant problem for the North American Indian population.

ii. Urban and rural population

The geographic distribution of the Aboriginal population does not correspond to the distribution of the general population, either on a rural/urban basis or on a provincial basis. The Aboriginal population is much more concentrated in rural and remote locations, in the Western provinces and in the Canadian north. In this section we use unadjusted estimates from the 2006 Census to provide an up-to-date portrait of the geographic distribution of Aboriginal Canadians.

Of the 1,172,790 enumerated Aboriginal Canadians in 2006, 308,500 lived on reserves, or 26.3 per cent of the total (Summary Table 3). The vast majority of those living on reserve, 97.5 per cent, were North American Indians (300,800 individuals). In other words, slightly less than half (43.1 per cent) the North American Indians population

[4] In fact, as recently as January 2009, a Métis man from Manitoba, Will Goodon, won a legal battle which resulted in a landmark ruling on Métis hunting rights. The ruling followed in the step of the Powley ruling in which the Supreme Court recognized the right of Métis to hunt without a licence under certain circumstances. The recent Manitoba ruling has important implications going forward because it covers a large area of southwestern Manitoba that includes the City of Winnipeg south to the U.S. border and west to the Saskatchewan border. Governments may eventually need to consult Métis people before development goes ahead in traditional Métis areas if such development has the potential to interfere with their hunting rights.

lived on reserves in 2006, a proportion which should be viewed as a lower-bound estimate as the census particularly undercounts on-reserve individuals.

Summary Table 3: Urban and Rural Population Distribution in Canada, 2006

	Total Population	Non-Aboriginal population	Total Aboriginal Population	North American Indian
On reserve	1.1	0.1	26.3	43.1
Rural (excluding reserves)	19.0	18.9	20.5	12.2
Total urban (excluding reserves)	79.9	81.0	53.2	44.7
Urban non-census metropolitan area	16.1	15.9	21.9	17.7
Urban census metropolitan area	63.8	65.1	31.2	27.0

Source: 2006 Census Tabulations
An urban area has a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square kilometre. All territory outside urban areas is classified as rural.
A census metropolitan area (CMA) is a large urban area and has a population of at least 100,000.
Urban non-census metropolitan areas are smaller urban areas with a population of less than 100,000.
Rural areas include remote and wilderness areas and agricultural lands, as well as small towns, villages and other populated places with a population of less than 1,000.

There is no breakdown of the Aboriginal population between rural and urban reserves, and it is thus fairly hard to estimate the proportion of Aboriginal Canadians living in rural areas accurately. Urban reserves, some of which are long standing and other newly created,[5] do exist and some of them are doing very well economically. Yet, it is also known that a large proportion of reserves are located in remote and/or rural areas. Because reserves are not classified into either rural or urban areas, it is hard to compare the distribution of the Aboriginal and non-Aboriginal population in these terms. Nonetheless, keeping in mind that a large portion of reserves are in rural areas, it clearly transpires that the Aboriginal population is not as urbanized as the non-Aboriginal population.

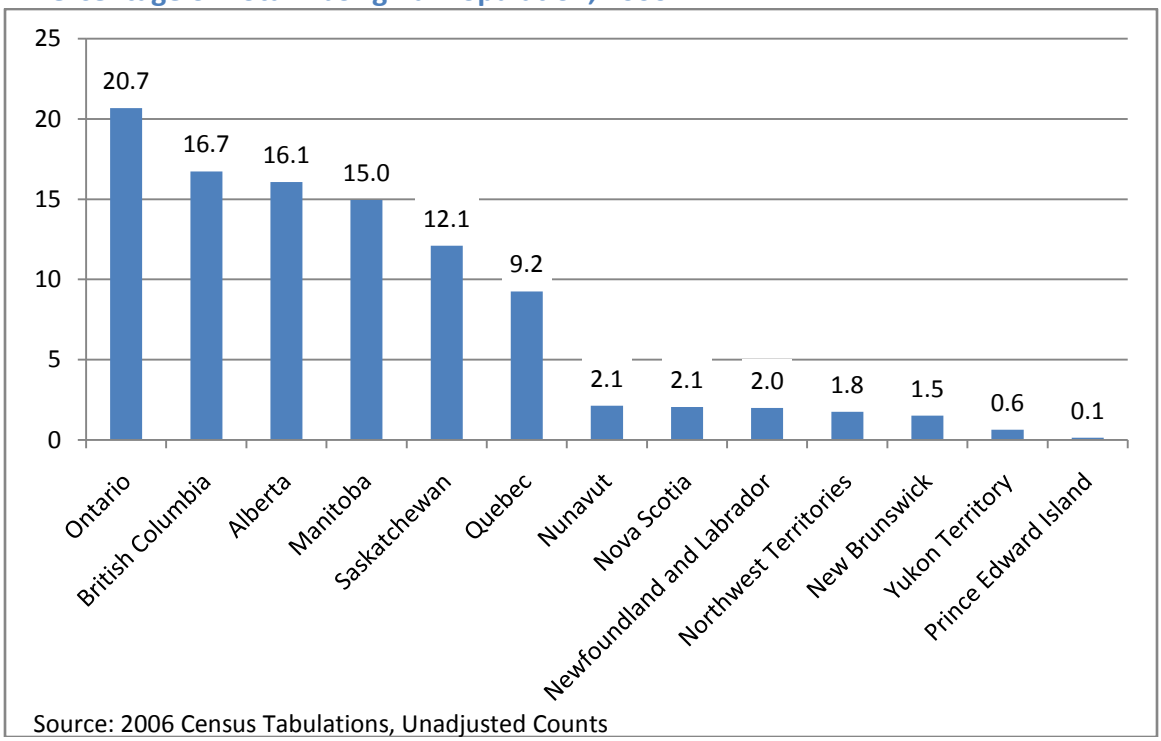
Indeed, the proportion of Aboriginal Canadians living in Canada's 34 Census Metropolitan Area (CMA) in 2006 was 31.2 per cent, less than half the proportion for other Canadians. The proportion was even lower for the North American Indian population, of which only 27.0 per cent lived in a CMA. Somewhat paradoxically, the proportion of Aboriginal Canadians living in rural areas (excluding reserves), was sensibly the same for both the non-Aboriginal population (18.5 per cent) and the Aboriginal population (20.5 per cent), and was even slightly lower for the North American Indian population (12.2 per cent). As noted above, however, if rural reserves were included in the proportion of Aboriginal Canadians living in rural areas, the proportion would be much larger.

[5] Examples of long-established urban reserves include Kahnawake near Montreal and Musqueam in Vancouver. Examples of newly established urban reserves include Muskeg Lake Cree First Nation urban reserve in Saskatoon and the Opawakoscikan Reserve in Prince Albert. See Western Economic Diversification Canada (2005) for more information on urban reserves.

iii. Population by province and territory

The provincial distribution of the Aboriginal population also differs significantly from that of the overall population in 2006. Out of the 1,172,790 Aboriginal people enumerated in 2006, about 60 per cent lived in the four Western provinces (Chart 3 and Summary Table 4). These four provinces accounted for only 30.1 per cent of the total population. In other words, the relative weight of Western Canada in term of the Aboriginal population is double that of the overall population.

Chart 3: Provincial and Territorial Distribution of the Aboriginal Population in Canada, in Percentage of Total Aboriginal Population, 2006



Source: 2006 Census Tabulations, Unadjusted Counts

A total of 4.5 per cent of the Aboriginal population in 2006 resided in one of the three territories, compared to only 0.3 per cent of the total population. Only 9.2 per cent of the Aboriginal population lived in Quebec and 20.7 per cent in Ontario, a much lower proportion than could be expected given the large proportion of the Canadian population in these provinces (23.8 and 38.5 per cent respectively).

In term of individual provinces and territories, Aboriginal Canadians were most highly concentrated in Nunavut, where they represented 85.0 per cent of the population in 2006 (Chart 4). The Aboriginal share was 50.3 per cent in the Northwest Territories and 25.1 per cent in Yukon. The two provinces that had the greatest concentration of Aboriginal people were Manitoba and Saskatchewan, each with around 15 per cent of their population. Alberta's population was composed of 5.8 per cent of Aboriginal Canadians, and British Columbia 4.8 per cent. Atlantic provinces had 3.0 per cent of their population as Aboriginal Canadians, with Newfoundland and Labrador at 4.7 per cent, Nova Scotia

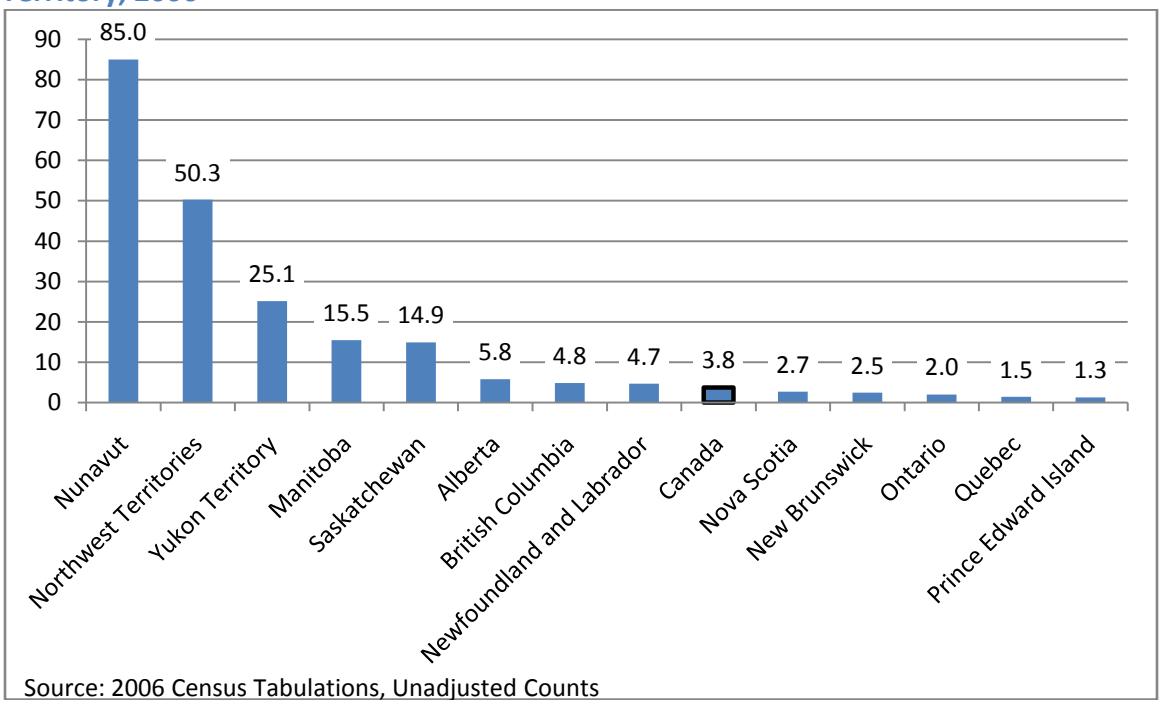
at 2.7 per cent, New Brunswick at 2.5 per cent and Prince Edward Island at 1.3 per cent. Ontario and Quebec stood at 2.0 and 1.5 per cent, respectively.

Summary Table 4: Geographic Distribution of Aboriginal Population in Canada, 2006

	Proportion of the Canadian Population	Proportion of the Aboriginal Population	Share of the Aboriginal Population in Total Population
Canada	100.0	100.0	3.8
Atlantic Canada	7.2	5.7	3.0
Quebec	23.8	9.2	1.5
Ontario	38.5	20.7	2.0
Western Canada	30.1	59.8	7.5
Manitoba	3.6	15.0	15.5
Saskatchewan	3.1	12.1	14.9
Alberta	10.4	16.1	5.8
British Columbia	13.0	16.7	4.8
Territories	0.3	4.5	52.8
Yukon Territory	0.1	0.6	25.1
Northwest Territories	0.1	1.8	50.3
Nunavut	0.1	2.1	85.0

Source: Census 2006 Tabulations

Chart 4: Aboriginal Population as a Proportion of Total Population, by Province and Territory, 2006



Source: 2006 Census Tabulations, Unadjusted Counts

In all provinces and territories except Nunavut, the Aboriginal population is composed primarily of North American Indians and Métis. On the other hand, practically

all of Nunavut's population is Inuit. The other two provinces with a significant proportion of their Aboriginal population of Inuit identity are Quebec and Newfoundland, with a small number also living in the Northwest Territories.

iii. Age structure of the population

Another interesting aspect in which the Aboriginal population differs sharply from the non-Aboriginal population is in their age structure. The Aboriginal population is much younger, with almost 40 per cent of its population under the age of 20 (Summary Table 5). This trend is even more pronounced for the North American Indian population, who has 42.4 per cent of its population under the age of 20 and more than 10 per cent under the age of 5. Among the non-Aboriginal population, less than a quarter of the population is under 20 years old and only 5.3 per cent is under 5 years old.

Summary Table 5: Age Distribution of the Population, per cent, 2006

	Total Population	Non-Aboriginal Population	Total Aboriginal Population	North American Indian	Métis	Inuit
0 to 19 years	24.7	24.1	39.8	42.4	35.1	47.0
Under 5 years	5.4	5.3	9.3	10.3	7.4	11.6
5 to 9 years	5.8	5.6	9.8	10.6	8.3	11.5
10 to 14 years	6.7	6.5	10.7	11.3	9.5	11.9
15 to 19 years	6.8	6.7	10.1	10.1	9.9	11.9
20 to 44 years	34.7	34.7	36.2	35.6	37.5	36.2
20 to 24 years	6.6	6.6	8.0	7.7	8.4	9.0
25 to 34 years	12.8	12.7	13.8	13.6	14.0	14.1
35 to 44 years	15.3	15.4	14.4	14.2	15.1	13.1
Above 45 years	40.6	41.2	23.9	22.1	27.4	16.8
45 to 54 years	15.8	16.0	12.2	11.2	14.2	8.4
55 to 64 years	11.7	11.9	6.9	6.3	8.0	4.7
65 to 74 years	7.2	7.4	3.3	3.1	3.6	2.6
75 years and over	5.8	6.0	1.5	1.5	1.5	1.1

Source: Census 2006 Tabulations

The differences in the age pyramid of Aboriginal and non-Aboriginal Canadians is most pronounced at the upper and lower tail of the distribution. Indeed, both groups have a similar proportion of their population in the 20 to 44 years category, at 34.7 per cent for non-Aboriginal Canadians and 36.2 per cent for Aboriginal Canadians. The large difference noted above in terms of young people is reflected in the respective proportions of the population aged above 45 years old. That proportion is about twice as large in the non-Aboriginal population (41.2 per cent) than in the Aboriginal population (23.9 per cent) or the North American Indian population (22.1 per cent).

B. Educational Attainment of Aboriginal Canadians

It was shown in Sharpe, Arsenault and Lapointe (2007) and Hull (2009) that education was an important determinant of income, labour market outcomes and other indicators of well-being. In particular, higher educational attainment was associated with higher income, lower unemployment, higher labour market participation, lower chances of being involved in crime, and better overall health. This section examines the level of educational attainment of Aboriginal Canadians in relation to the level attained by non-Aboriginal Canadians.

i. Situation in 2006

Aboriginal Canadians on average had a lower educational attainment in 2006 than their non-Aboriginal counterparts. Just under half (43.7 per cent) of Aboriginal Canadians had not even completed high school nor obtained another diploma or certificates, compared to only 23.1 per cent of non-Aboriginal Canadians (Summary Table 6).

Summary Table 6: Highest Level of Educational Attainment[6], Population 15+ 2006

	Non-Aboriginal population(%)	Total Aboriginal population (%)	North American Indian population (%)	Aboriginal/Non-Aboriginal Gap (percentage point)
No certificate, diploma or degree	23.1	43.7	48.4	20.6
Certificate, diploma or degree	76.9	56.3	51.6	-20.6
High school certificate or equivalent	25.7	21.8	19.9	-3.9
Apprenticeship or trades certificate or diploma	10.8	11.4	10.4	0.6
College, CEGEP or other non-university certificate or diploma	17.4	14.5	13.2	-2.8
University certificate, diploma or degree	23.0	8.6	8.1	-14.4

Source: 2006 Census Tabulations

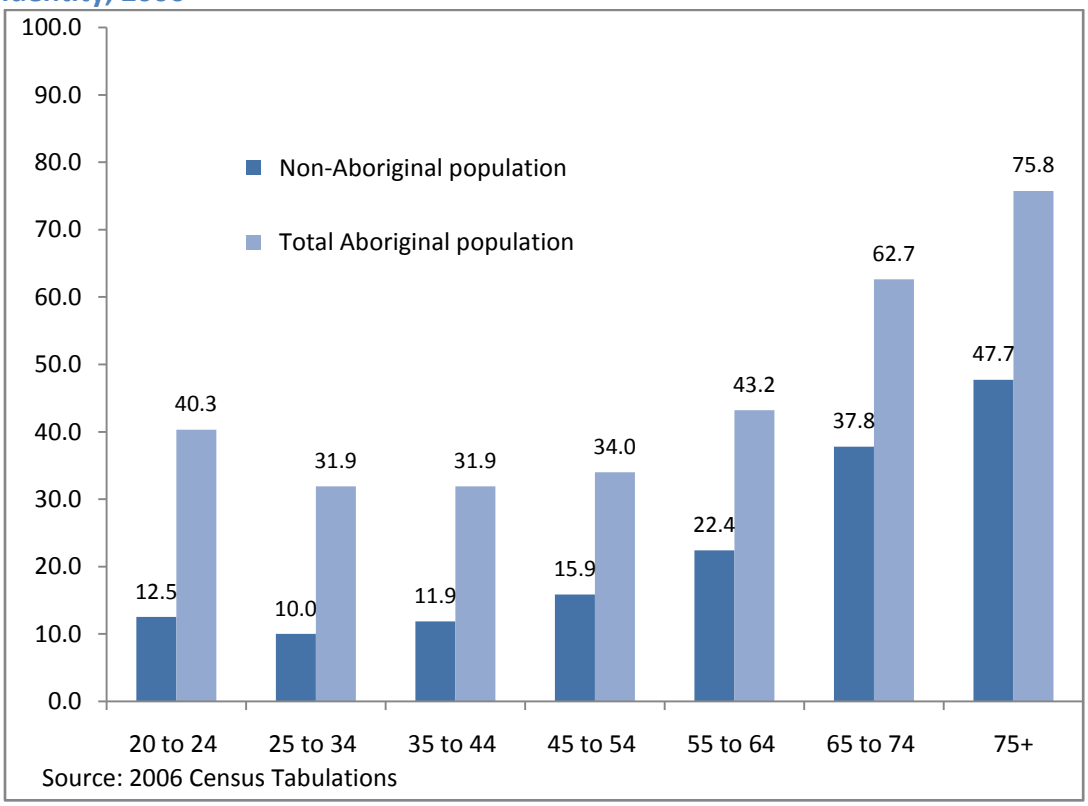
The North American Indian population fared even worse, with 48.4 per cent of its population not having a certificate, diploma or degree of any sort. In terms of apprenticeship, trade, college and other non-university certificate or diploma, the Aboriginal and non-Aboriginal populations had similar levels of educational attainment, with about 25 per cent of their respective population obtaining such degrees. The largest difference was in terms of university-level attainment, with 23.0 per cent of non-Aboriginal obtaining a university certificate, diploma or degree compared to only 8.6 per

[6] The educational categories included in the 2006 Census are not comparable to previous censuses. Unlike previous censuses, the 2006 Census does not include the categories "college: without trades or college certificate" and "university: without certificate, diploma and degree".

cent of Aboriginal Canadians. Even worse results obtain for the Registered Indian population on reserve (White and Beavon, 2009).

The proportion of individuals aged 20 to 24 years old obtaining no certificate is a good indicator of future completion rates as it reflects the educational attainment of the youngest 5-year cohort that can be expected to have completed high school. In 2006, 40.3 per cent of the Aboriginal population in this age group had not completed high school compared to 75.8 per cent for the 75 and over age group (Chart 5). While at first glance this suggests higher high school completion rates for younger age cohorts, a slightly more detailed analysis reveals that progress has been uneven.

Chart 5: Proportion without Diploma, Certificate or Degree, by Age and Aboriginal Identity, 2006

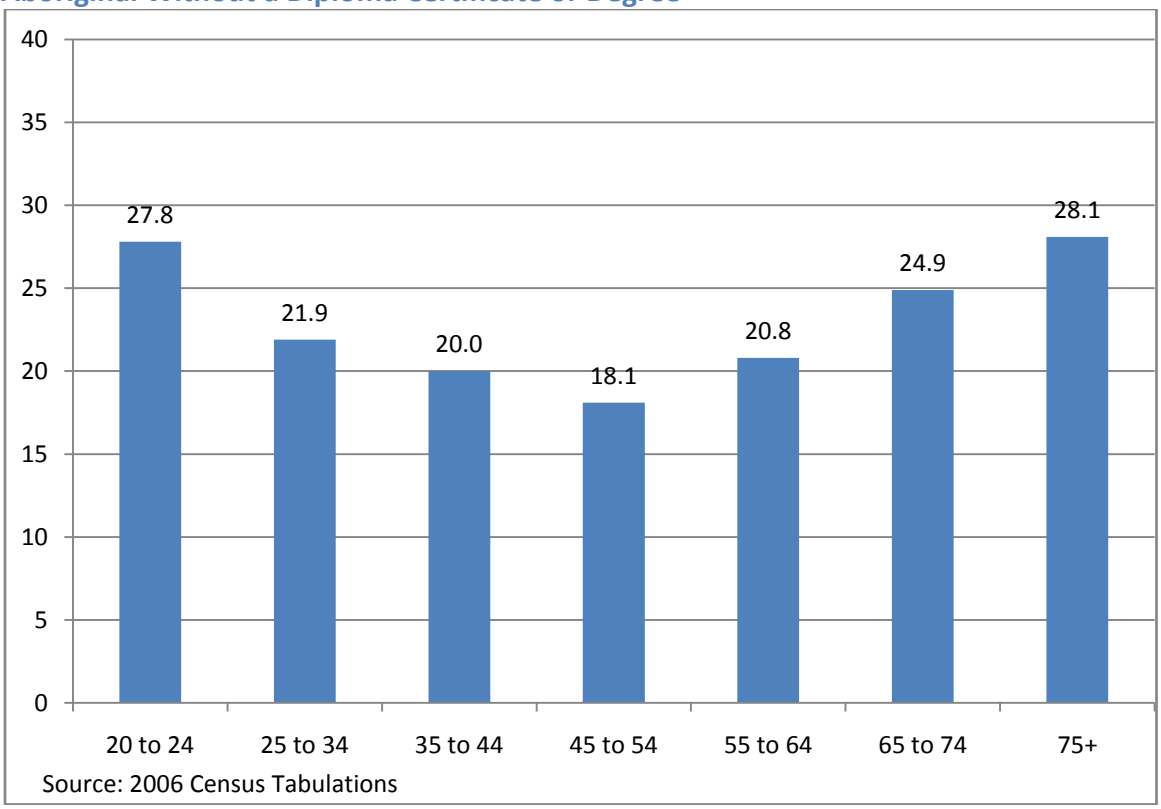


Using a cross-section decomposed by age, we can roughly observe the evolution in educational attainment through time. For example, 40 years ago, in 1966, the current 65 to 74 group was aged between 25 and 34 years. Thus, we can compare how educational attainment evolved since 1966 using the groups aged 65-74 (1966), 55-64 (1976), 45-54 (1986), 35-44 (1996) and the 2006 group aged 25-34. As Chart 5 illustrates, the trend in the proportion of Aboriginal Canadians who have no certificate is trending downwards through time. Yet, this indicator clearly shows a slower progression for later cohorts than for earlier cohorts. For example, the 1986 Aboriginal cohort had on average 9.2 percentage point less individuals with no certificate than the 1976 Aboriginal cohort, whereas the 2006 Aboriginal cohort experienced no improvement over the 1996

cohort. In fact, the 20 to 24 age groups have a larger proportion of individuals with no certificate, but they may catch-up to previous cohort in coming years.

Both Aboriginal and non-Aboriginal population experienced significant increases in their level of educational attainment since 1966. The Aboriginal population, however, has been unable to close the gap with the non-Aboriginal population. In fact, in relative terms, its performance has worsened in recent years. The relative gap gradually decreased between the 1966 and 1986 cohort, falling from 24.9 percentage points for the 1966 cohort (65-74) to only 18.1 percentage points for the 1986 cohort (45-54). Yet, since then, the gap has progressively worsened, and stood at 21.9 percentage points for the 2006 cohort (Chart 6). In 2006, the proportion of non-Aboriginal aged 25-34 without certificate was only about a third that of Aboriginal Canadians of the same age. Clearly, the level of educational attainment of Aboriginal Canadians has not been growing fast enough to close the gap with non-Aboriginal Canadians.

Chart 6: Percentage Point Gap Between the Proportion of Aboriginal and Non-Aboriginal Without a Diploma Certificate or Degree



ii. On-reserve/off-reserve Aboriginal educational attainment

Not all subsets of the aboriginal population face the same realities. In fact, major differences exist between those living in rural areas and those living in more urban settings. In effect, one of the variables most strongly related to educational attainment for Aboriginal Canadians is their reserve status.

Off-reserve North-American Indians have consistently higher educational outcomes than on-reserve residents (Summary Table 7). Off-reserve residents are almost 40 per cent more likely to obtain a certificate, diploma or degree than on-reserve residents. Moreover, in 2006 there was a larger proportion of off-reserve Aboriginal in every category of educational attainment at or above high school graduation. The difference is not attributable only to the growing proportion of Métis off-reserve, who tends to perform better than other groups, as similar trends can be observed among the off-reserve North American Indian population. Indeed, 59.9 per cent of off-reserve North American Indians obtain at least a high school certificate, a much higher proportion than on-reserve Aboriginal people at 45.1 per cent.

Summary Table 7: On- and Off-Reserve Aboriginal Educational Attainment, 2006

	Off-reserve Aboriginal	Off-reserve NAI	On-reserve Aboriginal	On-reserve/Off-reserve gap
	A	B	C	C-A=D
No certificate, diploma or degree	38.5	40.1	54.9	16.4
Certificate, diploma or degree	61.5	59.9	45.1	-16.4
High school certificate or equivalent	24.1	23.7	16.4	-7.7
Apprenticeship or trades certificate or diploma	12.0	11.0	10.3	-1.7
College, CEGEP or other non-university certificate or diploma	15.9	15.4	11.2	-4.8
University certificate, diploma or degree	9.6	9.8	7.3	-2.3

Source: 2006 Census Tabulations

iii. Inter-census comparability

It would be instructive to compare educational outcomes of Aboriginal Canadians not only at a given point in time, but also across censuses. In 2006, however, the definition used to classify educational attainment was changed significantly, and straightforward comparisons are impossible. For most educational categories, no meaningful comparison can be made. The main reason behind this lack of inter-census comparison is the elimination of the categories “some post-secondary without certificate” and “some university without certificate” which were included in previous censuses. For example, in 2001, if an individual had no high school diploma, but had spent one semester at a community college, the person would have been classified as having “some post-secondary without certificate”. In the 2006 census, that person would instead be classified as having no certificate.

One of the few category for which educational attainment comparisons are possible is that for university degree, i.e. bachelors’ degree or above. In this category, both Aboriginal and non-Aboriginal Canadians made progress between 2001 and 2006,

but this progress was uneven. The proportion of the population aged 15 and over with a university degree increased 2.8 percentage points for the non-Aboriginal population, from 15.7 per cent in 2001 to 18.5 per cent in 2006 (Summary Table 8). In relative terms, this was a 17.5 per cent increase. Aboriginal Canadians experienced a much smaller increase of 1.4 percentage points, from 4.4 per cent in 2001 to 5.8 per cent in 2006. Yet, the low base meant it represented a 31.8 per cent increase.

Summary Table 8: Proportion of University Graduates, Population Aged 15+, 2001 and 2006

	2001	2006	2001-2006 percentage point change	2001-2006 percentage change
Total	15.4	18.1	2.7	17.5
Non-Aboriginal population	15.7	18.5	2.8	17.8
Aboriginal population	4.4	5.8	1.4	31.8
North American Indian population	4.1	5.2	1.1	26.8
On Reserve Aboriginal	2.3	3.0	0.7	30.4

Source: 2001 Census and 2006 Census Tabulations

The relative increases were similar for North American Indians (26.8 per cent) and for Aboriginal people living on-reserve (30.4 per cent). Yet, because both these groups had lower proportion of their population with university degree in 2001, the absolute increase were much smaller, 1.1 percentage points for North American Indians and 0.7 percentage points for on-reserve Aboriginal Canadians. In other words, even though the absolute educational gap between Aboriginal and non-Aboriginal populations is increasing, the strong rate of growth in the proportion of Aboriginal holding a university degree remains encouraging for the future.

Regardless of the short term trend, it is clear that the Aboriginal population still lags far behind the non-Aboriginal population in terms university completion and, as a result, has more potential for growth. As noted in Sharpe, Arsenault and Lapointe (2007) the outcomes at the university level seems to be more the result of an inability to complete the required high school graduation, rather than a lack of readiness to continue beyond that level of educational attainment. Therefore, if Aboriginal rates of university completion are to eventually approach non-Aboriginal levels, Aboriginal high school completion must be prioritized.

C. Labour Market Outcomes of Aboriginal Canadians

Lower educational attainment translates into weaker labour market outcomes. It is important to recognize that differences in labour market outcomes are not solely the result of education-differential. Indeed, Appendix 1decomposes the 2001wage-differential between Aboriginal and non-Aboriginal Canadians and finds that a portion was also explained by differences in employment opportunities (expressed by the number of weeks and the number of hours worked per week) and by the geographical distribution

of the two populations (including rural/urban and provincial distributions).[7] Yet, a sizeable portion was directly related to educational outcomes. In this section, we review and compare labour market outcomes of both Aboriginal and non-Aboriginal Canadians for 1996, 2001 and 2006. We then briefly review the relationship between labour market outcomes and educational attainment by presenting labour market variables broken down by educational category.

i. Labour market outcomes in Canada

There are four major indicators of labour market outcomes: participation rate, employment rate, unemployment rate and employment income. The first three indicators are intertwined. The participation rate captures the percentage of the working age population who are in the labour force, i.e. employed or searching for work. The unemployment rate determines what share of the labour force is not currently employed. The employment rates is in turn defined as the proportion of the working age population employed in the reference week, and is a function of the two former rates.

Summary Table 9: Aboriginal and Non-Aboriginal Labour Market Outcomes 1996-2006

	1996	2001	2006	Percentage point growth (1996-2006)	Per cent growth (1996-2006)	Change in the Gap (Percentage Points) (1996-2006)
			Participation Rate			
Non-Aboriginal	65.6	65.7	66.9	1.3	1.98	-3.2
Aboriginal	58.5	59.3	63	4.5	7.69	
			Unemployment Rate			
Non-Aboriginal	9.8	5.9	6.3	-3.5	-35.71	6.1
Aboriginal	24.4	16.5	14.8	-9.6	-39.34	
			Employment Rate			
Non-Aboriginal	59.2	61.8	62.7	3.5	5.91	-6.0
Aboriginal	44.2	49.2	53.7	9.5	21.49	

Source: Census 1996, 2001 and 2006 Tabulations

Between 1996 and 2006, Canada's Aboriginal population has made significant progress in all three labour market indicators in both absolute terms and relative to the non-Aboriginal population. Over that ten year period, the Aboriginal non- Aboriginal participation rate gap closed by 3.2 percentage points, the unemployment rate gap closed by 6.1 percentage points and the employment rate gap closed by 6.0 percentage points (Summary Table 9). While the Aboriginal population labour market outcomes still fall short of their non-Aboriginal counterparts, the progress is encouraging. It must be noted, however, that part of the progress made by the Aboriginal population is attributable to a compositional shift towards a greater numbers of Métis, a group who tends to have better labour market outcomes than other Aboriginal groups.

[7] Updated Aboriginal employment income data decomposed by educational attainment will be available when the 2006 Census microdata files are released in late 2009.

Summary Table 10: Aboriginal and non-Aboriginal Labour Market Outcomes, 2006

	Participation rate	Employment rate	Unemployment rate
Non-Aboriginal population	66.9	62.7	6.3
Aboriginal population	63.0	53.7	14.8
On reserve	52.2	39.3	24.7
Off-reserve	66.6	58.4	12.2
North American Indian population	58.8	48.2	18.0

Source: 2006 Census Tabulations

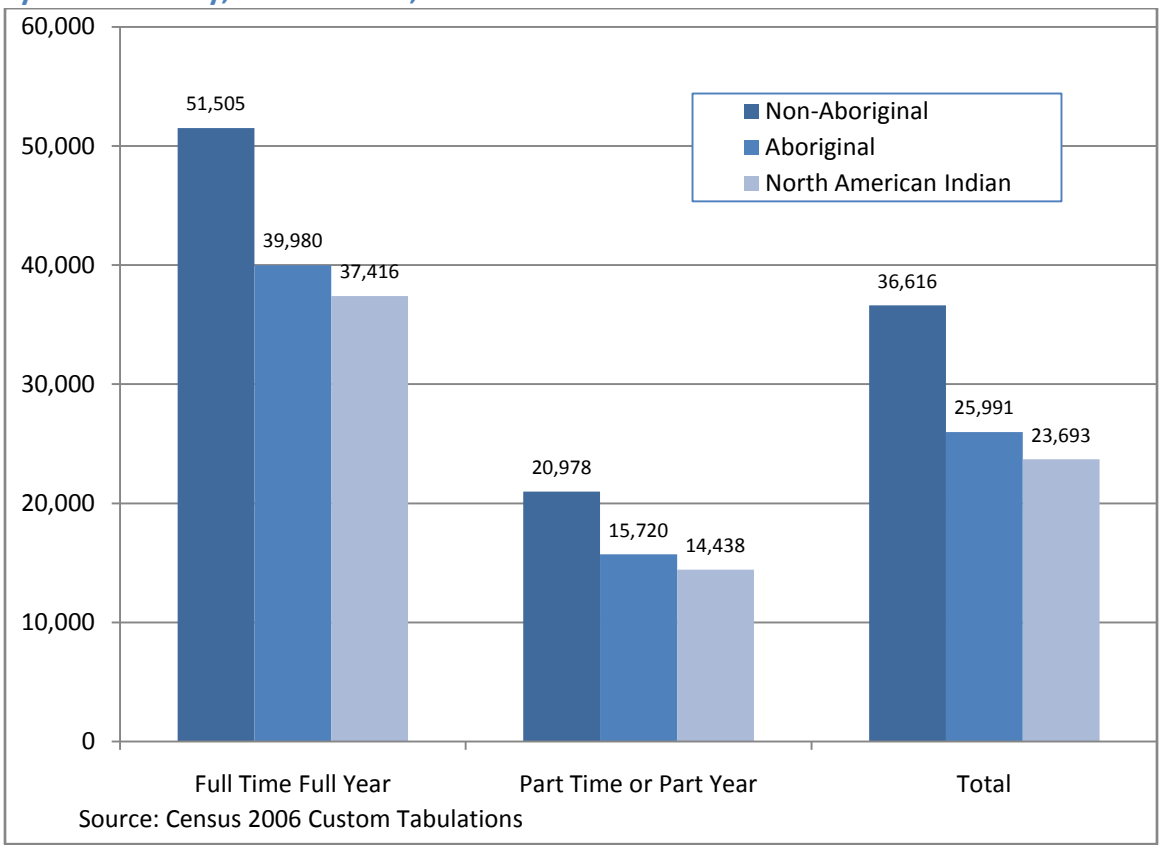
Summary Table 10 provides a brief overview of these three indicators for Aboriginal and non-Aboriginal Canadians in 2006. Unsurprisingly, we can see that the Aboriginal population has a lower participation rate (63.0 versus 66.9 per cent), a lower employment rate (53.7 versus 62.7 per cent) and a higher unemployment rate (14.8 versus 6.3 per cent) than non-Aboriginal Canadians. For all three indicators, the North American Indian population underperforms vis-à-vis the Aboriginal population as a whole, and the on-reserve Aboriginal population does even worse than North American Indians. Indeed, only 52.2 per cent of the on-reserve Aboriginal population of working age is either employed or searching for employment (14.4 percentage points lower than the off-reserve Aboriginal population). Only 39.3 per cent of the working age population is employed (19.9 percentage points lower than the off-reserve Aboriginal population), and of those participating in the labour force, 24.7 per cent cannot find employment and remain unemployed (12.4 percentage points more than the off-reserve Aboriginal population).

ii. Employment Income

According to the 2006 Census, Aboriginal Canadians were not only less likely to be employed than non-Aboriginal Canadians, they also earned less than non-Aboriginal people. In 2005, the average non-Aboriginal with employment income earned 41 per cent more than the average Aboriginal with employment income and 54 per cent more than the average North-American Indian with employment income (Chart 7Chart 8). Part of this gap is due to the relatively smaller proportion of employed Aboriginal Canadians who work full-time full-year. In 2005, only 42.3 per cent of all Aboriginal Canadians with employment income and 42.0 per cent of North American Indians with employment income worked full-time full-year compared to 59.7 per cent for non-Aboriginal people.

Even when differences in work patterns are controlled for, however, significant differences remain. The average non-Aboriginal who worked full-time full-year earned $51,505 in 2005, about 29 per cent higher than their Aboriginal counterparts ($39,980) and 38 per cent higher than North American Indians ($37,418). A practically identical pattern was observed across groups for part-time and/or part-year workers.

Chart 7: Average Employment Income of Aboriginal and non-Aboriginal Populations, by Work Activity, 2000 to 2005, Constant 2005 Dollars



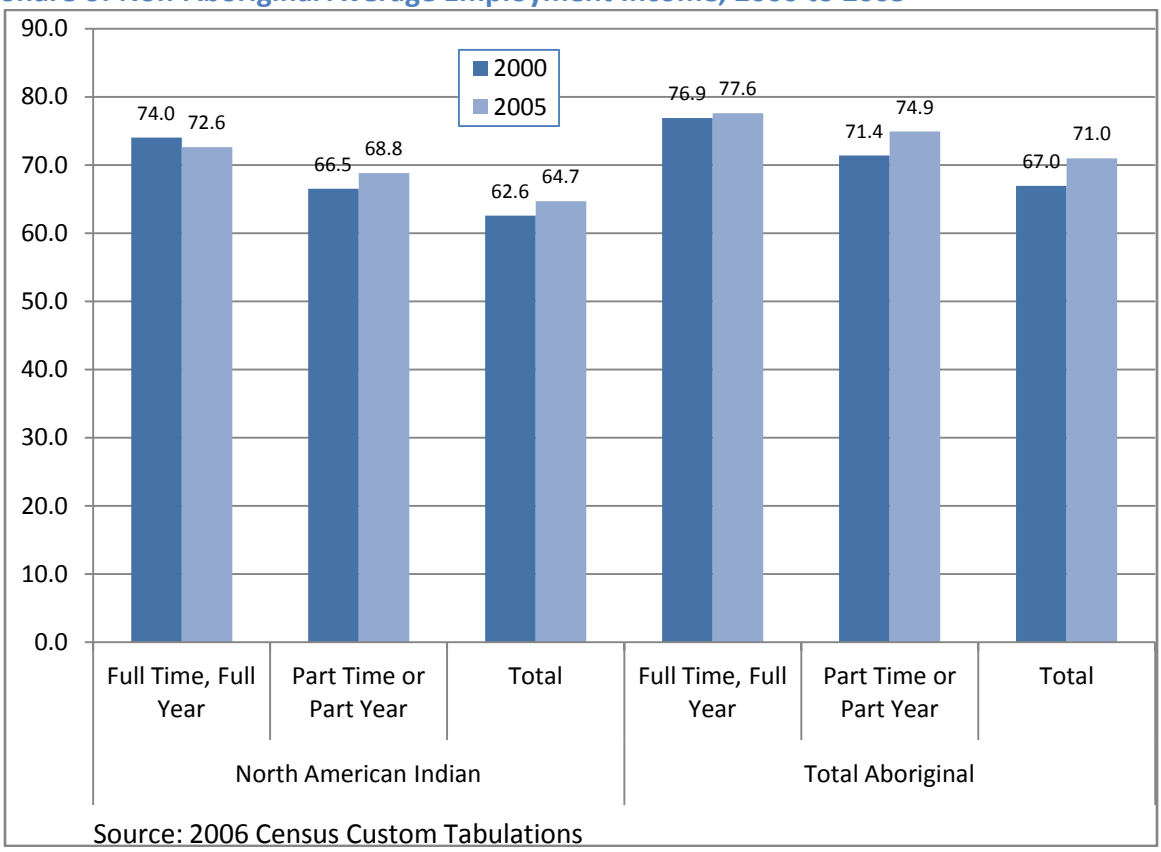
Although the Aboriginal population in general, and the North American Indian population in particular, earn significantly less on average than non-Aboriginal people, comparing data from the 2001 and 2006 Census reveals that the employment income gap is shrinking. Between 2000 and 2005, the ratio of Aboriginal average employment income to average non-Aboriginal income increased 4.0 percentage points (Chart 8). The average employment income gap also closed 3.5 percentage points among part-time or part-year workers and 0.7 percentage points among full-time full-year workers.

Smaller improvements at the more disaggregated level indicate that the relative level of Aboriginal people who worked full-time full-year increased between the two census periods. In fact, between 2000 and 2005, the proportion of non-Aboriginal Canadians who worked full-time full-year fell 2.0 percentage points (from 53.3 per cent to 51.3 per cent) while the proportion for Aboriginal Canadians increased 2.3 percentage points (from 38.0 per cent to 40.3 per cent).

As was the case for other variables, the improvement between censuses was in part related to an increase in Métis self-identification. Nonetheless, even when we focus on the North American Indian population in particular, improvement in the employment income gap is evident. Between 2000 and 2005, the ratio of North American Indian and non-Aboriginal average earnings increased by 3.3 percentage points. A large portion of this increase was due to a two percentage points increase in the proportion of North

American Indians working full-time full-year. Indeed, while the ratio for those who worked part-time or part-year rose 2.3 percentage points the ratio for those working full-time and full-year actually fell 1.4 percentage points. Although the narrowing of the employment income gap between 2000 and 2005 was modest and is not guaranteed to persist, it is an encouraging sign.[8]

Chart 8: Total Aboriginal and North-American Indian Average Employment Income as Share of Non-Aboriginal Average Employment Income, 2000 to 2005



Source: 2006 Census Custom Tabulations

iii. Labour market outcomes by educational attainment

If we contrast labour market outcomes for the portion of the population without any certificate, diploma or degree with that of the rest of the population, we can clearly see how education affects labour market outcomes. In 2006, only slightly more than 40 per cent of the population without certificates, both Aboriginal and non-Aboriginal, participated in the labour force, compared to about 75 per cent for those with at least one certificate or diploma (Summary Table 11). The difference was even sharper for employment and unemployment rates. Having a certificate or diploma roughly doubled the average employment rate and halved the average unemployment rate.[9]

[8] We considered examining the employment income gap between North American Indians who live on- and off-reserve to enrich our analysis, but the necessary data will not be available until public use micro data files are released in late 2009.

[9] Unfortunately, 2006 Census employment income data is current unavailable at a sufficiently detailed level of disaggregation (in terms of educational attainment) to be used in this reports' output projections.

Summary Table 11: Labour Market Outcomes by Educational Attainment, 2006

	Participation rate			Employment rate			Unemployment rate		
	Non-Aboriginal	Aboriginal	North Amer. Indian	Non-Aboriginal	Aboriginal	North Amer. Indian	Non-Aboriginal	Aboriginal	North Amer. Indian
Total	66.9	63.0	58.8	62.7	53.7	48.2	6.3	14.8	18.0
No certificate, diploma or degree	**42.8**	**44.4**	**41.0**	**38.3**	**34.4**	**30.3**	**10.4**	**22.5**	**26.2**
Certificate, diploma or degree	**74.2**	**77.4**	**75.6**	**70.0**	**68.6**	**65.1**	**5.6**	**11.4**	**13.9**
High school certificate or equivalent	68.7	73.0	69.7	63.8	63.6	58.7	7.1	12.8	15.8
Apprenticeship or trades certificate or diploma	72.5	76.8	75.9	68.2	66.1	62.8	5.9	13.9	17.3
College, CEGEP or other non-university cert. or diploma	78.0	81.1	79.9	74.2	73.1	70.4	4.8	9.9	11.9
University certificate, diploma or degree	78.3	83.4	82.7	74.7	77.1	75.3	4.6	7.5	8.9
University certificate or diploma below bachelor level	70.6	78.6	78.8	67.0	70.7	69.6	5.1	10.0	11.6
University certificate or degree	80.2	85.7	84.8	76.6	80.2	78.4	4.5	6.4	7.5

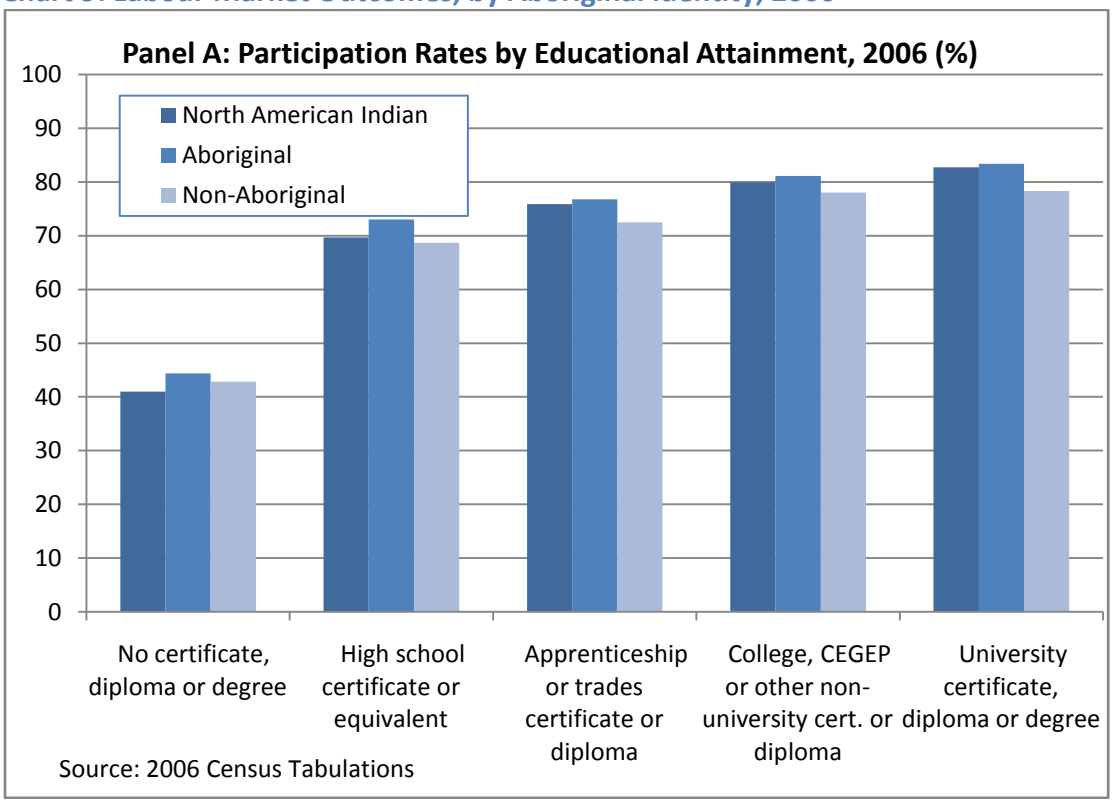
Source: 2006 Census Tabulations

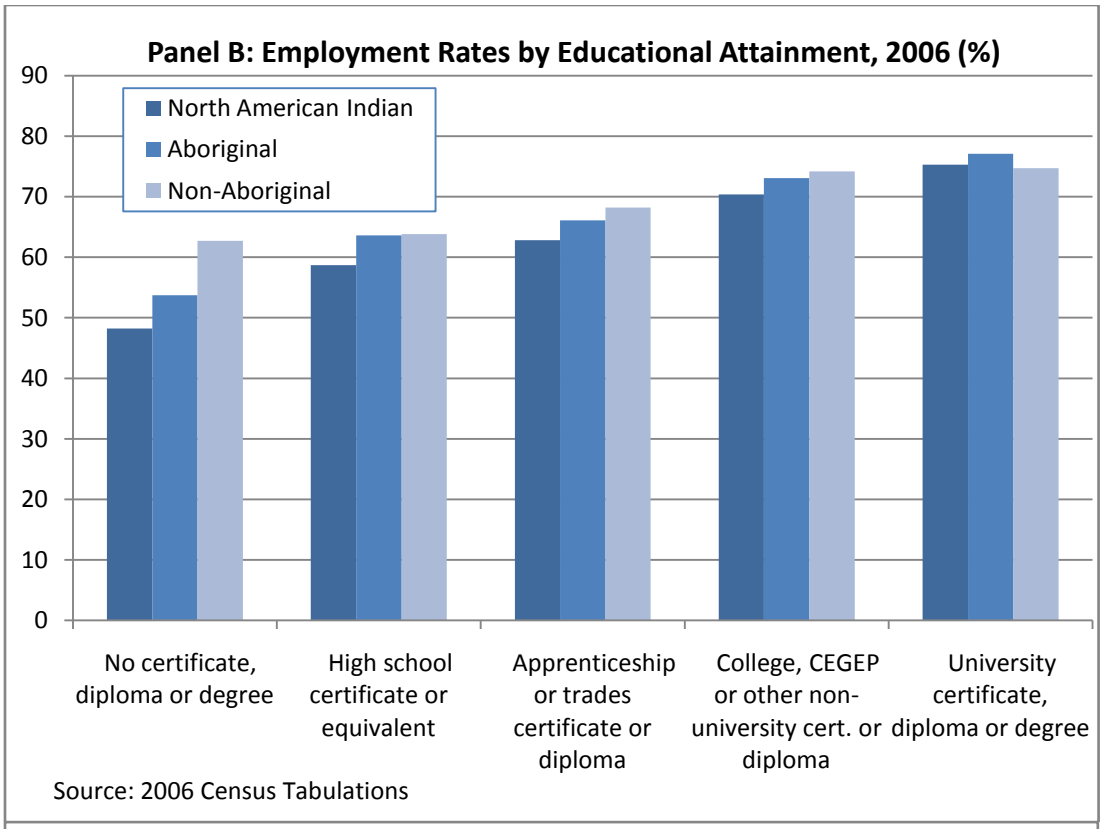
The more detailed data on educational attainment and labour market outcomes confirm that there is a hierarchy in terms of education. Indeed, for all three groups discussed here, as one goes up the educational ladder, participation rates and employment rates increase and unemployment rates decrease. The marginal improvement in labour market outcomes, however, decreases as educational attainment increases. For example, Aboriginal Canadians whose highest level of educational attainment is high school graduation had in 2006 an employment rate 29.2 percentage points above that of the group with no certificate. The employment rate premium for Aboriginal Canadians falls to 4.0 percentage points between college and university education. With the proportion of Aboriginal Canadians without certificate well above the non-aboriginal share, the potential for an increase in the proportion of high school graduates, and thus a sizeable improvement in labour market outcomes for Aboriginal Canadians, is exceptionally large.

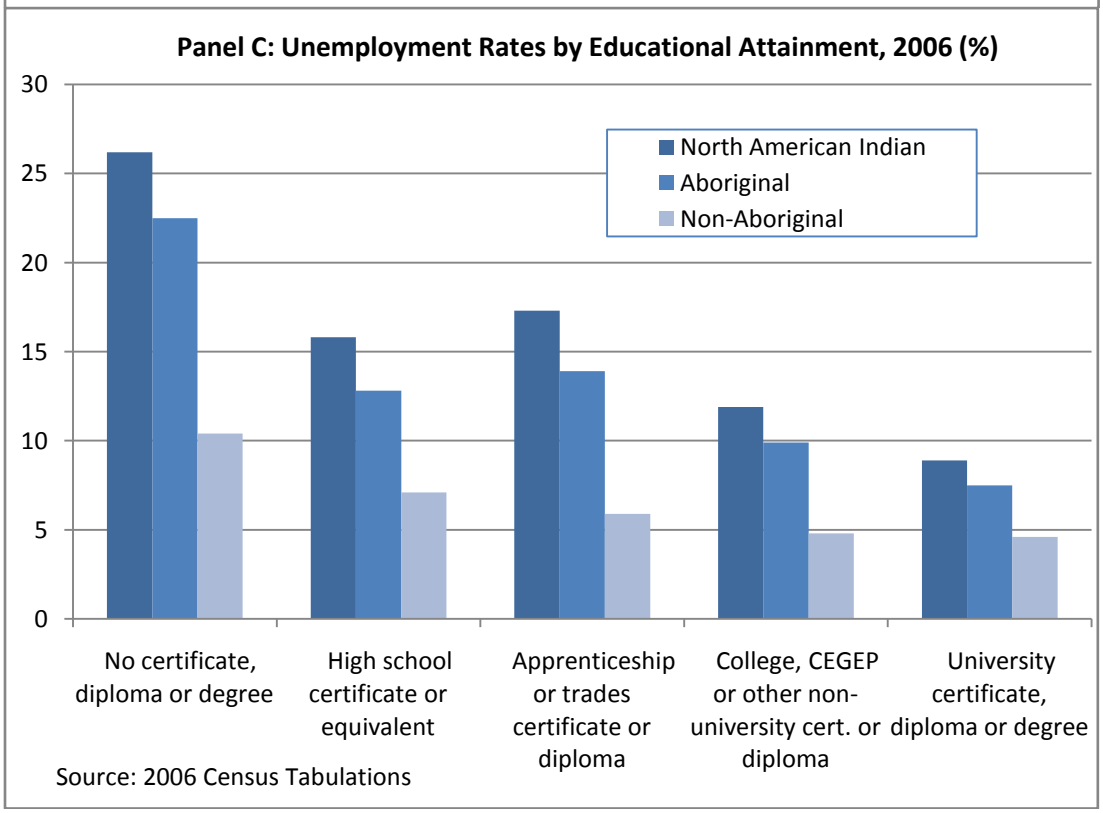
Chart 9 illustrates labour market outcomes by educational attainment for the non-Aboriginal, Aboriginal and North-American Indian populations. As expected, when educational attainment rises, participation and employment rates increase while unemployment rates decreases. Both Aboriginal and North American Indian participation rates tend to be higher than non-Aboriginal participation rates (Panel A). As previously mentioned, this is likely due to the younger age structure of the Aboriginal and North-American Indian populations relative to the non-Aboriginal population. For all

educational categories expect university certificate or diploma, Aboriginal people have lower employment levels than non-Aboriginal people and North American Indian employment levels are even lower (Panel B). This pattern is repeated in the unemployment statistics (Panel C). North American Indians have the highest rate of unemployment for each educational category while non-Aboriginal people unemployment rates are by far the lowest for each educational category. Clearly, while differences in educational attainment do have a significant impact on labour market outcomes, they can not explain the entire gap between Aboriginal and non-Aboriginal participation, employment and unemployment rates. This conclusion is confirmed by the econometric analysis in Appendix 1, which nonetheless highlight the key role of education for labour market performance.

Chart 9: Labour Market Outcomes, by Aboriginal Identity, 2006




Panel B: Employment Rates by Educational Attainment, 2006 (%)
90
80
70
60
50
40
30
20
10
0
North American Indian
Aboriginal
Non-Aboriginal
No certificate, diploma or degree
High school certificate or equivalent
Apprenticeship or trades certificate or diploma
College, CEGEP or other non-university cert. or diploma
University certificate, diploma or degree
Source: 2006 Census Tabulations


Panel C: Unemployment Rates by Educational Attainment, 2006 (%)
30
25
20
15
10
5
0
North American Indian
Aboriginal
Non-Aboriginal
No certificate, diploma or degree
High school certificate or equivalent
Apprenticeship or trades certificate or diploma
College, CEGEP or other non-university cert. or diploma
University certificate, diploma or degree
Source: 2006 Census Tabulations

III. An Overview of Population and Economic Projections

In order to project the potential contribution of the Aboriginal population to output and productivity growth, one needs base case projections for the Canadian economy as well as for the overall and Aboriginal populations. This section provides a brief summary of these projections.

Three main sources are used for projections in this report. *Population Projections for Canada, Provinces and Territories,* (Statistics Canada 2005b) provides projections for the overall Canadian population from 2005 to 2031. For the Aboriginal population, projections for the 2001 to 2026 period are based on a report entitled *Aboriginal Demography: Population, Household and Family Projections, 2001-2026* released jointly by Indian and Northern Affairs Canada and the Canadian Housing and Mortgage Corporation in 2007 (INAC and CMHC, 2007). Finally, in a report titled *Long Term Outlook for the Canadian Economy: National Projection Through 2040*, Dungan and Murphy (2008) from the Institute for Policy Analysis of the University of Toronto provide long-term forecasts for many economic indicators of the Canadian economy based on an econometric model. This source is used as a benchmark for output, productivity, wages, labour force participation and employment in 2026.

A. Canadian Population

In the publication *Populations Projections* of Statistics Canada (2005b), the Canadian population is projected using six projection scenarios based on different assumptions about fertility, mortality (life expectancy) and migration. For the purposes of this report the third scenario is used. Scenario 3 is a medium growth scenario with medium fertility rates, medium life expectancy projections and medium migration trends. Fertility rate assumptions are based on detailed analysis of the trends in fertility rates specific to each province and territory. Under Scenario 3, fertility rates for Canada are set at the 2002 level of 1.51 children per woman and remain at that level until 2031 (2002 was the most recent year for which vital statistics data were available). The mean age of childbearing is also set at its 2002 level of 29.2 years. Life expectancy is expected to be 81.1 years for males and 85.3 years for females in 2026. Finally migration trends, both international and inter-provincial, are projected using a number of underlying assumptions, including immigration and emigration rates, returning emigrants rates and recent data on inter-provincial movements.

The Canadian population is projected to reach 37,882,700 people by 2026, an increase of 26.3 per cent over 2001 (Summary Table 12). The population aged 15 and older is anticipated to reach 32,202,100, an increase of 32.7 per cent over 2001.

B. Aboriginal Population

INAC published two sets of projections for the Aboriginal population in Canada: one for the Aboriginal population as defined in the Census (in collaboration with CMHC) and another for Registered Indians. These projections were summarized in a report

published jointly by INAC and the Canadian Housing and Mortgage Corporation in 2007, entitled "Aboriginal Demography: Population, Household and Family Projections, 2001-2026."

The base year for these projections was 2001. The population was divided into four sub-groups: Registered Indians, Non-Status Indians, Métis and Inuit. Individuals reporting as being registered were assigned to the Registered Indian population. Persons that identified as Aboriginal with only one origin (for example, North American Indian), but were not registered were assigned to either the Non-Status Indian, Inuit or Métis population. Those that identified with more than one group (for example, North American Indian and Inuit) were assigned to one of the groups based on each groups' relative size. As such, the base population in 2001 for each group was: 633,600 Registered Indians, 110,300 Non-Status Indians, 274,200 Métis and 46,200 Inuit (Summary Table 12). For our analysis, we combined Registered Indians with Non-Status Indians and named that category North American Indians.

Summary Table 12: Aboriginal and non-Aboriginal Population Projections, 2001-2026

	2001	2006	2011	2016	2021	2026	Growth Rate (01-26)
Total Population	31,021,251	32,649,482	33,909,700	35,266,800	36,608,500	37,882,700	0.80
Share of population aged 15+	80.9	82.7	84.0	84.5	84.8	85.0	0.20
Population aged 15+	25,166,713	26,997,972	28,488,000	29,816,000	31,027,900	32,202,100	0.99
Total Aboriginal Population	1,064,300	1,166,000	1,270,000	1,375,000	1,475,000	1,566,900	1.56
Share of population aged 15+	66.6	69.4	71.6	72.3	73.2	74.5	0.45
Population aged 15+	708,824	809,137	909,307	993,618	1,080,111	1,166,868	2.01
North American Indian Population	743,900	820,400	896,900	1,274,300	1,048,100	1,115,700	1.63
Share of population aged 15+	65.4	68.2	70.7	54.8	72.8	74.2	0.51
Population aged 15+	486,208	559,329	634,332	697,840	762,984	827,319	2.15
Métis Population	274,200	294,300	316,100	338,000	358,100	376,500	1.28
Share of population aged 15+	71.1	73.8	75.2	75.2	75.7	76.7	0.30
Population aged 15+	194,956	217,183	237,638	254,035	270,974	288,715	1.58
Inuit Population	46,200	51400	57000	63100	69000	74,800	1.95
Share of population aged 15+	60.4	63.5	65.5	66.2	66.9	68	0.48
Population aged 15+	27,905	32,625	37,338	41,743	46,153	50,834	2.43
Aboriginal people as % of Canada	3.43	3.57	3.75	3.90	4.03	4.14	0.84

Source: Statistics Canada (2005b) and INAC-CHMC (2007)

Note: Because the INAC-CHMC projections are based on data from the 2001 census, the projections they obtain for 2006 are not consistent with data from the 2006 Census, primarily because no increase in the level of Métis self identification is assumed.

The population growth assumptions described in the report and used in our analysis is based on the "Medium Growth Scenario." This scenario assumes that between 2001 and 2026 there will be a moderate decline in fertility as well as a gradual improvement in life expectancy in all Aboriginal groups to the exception of the Inuit population which will maintain a higher fertility rate. Furthermore, it assumes that the distribution of transfer of identity to children will remain at its current level and that

reinstatement of status under the revision of the Indian Act in 1985 will gradually decline.

The total Aboriginal population is expected to grow by 47 per cent between 2001 and 2026, reaching 1,566,900 individuals. Due to their increasing expected life expectancy and declining fertility, Aboriginal Canadians will be older on average in 2026 than in 2006. However, when compared to the overall population, they will continue to be much younger, with about a quarter of their population still under 15 years old (400 thousands). Around two out of three Aboriginal people lived off-reserve in 2001, and this proportion is not expected to change much by 2026.

As a share of the Canadian population, Aboriginal Canadians are expected to become increasingly important. In 2001, their share of the population was 3.43 per cent (1.1 million persons), and after 25 years at a higher fertility rate they should represent 4.14 per cent (1.6 million persons) of the Canadian population.[10]

The North American Indian population will continue to be the largest group of Aboriginal people in Canada. In 2026, there will be 1,115,700 Registered and Non-Status Indians, representing total growth of 50 per cent over the 25 years period. About a quarter of the population will still be under 15 years old in 2026, translating into a working age population of around 826 thousands. The Inuit population is expected to grow by 74,800 by 2026 (62 per cent growth), while the Métis should grow by 37 per cent to reach a total of 359,500.

Projection the Métis population is more challenging. In fact, the 2006 Census indicates a number of Métis that is actually higher than the projection for 2026. While CMHC and INAC's projections indicate a Métis population of 294,300 in 2006 and 376,500 in 2026, the 2006 Census suggests that the Métis population was already 389,704 in 2006. As previously mentioned, this extremely rapid increase is attributable to increased Métis self-identification. We deal with this problem in part by also providing estimates for North American Indians in particular. Estimates based on the North American population are more reliable as self-identification for this group is more stable.

C. Projections for the Canadian Economy

Now that we have established base case scenarios for projections of both Aboriginal and non-Aboriginal populations, we need to establish base case economic projections in line with these population estimates. These projections will provide a benchmark against which to measure the potential contribution of Aboriginal Canadians to the overall economy. Summary Table 13 contains the projections for key labour market outcome indicators as well as for GDP, employment, and labour productivity.

The population projection in Dungan and Murphy is somewhat higher than Statistic Canada's, at 39.4 millions in 2026. The total population is expected to grow 32.6

[10] The 2026 figures are higher when adjustments are made to take account of new data available from the 2006 census. Summary Table 15 provides adjusted projections.

per cent over the 25 year period, which is about six percentage points higher than the growth rate projected by Statistics Canada. The working age population growth is also somewhat higher in this set of projections, at 31.8 per cent between 2001 and 2026, reaching 32,209 thousands in 2026.

Projections were also provided for the unemployment and participation rates up to 2026. In 2026, the Canadian employment rate is projected to be 59.6 per cent, down 1.6 percentage points from 2001. The participation rate is projected to be 63.4 per cent, down 2.5 percentage points from 2001. These employment and participation levels and population projections translate into a 26.8 per cent increase in the labour force and a 28.2 per cent increase in employment.

Summary Table 13: Economic and Labour Market Projections, 2001-2026

	2001	2026	Percentage change, 2001-2026	Average Annual Growth Rate
Nominal GDP (Billions of Dollars)	1,108.0	3,236.2	192.1	4.38
Real GDP (Billions of Constant 2006 dollars)	1,265.6	2,187.0	72.8	2.21
Total Population (Thousands)	30,974	39,675	28.1	1.00
Working Age Population (Thousands)	24,444	32,209	31.8	1.11
Labour Force (Thousands)	16,111	20,423	26.8	0.95
Employment (Thousands)	14,951	19,198	28.4	1.01
Employment Rate	61.2	59.6	-2.6	-0.10
Unemployment Rate	7.2	6.0	-16.7	-0.73
Participation Rate	65.9	63.4	-3.8	-0.15
Average Real Wages per Worker	n.a.	n.a.	43.9	1.41

Source: Dungan and Murphy (2008)
Note: For real wages, only growth rates are projected, not absolute values.

Real wages are expected to grow at an average of 1.41 per cent per year, or a total of 43.9 per cent over the 2001-2026 period. This is in line with expected productivity growth over the period, which stands at 1.50 per cent per year. These projections, with real wages and productivity growing at roughly the same rate, thus imply virtually no change in the labour share.

IV. Aboriginal Labour Force Projections

Canada's Aboriginal population could play a key role in mitigating the looming long term labour shortage caused by Canada's ageing population and low birthrate[11]. This report aims to provide insight into the extent and composition of the Aboriginal population's potential contribution to Canadian labour force and employment growth from 2006 to 2026. Although Indian and Northern Affairs Canada (INAC) expects the Aboriginal population to experience demographic trends similar to the general Canadian population (declining birth rates and an aging population), the Aboriginal population will remain significantly younger and maintain its high growth rate relative to the non-Aboriginal population for at least the next twenty years (INAC and CMHC, 2007). Indeed, the Aboriginal population is expected to grow at an annual rate of 1.47 per cent between 2006 and 2026 compared to the non-Aboriginal rate of 0.73 per cent per year. Driven by its high growth rate and favourable age structure, the Aboriginal population is expected to account for 12.7 per cent of labour force growth and 11.3 per cent of employment growth from 2006 to 2026.

The potential contribution of the Aboriginal population to Canadian labour force and employment growth coold be even larger than predicted by simple demographic forecasts, however, because their participation and employment rates currently lag far behind the Canadian average. Indeed, if Aboriginal participation and employment rates reach 2006 non-Aboriginal levels by 2026, it is projected that the Aboriginal population will account for 19.9 per cent of labour force growth and 22.1 per cent of employment growth over the 2006-2026 period. In other words, if in 2026 Aboriginal people experienced the same labour market outcomes as non-Aboriginal people did in 2006, the Aboriginal share of the Aboriginal population to the Canadian labour force would nearly double by 2026. This equates to nearly 200,000 additional productive Canadian workers. Given that educational attainment is the key driver of participation and employment rates, (Sharpe, Arsenault and Lapointe, 2006) there is clear incentive for the Canadian government to make Aboriginal education a priority. If in fact Aboriginal education were not prioritized, the drag on Canadian productivity caused by below average Aboriginal education will grow as the Aboriginal population's share of Canada's labour force increases over time.

A. Detailed Population Projections

As mentioned earlier, no single study includes population projections for both the Aboriginal and non-Aboriginal populations. Therefore, separate studies were used. Population projections for non-Aboriginal Canadians were calculated as the difference between the Aboriginal and total populations. Population projections for all Canadians were taken using a Statistics Canada report titled "Population Projections for Canada, Provinces and Territories". Aboriginal population projections were taken from a CMHC

[11] Although the recent economic slowdown is causing a short term fall in labour demand, when Canada's economy returns to its trend level demographic trends are still expected to put pressure on Canada's labour force. Refer to Chart ; Panel B for a graphical illustration of Canada's declining labour force growth.

and INAC collaborative project titled "Aboriginal Demography - Population, Household and Family Projections, 2001-2026". In an effort to maximize consistency between the two reports, the medium growth scenario was used in both cases. CMHC and INAC's medium Aboriginal growth scenario projects moderate declines in fertility, increases in life expectancy for all Aboriginal groups with the exception of the Inuit and constant transfer rate of Aboriginal identity from parent to child. Statistics Canada's total population projections assume medium trends in both population growth and migration. The average age of nearly all groups is expected to rise by roughly 5 years from 2006 to 2026 (Summary Table 14). In 2026, the average Aboriginal Canadian is expected to be 32.8 years of age, roughly ten years younger than the average Canadian. The Inuit population will have the lowest average age of all Aboriginal groups (27.8 years) followed by North-American Indians living on reserves (31.3), North American Indians living off reserves (32.4 years) and the Métis population (35.0 years).

Summary Table 14: Average Age of Aboriginal and non-Aboriginal Population

	2006	2026
Total Population	38.0	43.1
Aboriginal	28.2	32.8
North American Indian	27.7	32.4
On Reserve	27.1	31.3
Off Reserve	28.3	33.6
Métis	30.1	35.0
Inuit	24.4	27.8

Note 1: These figures were calculated as the weighted average of each age group from zero to eighty years of age. Unfortunately, age groups above 80 years were unavailable resulting in a slight underestimation.

Source: CMHC-INAC (2007), Cansim Table 520-0004 and 510-0001

These Aboriginal population projections are based on the 2001 census, which is now relatively outdated given the new estimates available from the 2006 census. Fortunately, the 2006 projections for the North-American Indian and Inuit populations are very similar to the 2006 census adjusted counts, with a difference of only 1.9 and 3.1 per cent respectively (Summary Table 15).[12] On the other hand, population projections for the Métis population are significantly lower (39.0 per cent) than 2006 census adjusted counts, due in large part to a surge in Métis self-identification. Given these discrepancies, the CSLS adjusted Aboriginal population projections. The CSLS used 2006 census adjusted counts as a base and projected forward using growth rates contained in the INAC-CMHC study. It should be noted that these estimates assume that changes in Métis self-identification do not continue beyond 2006. The number of on-reserves Aboriginal was estimated by applying the proportion of North-American Indians living on reserves projected by CMCH and INAC to these new estimates. Although the proportion of North-Americans living on reserves in 2006 was four per cent higher in CMHC and INAC's publication than in the 2006 census unadjusted counts (47 per cent compared to 43 percent), this difference mainly reflects the incomplete enumeration of reserves in the Census.

[12] For an explanation of CSLS estimation methods, refer to Summary Table 1.

Summary Table 15: Aboriginal Population Projections

	CHMC & INAC 2006 Projections	CSLS Adjusted 2006 Census Data	Percentage Difference	CMHC & INAC Population Average Annual Growth Rate, 2006-2026 (%)	CSLS 2026 Population Projections
	A	B	C = (B-A)/B	D	$A*(1+D/100)^{20}$=E
Aboriginal people	1,166,164	1,311,200	12.44	1.47	1,754,724
North American Indians	820,461	835,900	1.88	1.55	1,136,643
On Reserve	389,201	396,524	1.88	1.96	584,859
Off Reserve	431,261	439,376	1.88	1.15	551,783
Métis	294,318	409,100	39.00	1.24	523,284
Inuit	51,386	53,000	3.14	1.89	77,132

Note: To estimate the proportion of Aboriginal people living on reserve, the CSLS applied the CMHC and INAC estimate of the proportion of North-American Indians living on reserve in 2006 to the 2006 Census adjusted count for the North American Indian population.
Source: Summary Table 1, CMHC and INAC (2007).

The Aboriginal and non-Aboriginal working age population are expected to experience similar ageing trends between 2006 and 2026. The non-Aboriginal, on-reserve and off-reserve North American Indian, Métis and Inuit populations are all expected to experience a decline in population growth from 2006 to 2026. Even though the total Aboriginal population is expected to maintain a higher population growth rate than the non-Aboriginal population over the 2006-2026 period, its rate of growth is expected to decrease slightly faster than that of the non-Aboriginal population. A decomposition of the working age population growth by age and Aboriginal identity suggest that trends for the Aboriginal and non-Aboriginal populations growth will be very similar (Summary Table 16). In both cases, the oldest age group (those aged 65 and over) are expected to grow the fastest. Furthermore, in both cases, the youngest age groups (those aged 15 to 19 and 20 to 24) are expected to experience the slowest growth for most of the time period. This reinforces the earlier finding that both populations will age significantly over the next twenty years.

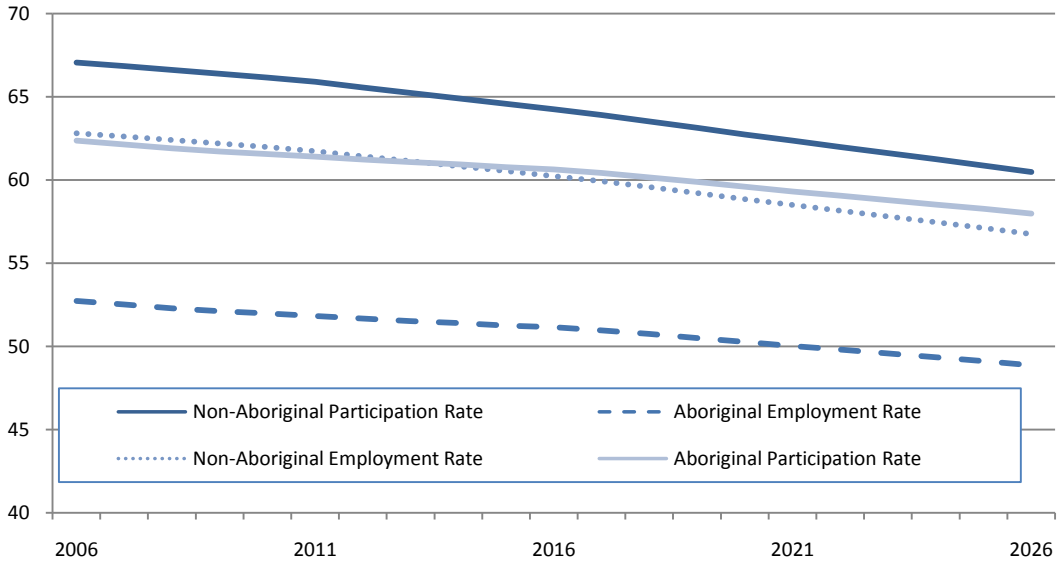
Summary Table 16: Average Annual Population Growth Rates by Age Group and Aboriginal Identity, Working Age Population, 2006-2026 (%)

	15+	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75+
Non-Aboriginal	0.86	-0.47	-0.43	0.30	0.19	-0.09	1.52	3.45	2.76
Total Aboriginal	1.85	0.38	0.88	1.70	1.29	1.12	3.67	5.25	5.72
North American Indians	1.98	0.47	1.15	2.01	1.32	1.22	3.90	5.18	5.41
On Reserve	2.39	0.66	1.35	2.77	2.13	1.84	4.14	4.78	4.97
Off Reserve	1.59	0.26	0.96	1.32	0.58	0.71	3.70	5.57	5.88
Métis	1.43	-0.01	-0.07	0.71	1.10	0.60	2.95	5.49	6.67
Inuit	2.24	0.81	1.52	2.05	1.86	3.12	4.85	4.22	3.51

Source: CMHC-INAC (2007)

This trend has important ramifications for the Canadian economy as individuals aged 65 and over tend to have low participation and employment rates. Therefore, if age-specific participation and employment rates remained constant at 2006 levels, an aging population means that both the Aboriginal and non-Aboriginal aggregate participation rates will fall over the next twenty years (Chart 10). Under that scenario, the Aboriginal participation rate would fall from 62.4 per cent to 58.0 per cent and the non-Aboriginal participation rate would decline from 66.9 per cent to 60.5 per cent between 2006 and 2026. Similarly, the Aboriginal employment rate would fall from 52.8 per cent to 48.9 per cent and the non-Aboriginal employment rate would fall from 62.7 per cent to 56.7 per cent. These trends underscore the potential importance of a rise in the Aboriginal labour force and employment rates for the Canadian economy. If there is no change in the Aboriginal participation and employment rates, the Aboriginal population will contribute to the overall trend towards higher dependency rates. Conversely, if Aboriginal participation and employment rates converge towards 2006 non-Aboriginal levels, dependency rates should decline and Canada's labour force growth will be stronger.

Chart 10: Participation and Employment Rate Projections, assuming constant 2006 age-specific employment and participation rates (2006-2026)



Sources: INAC & CMHC (2007), Statistics Canada (2005) and 2006 Census Custom Tabulations

B. Labour Force Projections

i. Methodology

In this section, we obtain labour force and employment projections in 2026 by applying 2006 participation and employment rates to the projected 2026 population working age population. At the national level, participation and employment rates are held constant at 2006 levels for each of eight age groups (Summary Table 16). Additionally, the Aboriginal population is divided into four categories: North-American Indians living on reserves, North American Indians living off reserves, the Métis

population and the Inuit population. Projections are made for each age and identity group combination. National estimates reflect the aggregation of all these estimates, and thus capture the effects of projected changes in the composition of the Canadian population (i.e. changes in the relative size of the non-aboriginal and aboriginal population as well as changes in the relative size of each of the four aboriginal sub-group) and of its age structure.

In addition to labour force and employment projections based on constant participation and employment rates (scenario A) that were outlined in the introductory section, this report includes projections using two other key scenarios. Scenario B assumes that half of the participation and employment rates gap in 2006 between the Aboriginal and the non-Aboriginal populations is closed by 2026. Scenario C assumes that the participation and employment rates of the Aboriginal population will reach 2006 non-Aboriginal levels by 2026. In the rare instances where the Aboriginal participation rate or employment rate exceeds the non-Aboriginal rate for a given age group, it is held constant.[13] While an increase in Aboriginal education would surely increase Aboriginal participation and employment rates, it is important to keep in mind that other factors, such as the prevalence of job opportunities in Aboriginal communities, also play a large role. In other words, one should not conclude that Canada can necessarily realize the benefits of Aboriginal labour force and employment growth found in scenario C by focusing on education alone.

ii. National Projections – All Aboriginal People

This report estimates that the Aboriginal labour force will increase from 564,515 in 2006 to a range of 751,711 (scenario A) to 885,283 (scenario C) in 2026 (Summary Table 17).[14] Likewise, the total number of employed Aboriginal people is projected to increase from 477,772 to a range of 633,629 (scenario A) to 824,978 (scenario C). Under all three scenarios, the Aboriginal share of labour force and employment growth far surpasses their share of the working age population. While the Aboriginal share of working age population growth between 2006 and 2026 is only 7.4 per cent, the Aboriginal share of labour force growth over the same period is projected to be between 12.7 and 19.9 per cent and the Aboriginal share of employment growth is projected to be between 11.3 and 22.1 per cent. In other words, even if there is no fundamental improvement in labour market outcomes for the Aboriginal population, they demography means that they will account for a disproportionately large share of Canada's future employment and labour force growth. Yet, it also suggest that if actions are taken to raise their participation and employment rates, the benefits to the Canadian economy could be

[13] In general, the Aboriginal participation and employment rates of the oldest age group (75+) are higher than non-Aboriginal rates. This is caused in part by high rates of poverty among elderly Aboriginal people which forces them to continue working past their desired retirement age. High participation rates among elderly Aboriginal people may also reflect a dedication to traditional Aboriginal activities such as hunting and fishing.

[14] The Aboriginal employment and labour force estimates for 2006 were calculated by applying the 2006 Aboriginal employment and participation rates (from the 2006 census) to adjusted Aboriginal population counts (Summary Table 1) for each identity group. Using adjusted counts instead of unadjusted counts increases the weight of the North-American Indian population which has lower participation and employment rates than the aggregate Aboriginal population. Thus, the Aboriginal participation and employment rates found in this report are respectively 0.9 and 0.6 percentage points lower than those found in the 2006 Census tabulations based on unadjusted counts.

considerable, with the contribution of Aboriginal Canadians to labour force and employment growth almost doubling.

Summary Table 17: Potential Contribution of the Aboriginal Population to the Canadian Labour Force and Employment, 2006-2026

		2006	2026	Percentage Change 2006-2026	Absolute Change 2006-2026	Contribution to Growth (%)
Population (15+)	Aboriginal	905,387	1,296,630	43.21	391,243	7.41
	Non-Aboriginal	26,017,313	30,905,470	18.79	4,888,157	92.6
	Total Population	26,922,700	32,202,100	19.61	5,279,400	100.0
Labour Force	Aboriginal					
	Scenario A	564,515	751,711	33.16	187,196	12.69
	Scenario B	564,515	827,043	46.51	262,528	16.93
	Scenario C	564,515	885,283	56.82	320,768	19.94
	Non-Aboriginal	17,405,582	18,693,692	7.40	1,288,109	100.0
Participation Rate	Aboriginal					
	Scenario A	62.4	58.0	-7.02	-4.38	
	Scenario B	62.4	63.8	2.30	1.43	
	Scenario C	62.4	68.3	9.50	5.92	
	Non-Aboriginal	66.9	60.5	-9.59	-6.41	
Employment	Aboriginal					
	Scenario A	477,772.17	633,629	32.62	155,857	11.29
	Scenario B	477,772.17	741,536	55.21	263,764	17.72
	Scenario C	477,772.17	824,978	72.67	347,206	22.08
	Non-Aboriginal	16,312,855	17,537,926	7.51	1,225,071	100.0
Employment Rate	Aboriginal					
	Scenario A	52.8	48.9	-7.40	-3.90	
	Scenario B	52.8	57.2	8.38	4.42	
	Scenario C	52.8	63.6	20.57	10.85	
	Non-Aboriginal	62.7	56.7	-9.49	-5.95	

Sources: Statistics Canada (2005), INAC-CMHC (2007), 2006 Census and Summary Table 1.
Note:
Scenario A assumes age-specific Aboriginal employment and participation rates remain at 2006 levels in 2026.
Scenario B assumes age specific Aboriginal employment and participation rates reach the midpoint between 2006 Aboriginal rates and 2006 non-Aboriginal rates by 2026.
Scenario C assumes Aboriginal employment and participation rates reach 2006 non-Aboriginal levels by 2026.

iii. National Projections by Group – North American Indians Living on Reserves

The on-reserve North American Indian population is the largest potential contributor to both labour force and employment growth, both because of its fast growing population and because it currently falls far behind the general population in terms of participation and employment rates. Assuming constant employment and participation rates, it is projected that the on-reserve North-American Indians labour force will grow by 78,034 and employment will grow by 59,832 between 2006 and 2026 (Summary Table 18). Should the entire 2006 age-specific participation and employment rate gaps be closed by 2026, the labour force is expected to grow by 156,081 and employment is

expected to grow by 170,219. In other words, if the participation and employment rates of North-American Indians living on reserves rose to the level of non-Aboriginal people by 2026 for all age groups, on-reserve North-American Indian labour force growth would be doubled and employment growth would be tripled.

Summary Table 18: Potential Contribution of the Aboriginal Population Living on Reserves to the Canadian Labour Force and Employment, 2006-2026

		2006	2026	Percentage Change 2006-2026	Absolute Change 2006-2026	Contribution to Growth (%)
Population (15+)	On-Reserve	264,177	423,978	60.49	159,801	3.27
	Non-Aboriginal	26,017,313	30,905,470	18.79	4,888,157	92.6
	Total Population	26,922,700	32,202,100	19.61	5,279,400	100.0
Labour Force	On-Reserve					
	Scenario A	137,372	215,406	56.81	78,034	5.29
	Scenario B	137,372	258,914	88.48	121,542	7.84
	Scenario C	137,372	293,453	113.62	156,081	9.70
	Non-Aboriginal	17,405,582	18,693,692	7.40	1,288,109	100.0
Participation Rate	On-Reserve					
	Scenario A	52.0	50.8	-2.30	-1.19	
	Scenario B	52.0	61.1	17.44	9.07	
	Scenario C	52.0	69.2	33.10	17.21	
	Non-Aboriginal	66.9	60.5	-9.59	-6.41	
Employment	On-Reserve					
	Scenario A	103,029.08	162,861	58.07	59,832	4.33
	Scenario B	103,029.08	223,499	116.93	120,470	8.09
	Scenario C	103,029.08	273,248	165.21	170,219	10.83
	Non-Aboriginal	16,312,855	17,537,926	7.51	1,225,071	100.0
Employment Rate	On-Reserve					
	Scenario A	39.0	38.4	-1.51	-0.59	
	Scenario B	39.0	52.7	35.17	13.71	
	Scenario C	39.0	64.4	65.25	25.45	
	Non-Aboriginal	62.7	56.7	-9.49	-5.95	

Sources: Statistics Canada (2005), INAC-CMHC (2007), 2006 Census and Summary Table 1.
Note:
Scenario A assumes age-specific Aboriginal employment and participation rates remain at 2006 levels in 2026.
Scenario B assumes age specific Aboriginal employment and participation rates reach the midpoint between 2006 Aboriginal rates and 2006 non-Aboriginal rates by 2026.
Scenario C assumes Aboriginal employment and participation rates reach 2006 non-Aboriginal levels by 2026

iv. National projections by Group – North American Indian Population not Living on Reserves

The North-American Indian population living off reserves has a higher employment rate, a higher participation rate and a slower working age population growth than the on-reserve North-American Indian population. For these reasons - while still

significant - the potential contribution of off-reserve Aboriginal people is lower than that of on-reserve North-American Indians, even though they have a similar population size. Based on the assumptions of scenario A, the labour force of the off-reserve North-American Indian population is projected to grow by 53,252 or 27.3 per cent (Summary Table 19). Total employment is projected to grow by 46,157 persons or 27.5 per cent. Should the 2006 employment and participation rate gaps vanish, the labour force would grow by 90,888 persons (46.6 per cent) and employment would grow by 98,713 persons (58.8 per cent).

Summary Table 19: Potential Contribution of the North-American Indian Population Living off Reserve to the Canadian Labour Force and Employment, 2006-2026

		2006	2026	Percentage Change 2006-2026	Absolute Change 2006-2026	Contribution to Growth (%)
Population (15+)	Off-Reserve	305,677	418,909	37.04	113,232	2.14
	Non-Aboriginal	26,017,313	30,905,470	18.79	4,888,157	92.6
	Total Population	26,922,700	32,202,100	19.61	5,279,400	100.0
Labour Force	Off-Reserve					
	Scenario A	194,895	248,147	27.32	53,252	3.61
	Scenario B	194,895	269,178	38.11	74,283	4.79
	Scenario C	194,895	285,783	46.63	90,888	5.65
	Non-Aboriginal	17,405,582	18,693,692	7.40	1,288,109	100.0
Participation Rate	Off-Reserve					
	Scenario A	63.8	59.2	-7.09	-4.52	
	Scenario B	63.8	64.3	0.78	0.50	
	Scenario C	63.8	68.2	7.00	4.46	
	Non-Aboriginal	66.9	60.5	-9.59	-6.41	
Employment	Off-Reserve					
	Scenario A	167,800	213,957	27.51	46,157	3.34
	Scenario B	167,800	243,735	45.25	75,935	5.10
	Scenario C	167,800	266,513	58.83	98,713	6.28
	Non-Aboriginal	16,312,855	17,537,926	7.51	1,225,071	100.0
Employment Rate	Off-Reserve					
	Scenario A	54.9	51.1	-6.96	-3.82	
	Scenario B	54.9	58.2	5.99	3.29	
	Scenario C	54.9	63.6	15.90	8.73	
	Non-Aboriginal	62.7	56.7	-9.49	-5.95	

Sources: Statistics Canada (2005), INAC-CMHC (2007), 2006 Census and Summary Table 1.
Note:
Scenario A assumes age-specific Aboriginal employment and participation rates remain at 2006 levels in 2026.
Scenario B assumes age specific Aboriginal employment and participation rates reach the midpoint between 2006 Aboriginal rates and 2006 non-Aboriginal rates by 2026.
Scenario C assumes Aboriginal employment and participation rates reach 2006 non-Aboriginal levels by 2026

v. National Projections by Group – Métis

Of all four Aboriginal sub-groups under analysis, the Métis population is most similar to the non-Aboriginal population in terms of both labour market performance and age structure. Compared to other Aboriginal groups, the Métis have a higher employment rate, a higher participation rate, an older age structure and lower population growth. For these reasons, the Métis population stands to contribute the least from a full catch-up of

employment and participation rates. On the other hand, the complete elimination of the gap between 2006 and 2026 may be most realistic for this group. Without increases in its age-specific participation or employment rates, the Métis labour force and the total number of Métis employed is projected to grow by 43,923 and 40,165, respectively (Summary Table 20). Should the increases in participation and employments rates assumed by scenario C be realized, the Métis labour force and Métis employment would grow by 56,036 and 59,068 respectively – an increase of 28 and 47 per cent over the projections of scenario A.

Summary Table 20: Potential Contribution of the Métis Population to the Canadian Labour Force and Employment, 2006-2026

		2006	2026	Percentage Change 2006-2026	Absolute Change 2006-2026	Contribution to Growth (%)
Population (15+)	Métis	301,883	401,312	32.94	99,429	1.88
	Non-Aboriginal	26,017,313	30,905,470	18.79	4,888,157	92.6
	Total Population	26,922,700	32,202,100	19.61	5,279,400	100.0
Labour Force	Métis					
	Scenario A	211,620	255,544	20.76	43,923	2.98
	Scenario B	211,620	262,937	24.25	51,317	3.31
	Scenario C	211,620	267,657	26.48	56,036	3.48
	Non-Aboriginal	17,405,582	18,693,692	7.40	1,288,109	100.0
Participation Rate	Métis					
	Scenario A	70.1	63.7	-9.16	-6.42	
	Scenario B	70.1	65.5	-6.53	-4.58	
	Scenario C	70.1	66.7	-4.86	-3.40	
	Non-Aboriginal	66.9	60.5	-9.59	-6.41	
Employment	Métis					
	Scenario A	190,488	230,653	21.09	40,165	2.91
	Scenario B	190,488	242,724	27.42	52,236	3.51
	Scenario C	190,488	249,557	31.01	59,068	3.76
	Non-Aboriginal	16,312,855	17,537,926	7.51	1,225,071	100.0
Employment Rate	Métis					
	Scenario A	63.1	57.5	-8.91	-5.63	
	Scenario B	63.1	60.5	-4.15	-2.62	
	Scenario C	63.1	62.2	-1.45	-0.91	
	Non-Aboriginal	62.7	56.7	-9.49	-5.95	

Sources: Statistics Canada (2005), INAC-CMHC (2007), 2006 Census and Summary Table 1.
Note:
Scenario A assumes age-specific Aboriginal employment and participation rates remain at 2006 levels in2026.
Scenario B assumes age specific Aboriginal employment and participation rates reach the midpoint between 2006 Aboriginal rates and 2006 non-Aboriginal rates by 2026.
Scenario C assumes Aboriginal employment and participation rates reach 2006 non-Aboriginal levels by 2026

Due to its ageing population, the Métis participation rate and employment rate are both expected to decline between 2006 and 2026. Even scenario C projects a falling Métis participation and employment rates. In other words, the negative effect the ageing Métis population has on participation and employment outweighs the assumed increase in age-specific participation and employment rates. Among Aboriginal groups, this result is

unique to the Métis population, which again underlines the fact that it most resembles the non-aboriginal population.

vi. National Projections by Group – Inuit

Summary Table 21: Potential Contribution of the Inuit Population to the Canadian Labour Force and to Total Employment, 2006-2026

		2006	2026	Percentage Change 2006-2026	Absolute Change 2006-2026	Contribution to Growth (%)
Population (15+)	Inuit	33,650	52,431	55.81	18,781	0.36
	Non-Aboriginal	26,017,313	30,905,470	18.79	4,888,157	92.6
	Total Population	26,922,700	32,202,100	19.61	5,279,400	100.0
Labour Force	Inuit					
	Scenario A	20,627	32,614	58.11	11,986	0.81
	Scenario B	20,627	36,014	74.60	15,387	0.99
	Scenario C	20,627	38,390	86.11	17,763	1.10
	Non-Aboriginal	17,405,582	18,693,692	7.40	1,288,109	100.0
Participation Rate	Inuit					
	Scenario A	61.3	62.2	1.47	0.90	
	Scenario B	61.3	68.7	12.05	7.39	
	Scenario C	61.3	73.2	19.45	11.92	
	Non-Aboriginal	66.9	60.5	-9.59	-6.41	
Employment	Inuit					
	Scenario A	16,455	26,158	58.97	9,704	0.70
	Scenario B	16,455	31,578	91.91	15,123	1.02
	Scenario C	16,455	35,660	116.72	19,206	1.22
	Non-Aboriginal	16,312,855	17,537,926	7.51	1,225,071	100.0
Employment Rate	Inuit					
	Scenario A	48.9	49.9	2.03	0.99	
	Scenario B	48.9	60.2	23.16	11.33	
	Scenario C	48.9	68.0	39.09	19.11	
	Non-Aboriginal	62.7	56.7	-9.49	-5.95	

Sources: Statistics Canada (2005), INAC-CMHC (2007), 2006 Census and Summary Table 1.
Note:
Scenario A assumes age-specific Aboriginal employment and participation rates remain at 2006 levels in2026.
Scenario B assumes age specific Aboriginal employment and participation rates reach the midpoint between 2006 Aboriginal rates and 2006 non-Aboriginal rates by 2026.
Scenario C assumes Aboriginal employment and participation rates reach 2006 non-Aboriginal levels by 2026

The potential contribution of the Inuit population to the Canadian labour force and employment growth is the smallest of all Aboriginal groups simply because the Inuit population is very small. It only accounted for 3.7 per cent of the working age Aboriginal population in 2006 and 0.12 per cent of the total Canadian working age population. Assuming employment and participation remain at their 2006 levels for each age group, the Inuit labour force is projected to increase by 11,986 persons and Inuit employment is projected to increase by 9,704 persons (Summary Table 21).

If Inuit employment and participation rates reach the 2006 non-Aboriginal levels for each group by 2026, the Inuit labour force is projected to increase by 17,763 persons and Inuit employment is projected to increase by 19,206. The Inuit share of total labour force growth over the 2006 to 2026 period is projected to be 0.81 per cent under scenario A and 1.10 per cent under scenario C. Likewise, the Inuit contribution to total employment growth is expected to be 0.70 per cent under scenario A and 1.22 per cent under scenario C. It may be extremely difficult, however, for the Inuit population to reach the 2006 non-Aboriginal levels of participation and employment rates without migrating into more populated areas as employment opportunities in remote Northern communities are likely to remain scarce.

vii. Summary of National Projections

Summary Table 22 summarizes the potential contribution of the Aboriginal population to the working age population, employment and labour force growth of Canada between 2006 and 2026. Driven by rapid population growth and significant potential for improving their labour market performance, the on-reserve North American Indian population is the largest potential contributor to the Canadian labour market.

Summary Table 22: The Aboriginal Population's Contribution to Working Age Population, Employment and Labour Force Growth, by Aboriginal Identity, 2006-2026, (%)

	Population Age 15+	Employment			Labour Force		
Scenario	-	A	B	C	A	B	C
Aboriginal	7.41	12.69	16.93	19.94	11.29	17.72	22.08
North American Indian on Reserve	3.03	5.29	7.84	9.70	4.33	8.09	10.83
North American Indian off Reserve	2.14	3.61	4.79	5.65	3.34	5.10	6.28
Métis	1.88	2.98	3.31	3.48	2.91	3.51	3.76
Inuit	0.36	0.81	0.99	1.10	0.70	1.02	1.22

Source: Summary Tables 17 to 21

It is undeniable that on-reserve North American Indians may face significant challenges in creating sufficient employment to reach the most optimistic scenario. Yet, many reserves are located near major urban centres or are rich in natural resources. We believe there is significant potential to create viable commercial enterprises on reserves, particularly if individuals are given the means to establish successful businesses through appropriate education and financing. Other opportunities lay in the North-American Indian population's rich cultural heritage, which affords many business opportunities to the Aboriginal community. While the monetization of Aboriginal heritage may be a damaging process, it may also provide additional incentive to preserve First-Nation heritage - especially if carried out by Aboriginal people themselves. While on-reserve jobs may be scarce now, a better educated on reserve North American Indian population will be better equipped to exploit the many business opportunities that will arise.

V. Potential Output and Productivity When Aboriginal Canadians Attain Higher Educational Attainment

This section draws from the projections described earlier to project the total employment income of the Aboriginal population to 2026 and calculate their potential contribution to output and labour productivity growth based on different assumptions related to educational attainment. The methodology used in this report is explained in Sharpe, Arsenault and Lapointe (2007) and summarized briefly in Box 1. The analysis will use 2001 as the base year due to the lack of available data on employment income decomposed by detailed educational attainment categories from the 2006 Census. Detailed data on average Aboriginal income should be released by Statistics Canada in late 2009, at which point these projections could be updated.

Box 1: Summary of the Methodology

In order to make projections of Aboriginal income and productivity to 2026, a general methodology was developed and is outlined below.

- The Aboriginal and non-Aboriginal populations in 2001 were divided into educational attainment categories based on the highest level of schooling they achieved, and shares of the population for these two populations in each educational category were calculated.
- The shares of the Aboriginal population in each educational category are then applied to the total working age population in 2001 and 2026 to find the absolute number of persons of working age in each educational category in 2001 and 2026.
- The working age population in each educational category is then multiplied by the category's corresponding employment rate (chosen according to the scenario – in the Census reference week*) to find the number of Aboriginal employed in each category.
- The number of Aboriginal employed is then multiplied by the average employment income in each educational category (once again, chosen according to the scenario) to obtain the aggregate income for that category.
- Total income of the Aboriginal population in 2026 is calculated by summing up the incomes of each educational category. Total Canadian GDP is calculated from this information.

*It would also be possible to use the proportion of Aboriginal people with positive income in the reference year as a proxy for the employment rate. A cursory analysis suggests that using that indicator would reduce projections of Aboriginal output by up to 20 per cent depending on the scenario. This issue will be explored in more details in future work.

The potential contribution of the Aboriginal population is examined under different scenarios based on three assumptions: (i) the educational level of Aboriginal Canadians remains unchanged over the period, (ii) the educational level of Aboriginal Canadians in 2026 reaches the mid-point between its level in 2001 and that of non-Aboriginal in 2001 and (iii) the Aboriginal Canadians in 2026 acquire the same educational profile as that of non-Aboriginal Canadians in 2001.[15]

[15] These assumptions differ slightly from the assumptions used for the labour market projections. While employment rates in the labour force projections focus on projected changes in the relative weights of Aboriginal identities and in the age structure, employment rates for the output and productivity projections capture changes in educational

Summary Table 23: Scenario Summary

Scenario	Share of Aboriginal Population in Each Educational Category	Aboriginal Average Income Given Education	Aboriginal Employment Rate Given Education
Base Scenario 1	2001 Level of the Aboriginal Population	Increase with average wage growth	Level of Aboriginal Employment Rate in 2001
Base Scenario 2	2001 Level of the Aboriginal Population	Level of Non-Aboriginal Income in 2026	Level of Non-Aboriginal Employment Rates in 2001
3	Half of the Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Increase with average wage growth	Level of Aboriginal Employment Rate in 2001
4	Half of the Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Increase with average wage growth	Level of Non-Aboriginal Employment Rates in 2001
5	Half of the Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Level of Non-Aboriginal Income in 2026	Level of Aboriginal Employment Rate in 2001
6	Half of the Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Level of Non-Aboriginal Income in 2026	Level of Non-Aboriginal Employment Rates in 2001
7	The Complete Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Increase with average wage growth	Level of Aboriginal Employment Rate in 2001
8	The Complete Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Increase with average wage growth	Level of Non-Aboriginal Employment Rates in 2001
9	The Complete Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Level of Non-Aboriginal Income in 2026	Level of Aboriginal Employment Rate in 2001
10	The Complete Gap Between the Aboriginal and Non-Aboriginal Education in 2001 is Eliminated	Level of Non-Aboriginal Income in 2026	Level of Non-Aboriginal Employment Rates in 2001

attainment. Furthermore, labour force projections use 2006 as its base year while output projections use 2001 as its base year. The differences in employment rate projections, however, are not substantial. The worst case scenario in the labour force projections assumes no growth in employment rate for all age groups and all Aboriginal identities. An Aboriginal employment rate of 48.9 is projected. The worst case scenario for output projections assumes no change in educational attainment or employment rate by educational attainment. This scenario projects an employment rate just 0.6 percentage points (49.5) higher than the labour force projections. Likewise, the best case labour force scenario (which assumes age-specific Aboriginal employment rates reach 2006 non-Aboriginal levels) is only 1.5 percentage points higher than the best case output scenario (which assumes full closing of the 2001 educational attainment and employment rate by educational group gaps). The differences in methodology arises both because of differences in data availability, and more importantly because of differences in focus, with the output and productivity projections focusing particularly on the effect of educational attainment.

The report also makes different assumptions regarding the Aboriginal employment rate and employment income in 2026 for given educational categories (Summary Table 23).[16] In 2001, the base year, total Canadian GDP was $1,266 billion (2006 dollars) and labour productivity was $84,654 per worker. These values are used as a benchmark. The analysis is done first for the Aboriginal population as a whole and then for the North American Indian population in particular.

A. Base Scenarios – Scenarios 1 and 2

The increase of the Aboriginal population has an effect on the aggregate income of that population which is unrelated to increased education. Thus, before estimating the impact of higher educational attainment for Aboriginal income, the report develops scenarios in which Aboriginal Canadians do not increase their educational attainment from 2001 to 2026. The two Base Scenarios are added especially for comparisons with the scenarios in which educational attainment is increased. The main results are summarized in Summary Table 24.

In the "no change" scenario (Base Scenario 1), average employment income is assume to increase by 45.9 per cent over the period, which is the average projected real wage increase (Dungan and Murphy, 2008), while employment rates remain constant for each educational attainment category. The gap in employment income between Aboriginal and non-Aboriginal Canadians for each educational category is unchanged.

This scenario projects a level of estimated GDP created by the Aboriginal population in 2026 of $45.6 billion[17] – a $28.5 billion increase over 2001 - with an average annual growth of 3.51 per cent over the 2001-2026 period. The total Canadian GDP in 2026 under this base scenario is assumed to be at a level of $2,187 billion (Dungan and Murphy, 2007) while employment is projected to be 19,198 thousand persons. Canadian labour productivity, then, is estimated at $113,923 per worker. The annual average growth rates are 2.21 per cent for GDP, 1.01 for employment and 1.19 per cent for labour productivity over the 2001-2026 period (Summary Table 24).

A second scenario used the assumption of no increase in educational attainment, and is also to be used as a benchmark. There is an increasing proportion of Aboriginal people who live off-reserve and in urban locations (Globe and Mail, July 29, 2007). This has an effect on employment opportunities for Aboriginal Canadians. While they used to live on reserves, which are situated in remote locations and where employment opportunities are scarce or not as good, they are now gradually moving to bigger cities where they can more easily find jobs given a certain level of skills and experience.

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[16] In 2004, the Office of the Auditor General Report of the Auditor General of Canada estimated that it would take 28 years to close the educational attainment gap that existed in 2001, thereby closing the gap in 2029. Additionally, one goal of the Kelowna Accord was to close the gap between Aboriginal and non-Aboriginal high school graduation rates and to increase the Aboriginal post-secondary completion rate by 50 per cent by 2016. In this context, assuming that that the educational gap is entirely closed by 2026 seems reasonable. Nevertheless, we provide an alternative scenario (half the gap is closed) as a potential lower bound objective.

[17] All monetary projections are in 2006 dollars.

Moreover, the development of natural resources also has the potential to increase employment opportunities for Aboriginal Canadians who decide to remain on reserve. Base Scenario 2 takes the effect of increasing job opportunities into account, assuming that the employment rates of the Aboriginal population in each educational attainment category will, by 2026, reach the same level as that for the non-Aboriginal population in 2001. It also assumes that the average Aboriginal employment income in each educational category will increase to the 2026 level of the non-Aboriginal population (assuming the non-Aboriginal wages grow at the average growth rate projected in Dungan and Murphy (2008)). In other words, this scenario assumes that given the same educational profile, Aboriginal and non-Aboriginal Canadians would face the same labour market outcomes.

Summary Table 24: Summary of Projections for Income and Productivity with Increased Aboriginal Education, in 2026

		Projected Canadian GDP in 2026 (Billions of 2006 dollars)	Average Annual Growth Rate (2001-2026)	Projected Employment in 2026 (Thousands of Persons)	Average Annual Growth Rate (2001-2026)	Projected Labour Productivity in 2026 (2006 dollars per worker)	Average Annual Growth Rate (2001-2026)
Base Scenarios	1	2,187.0	2.212	19,197.6	1.005	113,923	1.195
	2	2,207.2	2.249	19,283.6	1.023	114,458	1.214
Half the educational gap is eliminated	3	2,194.0	2.225	19,243.9	1.015	114,011	1.198
	4	2,199.1	2.234	19,322.4	1.031	113,810	1.191
	5	2,208.7	2.252	19,243.9	1.015	114,776	1.225
	6	2,215.3	2.265	19,322.4	1.031	114,652	1.221
All the educational gap is eliminated	7	2,201.0	2.238	19,290.1	1.024	114,100	1.201
	8	2,201.1	2.238	19,291.3	1.025	114,095	1.201
	9	2,217.3	2.268	19,290.1	1.024	114,944	1.231
	10	2,223.5	2.280	19,361.2	1.039	114,844	1.228

Source: CSLS estimates

Under Base Scenario 2, the estimated Canadian GDP in 2026 is $2,207 billion – $20.2 billion over Base Scenario 1. The average annual increase of Canadian GDP is projected to reach an average 2.25 per cent per year between 2001 and 2026. Employment also increases more than under Base Scenario 1, increasing the annual average growth rate of Canadian employment to 1.02 per cent. Finally, Canadian labour productivity in 2026 would be $114,458 per worker, increasing at an average of 1.21 per cent per year between 2001 and 2026. This scenario represents the largest estimated improvements in output and productivity if no increase in educational attainment for Aboriginal Canadians is achieved.

B. Partial Catching-Up in Educational Attainment – Scenarios 3 to 6

The best case scenario for Canada developed in this report is that the Aboriginal population reaches the 2001 level of non-Aboriginal Canadians of educational attainment

by 2026. However, the case where they reach the mid-point between their 2001 educational attainment and that of non-Aboriginal Canadians in 2001 by 2026 is first considered. For example, there were 3.72 per cent of Aboriginal Canadians with less than grade 5 in 2001, and 2.13 per cent of non-Aboriginal Canadians. The assumption, then, is that by 2026, 2.93 per cent of Aboriginal Canadians will be in this educational category. Similarly, the 2001 share of Aboriginal Canadians with a bachelor's degree (3.43 per cent) is assumed to increase to 7.12 per cent under this scenario by 2026 because the share of non-Aboriginal Canadians in the bachelor's degree educational category was 10.81 per cent in 2001.

Summary Table 25: Incremental Contribution of Aboriginal Canadians to Output and Labour Productivity in Canada over Base Scenarios, 2001-2026

		Additional Output Growth Over Base Scenario 1	Additional Output Growth Over Base Scenario 2	Additional Employment Growth Over Scenario 1	Additional Employment Growth Over Scenario 2	Additional Productivity Growth Over Scenario 1	Additional Productivity Growth Over Scenario 2
Base Scenarios	1	-	-	-	-	-	-
	2	0.037	-	0.018	-	0.019	-
Half the educational gap is eliminated	3	**0.013**	-	**0.010**	-	**0.003**	-
	4	0.022	-	0.026	-	-0.004	-
	5	0.040	-	0.010	-	0.030	-
	6	0.053	**0.015**	0.026	**0.008**	0.026	**0.007**
All the educational gap is eliminated	7	**0.026**	-	**0.019**	-	0.006	-
	8	0.026	-	0.020	-	0.006	-
	9	0.056	-	0.019	-	0.036	-
	10	0.068	**0.030**	0.034	**0.016**	0.033	**0.014**

Source: CSLS estimates. Only meaningful comparisons were included.
Note: Comparisons of scenarios for which only the educational attainment assumption is changed are bolded.

In Scenario 3, average employment income of Aboriginal Canadians increases only at the projected average growth rate while education-specific employment rates are maintained constant over the period. Therefore, only educational attainment is changing if compared to Base Scenario 1. Scenario 4 adds the assumption that Aboriginal employment rates reach the 2001 level of non-Aboriginal Canadians by 2026. In Scenario 5, employment rates are kept constant, but average employment income at a given level of education increases to the level projected for the non-Aboriginal population. Finally, Scenario 6 estimates the additional output created if Aboriginal Canadians increase their educational level to the mid-point between the Aboriginal and non-Aboriginal levels in 2001 and if both Aboriginal employment rates and average employment incomes reach parity with non-Aboriginal Canadians in 2026.

i. Total Effect

Under Scenario 3, estimated total GDP is $2,194 billion in 2026, increasing at an average rate of 2.22 per cent per year over the period. Labour productivity is $114,011,

with an average annual growth rate of 1.20 per cent (Summary Table 24). The effect of a partial catch-up in educational attainment is, in this case, a 0.013 percentage points addition to annual output growth, a 0.010 percentage points addition to annual employment growth and a 0.003 percentage points addition to labour productivity growth (Summary Table 25). In 2026, the level of GDP would be increased by $7 billion. These estimates are obtained by comparing Scenario 3 to Base Scenario 1.

Under Scenario 6, the estimated Canadian GDP is estimated at $2,215 billion in 2026, $28.3 billion over the level of Base Scenario 1. It is also increasing at an average 2.26 per cent per year. Labour productivity is projected to be $114,652 per worker, $729 over the Base Scenario 1, with an average annual increase over the period of 1.22 per cent. The average annual growth of GDP under Scenario 6 is 0.053 percentage points higher than that of Base Scenario 1. This represents the aggregate effect of all three sources of improvement. Employment increases 0.026 percentage points faster under Scenario 6 than under Base Scenario 1, with the remaining growth translating into a 0.026 percentage points increase in average annual labour productivity growth (Summary Table 25).

ii. Effect of Increased Educational Attainment

Also relevant to this report is the effect of education alone, and how much of the improvement can directly be attributed to it. One way to estimate this single effect is to compare Scenario 6 to Base Scenario 2 as these scenarios differ only on their assumption about educational attainment. Output growth under Scenario 6 is 0.015 percentage points higher annually than in Base Scenario 2. This increase in average annual GDP growth rate is divided almost equally between employment and labour productivity growth, with the former increasing 0.008 per cent faster each year and the latter increasing 0.007 per cent faster each year compared to Base Scenario 2. In absolute terms, labour productivity per worker in 2026 under Scenario 6 is $193 higher than in Base Scenario 2 and total Canadian output in 2026 is higher by $8.2 billion.

The effect of education alone on output and productivity is smaller if no improvement in either employment rates or average employment income in a given educational attainment category occurred. In fact, we have already observed this when we compared Scenario 3 to Base Scenario 1. This comparison estimated that GDP would grow at a rate 0.013 percentage points higher per year, employment at a rate 0.010 percentage points higher per year and labour productivity at a rate 0.003 percentage points higher per year. Scenario 3 also projects that productivity will be $89 higher per worker than in the Base Scenario 1 and output higher by $7.0 billion. These estimates are slightly lower than those obtained when comparing Scenario 6 to Base Scenario 2. Yet, in both cases (comparing scenarios 3 and 1 and scenarios 6 and 2), we are comparing scenarios in which only the level of educational attainment was changed. The difference between these two comparisons follows from the interaction effect between improved educational attainment and improved labour market outcomes.[18]

[18] This can be explained intuitively with an extreme example. Let's assume Mr. X who lives in Canada and Mr. Z who lives in Haiti are both projected to increase their level of educational attainment in the future. Intuitively, the impact on

This shows that the effect of education is more important if it is accompanied by improvements in the labour market outcomes of the Aboriginal population. Thus, we can consider that the isolated effect of education in the case where labour market outcomes remain unchanged is a lower-bound estimate while the isolated effect of education when labour market outcomes variables for Aboriginal Canadians reach parity with that of other Canadians is an upper-bound estimate. Of course, these estimates do not differ dramatically from each other since they both embody only the impact of an increased in educational attainment. A summary of the impact of increased educational attainment is shown in Summary Table 26.

C. Complete Catching-Up in Educational Attainment – Scenarios 7 to 10

In the previous sub-section, the assumption was that Aboriginal Canadians by 2026 reached only the mid-way point between their 2001 educational level and the 2001 educational level of non-Aboriginal Canadians. In this sub-section, we focus on the more optimistic assumption that Aboriginal Canadians cover the whole gap in educational level that separated them from the non-Aboriginal population in 2001. In practice, the shares in each educational category for Aboriginal Canadians in 2026 are assumed to be identical to those of non-Aboriginal Canadians in 2001.

Four scenarios are considered in which the educational profile of Aboriginal Canadians in 2026 is assumed to be the same as that of non-Aboriginal Canadians in 2001. Notwithstanding an additional increase in non-Aboriginal educational level between 2001 and 2026, the 2001 gap would be eliminated and parity would be reached in 2026. In Scenario 7, educational attainment is the only variable improving for the Aboriginal population over the period. Scenario 8 adds the assumption that employment rates reach the 2001 level of the non-Aboriginal population. In Scenario 9, employment rates are kept constant, but the average employment income of each education group reaches parity with the projected non-Aboriginal incomes in 2026. In the last scenario (Scenario 10), all three variables improve. Scenario 10 is thus the *best case* scenario in this report.

i. Total Effect

Under Scenario 7, the total GDP in Canada in 2026 is estimated at $2,201 billion, increasing at a rate of 2.24 per cent per year. Employment in Canada is projected to increase to 19,290 thousand persons in 2026, which translates into an annual average growth rate of 1.02 per cent. Finally, labour productivity in 2026 is $114,100 per worker, with a growth rate of 1.20 per cent per year on average.

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output *in absolute term* will be larger for Mr. X than for Mr. Z because of greater employment opportunities and higher average employment income in Canada compared to Haiti. Even though the relative effect will likely be much larger for Mr. Z, the value of additional output produced by Mr. X will be larger.

Under the best case Scenario (10), total GDP is $2,223.5 billion in 2026, increasing at an average of 2.28 per cent per year over the period. Aboriginal employment is also expected to increase faster, bringing the average annual growth rate of employment in Canada to 1.04 per cent over the period. Labour productivity in this case is projected at $114,844 per worker, representing an additional $922 per worker over Base Scenario 1. Labour productivity is projected to grow at an average annual rate of 1.23 per cent per year in this scenario.

Summary Table 26: Estimated Effect of Increased Education for Aboriginal Canadians on Output and Productivity under Different Scenarios

Aboriginal Employment Rate in 2026	Average Aboriginal Employment Income in 2026	Aboriginal Educational Attainment in 2026	Effect of Education Assumption on Output Annual Growth Rate	Effect of Education Assumption on Productivity Annual Growth Rate
Level of Aboriginal Employment Rate in 2001	Increase with average wage growth	Half of the Gap Between the Aboriginal and non-Aboriginal Education in 2001 is Eliminated	0.013	0.003
Level of non-Aboriginal Employment Rates in 2001	Level of non-Aboriginal Income in 2026	Half of the Gap Between the Aboriginal and non-Aboriginal Education in 2001 is Eliminated	0.015	0.007
Level of Aboriginal Employment Rate in 2001	Increase with average wage growth	The Complete Gap Between the Aboriginal and non-Aboriginal Education in 2001 is Eliminated	0.026	0.006
Level of non-Aboriginal Employment Rates in 2001	Level of non-Aboriginal Income in 2026	The Complete Gap Between the Aboriginal and non-Aboriginal Education in 2001 is Eliminated	0.030	0.014

Note: Effects of education refer to the increase in percentage points of the annual growth rates.
Source: CSLS estimates

As in the previous sub-section, comparisons with base scenarios are particularly interesting. The annual growth rate of output is higher by 0.068 percentage points in Scenario 10 than in Scenario 1, which translates in the 2026 level being higher by $36.5 billion (Summary Table 24). Productivity growth is also higher by 0.033 percentage points. This encompasses improvement coming from all three sources outlined earlier.

ii. Effect of Increased Educational Attainment

This report, however, is particularly interested in the effect of education alone, which can be estimated by comparing Scenario 7 with Base Scenario 1 and Scenario 10 with Base Scenario 2. The differences in average annual growth rates between Scenario 10 and Scenario 2 are 0.030 percentage points for output, 0.016 percentage points for employment and 0.014 percentage points for labour productivity. The absolute value of productivity in Scenario 10 is increased by $386 over Base Scenario 2. In 2026, GDP would be $16.4 billion higher under scenario 10 than under Base Scenario 2. The effect of education on output and productivity growth represents almost half of the total effect of $36.5 billion mentioned earlier. Clearly, the effect of education on its own is non-negligible.

As pointed out earlier, the impact of education is slightly lower if the Aboriginal population does not experience a concurrent improvement in its labour market outcomes (employment rate and average employment income). To estimate the effect of education in this context, the report compares Scenario 7 to Base Scenario 1. In Scenario 7, only education improves, whereas none of the variables improve in Base Scenario 1. The average annual growth rate of output is 0.026 percentage points higher in Scenario 7, and productivity growth is higher by 0.006 percentage points on average each year. The absolute value of Canadian output is higher by $14.0 billion over Base Scenario 1 in 2026, and labour productivity is also increased by $177 per worker.

iii. Cumulated Effect Over Time

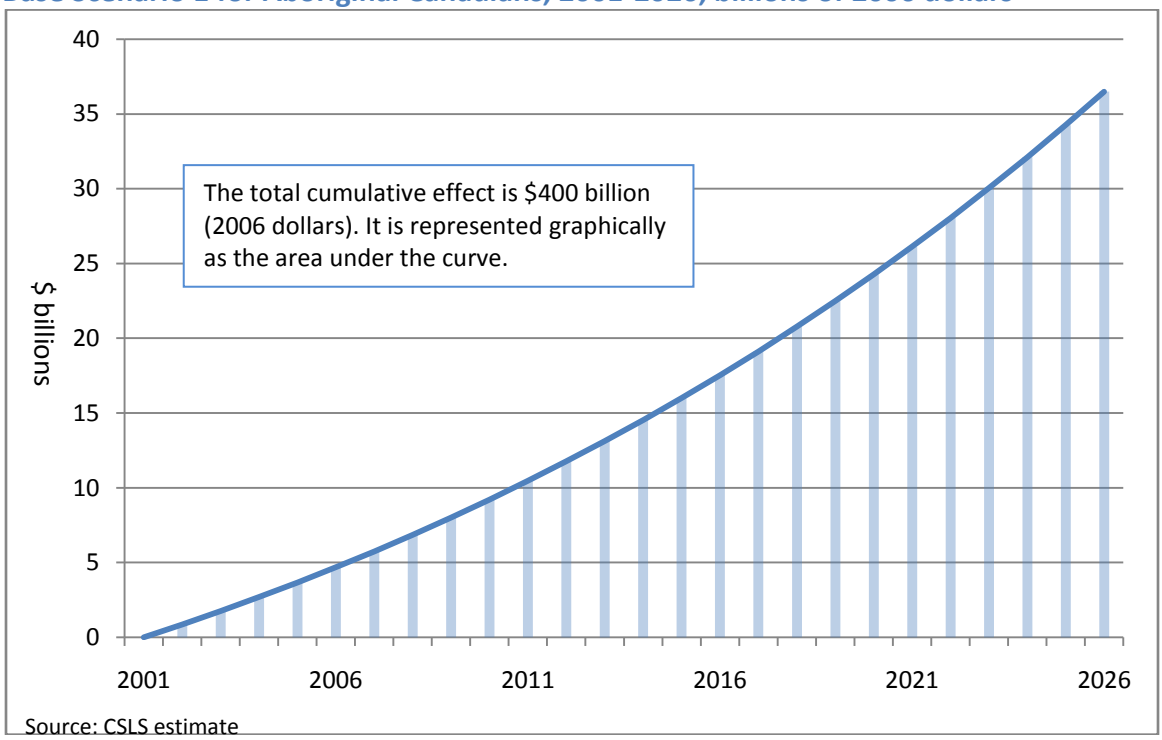
The additional GDP growth in Scenario 10 over Base Scenario 1 may seem small at only 0.068 percentage points each year. However, when considering billion of dollars, a small increase in GDP growth has a large effect on the economy. Chart 11 illustrates the trend in the difference between GDP under Scenarios 1 and 10. It is important to note that the chart represents only one of the multitudes of possible paths between the level of GDP in 2001 and 2026. [19] In 2001, the GDP is the same in both scenarios, but in 2026, the difference grows to $36.5 billion. Over the 25 years, the aggregate additional GDP to the Canadian economy would be a staggering $400.5 billion.[20] Of that sum, $179.3

[19]Chart 11 assumes that the growth rate remains constant over the period. Of course, the path between the level of GDP in 2001 and that in 2026 can take various other forms. Specifically, if a large number of currently employed Aboriginal Canadians drop out of the labour force in order to return to school, this might results in more muted growth at the beginning of the period and stronger growth towards the end. In turn, the shape of the path between the 2001 and the 2026 GDP level can significantly affect the estimate of cumulated benefits, and as such that estimate must be interpreted with care. It is meant to be illustrative of the magnitude of potential benefits rather than a definite and robust estimate of the cumulated benefits over the 2001-2026 period.

[20] This aggregate additional GDP over the 25 years is determined by two effects. First, there is a level effect. The increased growth rate in the first year induces an increase in the level of the GDP that is permanent over the whole period. This is not a one-time gain: it is realized year after year. In other words, even if the growth rate increase was only present in the first year, the level of the GDP would have been higher than the status quo in each of the subsequent years. However, the absolute growth is higher every year, and thus there is a second effect, the growth rate effect. Each year, the growth rate is 0.058 percentage point, but applies to a higher base. Therefore, there is a small compound growth rate effect which magnifies the difference of the absolute annual growth of GDP of the two scenarios. Overall, both effects add up, which means that past increases in the level of the GDP carry on to subsequent years and that each year an additional increase is added to the total.

billion can be directly attributed to an increase in educational attainment for Aboriginal Canadians.

Chart 11: Potential Path of Canadian GDP in Scenario 10 Compared to Canadian GDP in Base Scenario 1 for Aboriginal Canadians, 2001-2026, billions of 2006 dollars



D. The Case of the North American Indian Population

North American Indians constitute the majority of the Aboriginal population in Canada and so they are of particular interest to Canadian policy-makers. This group also mostly lives on reserve, and it has been shown that economic conditions are worst among the fraction of the Aboriginal population who lives in these areas. In this sub-section, the same methodology as above is applied to this particular group of the Aboriginal population.

Summary Table 27 shows the main results of this analysis. Due to their high representation among the Aboriginal population, increasing the educational attainment of North American Indians alone has similar implications than doing it for the entire Aboriginal population.

i. Partial Catching-up in Educational Attainment

As was the case with the total Aboriginal population, the effect of increased educational attainment on output, employment and productivity can be obtained under a number of different scenarios. First, this report considers the effect of a partial elimination of the 2001 educational attainment gap.

The average annual growth of GDP under Scenario 6 (with all three variables increasing) over the 2001-2026 period is 0.043 percentage points higher than Base Scenario 1 (Summary Table 28). In absolute terms, this represents an addition of $23.0 billion to the projected level of total GDP in Base Scenario 1. This increase in average annual GDP growth is due both to higher growth in employment (0.027 percentage points per year) and labour productivity (0.016 percentage points per year). Thus, labour productivity in 2026 is $447 per worker higher in 2026 compared to Base Scenario 1.

Summary Table 27: Summary of Projections for Income and Productivity with Increased North American Indian Education, in 2026

		Projected Canadian GDP in 2026 (Billions of 2006 dollars)	Average Annual Growth Rate (2001-2026)	Projected Employment in 2026 (Thousands of Persons)	Average Annual Growth Rate (2001-2026)	Projected Labour Productivity in 2026 (2006 dollars per worker)	Average Annual Growth Rate (2001-2026)
Base Scenarios	1	2,187.0	2.212	19,197.6	1.005	113,923	1.195
	2	2,203.6	2.243	19,290.1	1.024	114,233	1.206
Half the educational gap is eliminated	3	2,193.9	2.225	19,238.3	1.014	114,038	1.199
	4	2,199.6	2.235	19,324.5	1.032	113,823	1.191
	5	2,202.8	2.241	19,238.3	1.014	114,500	1.215
	6	2,210.1	2.255	19,324.5	1.032	114,369	1.211
All the educational gap is eliminated	7	2,198.4	2.233	19,269.6	1.020	114,085	1.201
	8	2,198.4	2.233	19,270.8	1.020	114,081	1.201
	9	2,208.3	2.251	19,269.6	1.020	114,599	1.219
	10	2,215.4	2.265	19,349.7	1.037	114,495	1.215

Source: CSLS estimates

To isolate the effect of education alone, and to estimate what share of this potential improvement can be attributed only to increased educational attainment, we can compare Scenario 6 with Base Scenario 2. Base Scenario 2 assumes improvements in employment rates and average employment incomes, but none in educational attainment. Output growth under Scenario 6 is 0.012 percentage points higher annually than in Base Scenario 2 and in 2026 the level of GDP under Scenario 6 is $6.6 billion higher than under Base Scenario 2. In other words, almost a third of the total increase in GDP can be directly attributed to improved educational attainment. Under Scenario 6, productivity in 2026 is larger by $361 per worker, which translates in a growth rate 0.005 percentage points higher on average each year over the 2001-2026 period.

Again, the effect of education on output and productivity would be smaller in the context of no improvement in neither employment rates or average employment income in a given educational attainment group. In Scenario 3, only the education was improved. Comparing this Scenario to the outcome of Base Scenario 1 gives a lower-bound estimate of the effect of a partial increase in educational attainment. Total GDP is estimated to grow at a rate 0.013 percentage points higher per year and to be $6.9 billion higher in 2026 than it would be under Base Scenario 1. Productivity is larger by $116 per worker

in Scenario 3 than Base Scenario 1, and its growth rate is 0.004 percentage points higher on average each year over the period. This underlines the fact that in the case of North American Indian, gains related to improved education alone would not be much larger if labour market outcomes for North American Indians at a given level of education improve simultaneously.

ii. Complete Catching-up in Educational Attainment

This section reviews the scenarios under which the North American Indian population achieves in 2026 the same educational profile as that of non-Aboriginal Canadians in 2001. Comparing Scenario 10 - the best case scenario - with Base Scenario 1, we find that the annual growth rate of output is higher by 0.053 percentage points in Scenario 10, with the projected level in 2026 $28.4 billion higher. Projected labour productivity is also much larger, with an additional $573 per worker in 2026. The projected average annual growth of labour productivity is 0.032 percentage points higher under Scenario 10 than Base Scenario 1. Scenario 10, however, encompasses increases in all three variables.

Summary Table 28: Incremental Contribution of North American Indians to Output and Labour Productivity in Canada over Base Scenarios, 2001-2026

		Additional Output Growth Over Base Scenario 1	Additional Output Growth Over Base Scenario 2	Additional Employment Growth Over Scenario 1	Additional Employment Growth Over Scenario 2	Additional Productivity Growth Over Scenario 1	Additional Productivity Growth Over Scenario 2
Base Scenarios	1	-	-	-	-	-	-
	2	0.031	-	0.019	-	0.011	-
Half the educational gap is eliminated	3	**0.013**	-	**0.009**	-	**0.004**	-
	4	0.023	-	0.027	-	-0.004	-
	5	0.029	-	0.009	-	0.020	-
	6	0.043	**0.012**	0.027	**0.007**	0.016	**0.005**
All the educational gap is eliminated	7	**0.021**	-	**0.015**	-	**0.006**	-
	8	0.021	-	0.015	-	0.006	-
	9	0.040	-	0.015	-	0.024	-
	10	0.053	**0.022**	0.032	**0.012**	0.020	**0.009**

Source: CSLS estimates
Note: Comparisons of scenarios for which only the educational attainment assumption is changed are bolded.

In order to focus only on increases in educational attainment we compare Scenario 10 and Base Scenario 2. The difference in growth rates between Scenarios 10 and 2 are of 0.022 percentage points for output, 0.012 percentage points for employment and 0.009 percentage points for labour productivity (Summary Table 28). Total Canadian output is larger by $11.9 billion in 2026 and the productivity is $262 per worker higher under Scenario 10. Thus, the effect of education on output and productivity growth represents almost half of the total effect identified when comparing Scenario 1 and 10.

Finally, we look at the impact of education if the North American Indian population does not improve in other areas (employment and average employment income). To estimate this effect, we compare Scenario 7 to Base Scenario 1. Compared to Base Scenario 1, the growth rate of output under Scenario 7 is increased by 0.021 percentage points, and productivity growth is higher by 0.006 percentage points on average each year. In 2026, the total Canadian output is larger by $11.3 billion and labour productivity gains an additional $162 per worker. The effects of education alone, both with the complete and partial elimination of the educational attainment gap, are summarized in Summary Table 29.

Summary Table 29: Estimated Effect of Increased Education for North American Indians on Output and Productivity under Different Scenarios

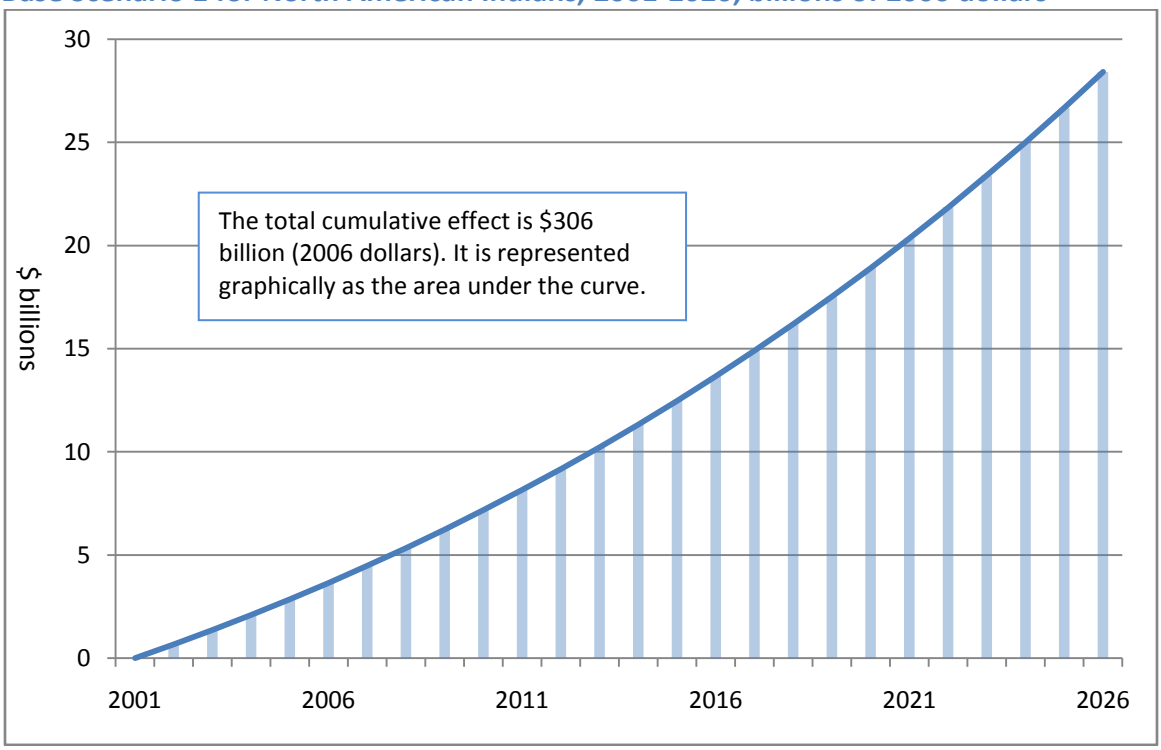
North American Indian Employment Rate in 2026	Average North American Indian Employment Income in 2026	North American Indian Educational Attainment in 2026	Effect of Education on Output Annual Growth Rate	Effect of Education on Productivity Annual Growth Rate
Level of North American Indian Employment Rate in 2001	Increase with average wage growth	Half of the Gap Between the North American Indian and non-Aboriginal Education in 2001 is Eliminated	0.013	0.004
Level of non-Aboriginal Employment Rates in 2001	Level of non-Aboriginal Income in 2026	Half of the Gap Between the North American Indian and non-Aboriginal Education in 2001 is Eliminated	0.012	0.005
Level of North American Indian Employment Rate in 2001	Increase with average wage growth	The Complete Gap Between the North American Indian and non-Aboriginal Education in 2001 is Eliminated	0.021	0.006
Level of non-Aboriginal Employment Rates in 2001	Level of non-Aboriginal Income in 2026	The Complete Gap Between the North American Indian and non-Aboriginal Education in 2001 is Eliminated	0.022	0.009

Note: Effects of education refer to the increase in percentage points of the annual growth rates.
Source: CSLS estimates

The North American Indian population accounts for a large part of the Aboriginal population in Canada. Therefore, it is normal that the effect of education when only considering this particular group is almost as large as for the complete Aboriginal population. The accumulated effect under the best case Scenario (10), total Canadian

GDP is $2,215 billion in 2026, increasing at an average of 2.265 per cent per year over the 2001-2026 period, compared to 2.212 per cent for Base Scenario 1. While the difference is only 0.053 percentage point, this translates into a cumulative difference of $312 billion over the period. In other words, between 2001 and 2026, the potential cumulative contribution of the North American Indian population to Canadian GDP is $312 billion. The effect of education alone represents about a third of that sum, at $130.4 billion.

Chart 12: Potential Path of Canadian GDP in Scenario 10 Compared to Canadian GDP in Base Scenario 1 for North American Indians, 2001-2026, billions of 2006 dollars



VI. The Fiscal Cost of the Aboriginal Population's Social and Economic Conditions

The 1996 Royal Commission on Aboriginal People's (RCAP) final report estimated that excess government expenditure related to the below-average economic and social conditions of Aboriginal Canadian was $2.2 billion in fiscal year 1992-1993 (0.20 per cent of nominal GDP). In the fifteen years since the report's publication, gaps between Aboriginal and non-Aboriginal Canadians continue to persist in a litany of social and economic indicators. Given the demographic growth of the Canadian Aboriginal community and increases in federal, provincial and local governments' budgets, the total fiscal cost is much larger today.

Wherever possible, this report relied on the RCAP's methodology to estimate the fiscal cost of the Aboriginal Population sub-par social and economic conditions. It also follows the methodology developed by Bert Waslander to adjust for differences in age structure between the Aboriginal and non-Aboriginal population (Waslander, 1997). We find that age-adjusted excess government expenditure on Aboriginal people was $6.2 billion in 2006-07 (0.44 per cent of nominal GDP), an increase of $3.9 billion over Waslander's 1992-93 estimate.[21] In other words, if the average Aboriginal Canadian benefited from the same social and economic conditions as those enjoyed by the average Canadian, the different government levels of Canada could allocate $6.2 billion dollars towards other social programs, towards debt reduction or towards a reduction of the tax burden.

A. Methodology for Measuring Excess Government Expenditures

This section examines two broad categories of government spending on Aboriginal Canadians: general government expenditures and expenditures specifically targeting Aboriginal Canadians. The methodology developed for the RCAP uses three key variables to estimate the Aboriginal share of general government expenditure: government expenditure, Aboriginal population share (APS) and level of use (LOU). Government expenditure covers all levels of government plus the Quebec and Canada Pension Plans. The Aboriginal population share refers to the Aboriginal share of the population which uses a given service. The Aboriginal population share for child and family services, for example, includes only Aboriginal people living off-reserve age five to fourteen because provincially funded child and family service agencies are only responsible for children living off reserves. The federal government is responsible for the child and family on reserves and this expenditure falls under the second broad expenditure category to be discussed later. The level of use refers to the rate at which Aboriginal people use a given service relative to the rate at which the non-Aboriginal population uses the service. Methods used to calculate level of use data are discussed

[21] About one-quarter of the increase ($0.8 billion) is directly related to inflation, while two-thirds is related to Aboriginal population growth. The remaining 10 per cent difference is due to real increases in spending per capita for Aboriginal people.

later in the report. The three variables are combined using the following formula to calculate general expenditure on Aboriginal Canadians.[22]

$$General\ Expenditure\ on\ Aboriginals = \frac{Government\ Expenditure\ \times APS \times LOU}{1 - APS + APS \times LOU}$$

The second category of expenditure considered is expenditure intended specifically for Aboriginal people. This report follows the RCAP final report by referring to this type of expenditure as targeted expenditure. The vast majority of these expenditures are federal government programs for Aboriginal communities. The Aboriginal Horizontal Framework provides a detailed decomposition of federal government Aboriginal expenditure for fiscal year 2004-2005 (Treasury Board Secretariat, 2005). Targeted and general expenditures on aboriginal Canadians are added up to determine the per capita Aboriginal expenditure in the reference year. This estimate is then compared to per capita expenditure for all Canadians to measure "excess expenditure" on Aboriginal Canadians.

B. Program Areas

Five main program areas of expenditure are considered: child and family services; protection of persons and property; housing; transfer payments; and health care.[23] The protection of persons and property, housing and health care program areas are identically defined as those used by the RCAP. While the child and family services category does not appear in the RCAP final report, there is a slightly broader category called social service. The fifth program area examined in the RCAP final report is transfer payments. The Statistics Canada publication upon which RCAP expenditure data are based does not include a category for transfer payments although there is a category called social services which appears to be equivalent. In the following sections, government expenditure associated with each program area will be discussed along with a detailed description of the methods and sources used to calculate each of them.

i. Child and Family Services

Child services refers to the investigation of child abuse and neglect, foster care programs, adoption programs and a number of other services which strive to minimize the damage caused by family breakdown. Aboriginal Canadians are significantly overrepresented in the ranks of children in government funded care. According to a Child Welfare League Report, between thirty and forty percent of the 76,000 Canadian children

[22] This formula measures how much of the expenditure in a program area is used by Aboriginal people. The numerator accounts for the share of Aboriginal people in the client group and for how frequently they use a program relative to non-Aboriginal clients. The denominator adjusts for the fact that the level of use is based on a comparison between the Aboriginal and non-Aboriginal population rather than the Aboriginal population and the total Canadian population. The denominator increases – which reduces general expenditure on Aboriginal people – as the weight of the Aboriginal population and the level of use increase because a larger Aboriginal client population affects the Canadian average more than a smaller one.

[23] Transfer payments include Old Age Security, Child Tax Benefits, GST/HST Credit, Employment Insurance Benefits, Canada and Quebec Pension Plans, Social Assistance and other similar programs.

in care are of Aboriginal identity (Farris-Manning and Zandstra, 2003). This is a startlingly high number considering Aboriginal people aged zero to fourteen make up only 6 percent of all Canadians in that age bracket. This figure roughly lines up with Assembly of First Nation Chief Pat Lafontaine's assertion that 27,000 Aboriginal children are in care (Blanchfield, 2007). In fact, it is possible he arrived at his number using the Child Welfare League's report. Unfortunately, there is no distinction between on-reserve and off-reserve cases so this report relies on former Indian Affairs Minister Jim Prentice who claimed that 9,000 of the 27,000 Aboriginal children in care were taken from reserves (Blanchfield, 2007). Using these figures, of the 67,000 of all children in care off-reserve, about 18,000, or 27 per cent, are of Aboriginal identity. This translates into a level of use of 6.4 (Summary Table 30).

Summary Table 30: Level of Use - Child and Family Services

Aboriginal persons in care (off reserve)	Non-Aboriginal persons in care	Aboriginal children (off reserve)	Non-Aboriginal children	APS	LOU
A	B	C	D	E = C/(C+D)	F = (A)/(B*E)
17,600	49,400	283,074	5,092,890	5.3	6.4

Source: Census 2006 Tabulations, Farris-Manning and Zandstra (2003), Blanchfield (2007).

In addition to the enormous social cost family breakdown has on Aboriginal families and communities, it also represents a substantial fiscal cost for Canadian governments. Unlike other expenditure categories analyzed in this report, Statistics Canada does not have expenditure data specific to child and family services. The most recent government report on child and family services is a 2004 report published by the Federal-Provincial Working Group on Child and Family Services. This report includes comparable provincial expenditure on child and family services for most provinces. For provinces where expenditure was unavailable, expenditure was estimated based on the number of children in each province. While at first glance other variables may constitute better proxies (such as the number of investigations or cases in place of total children), comparisons across provinces for these variables are not reliable due to significant differences in provincial agencies' terms of reference.

Summary Table 31: Excess Government Expenditure - Child and Family Services (2006*)

	Total General Expenditure on Child and Family Services ($ millions)	Aboriginal Component of Total Expenditure ($ millions)	Expenditure Specifically Targeting Aboriginal people ($ millions)	Total Expenditure Aboriginal people ($ millions)	Total Expenditure per Aboriginal	Per capita Expenditure	Per Capita Excess Expenditure	Excess Expenditure ($ millions)
	A	B**	C	D = B+C	E = D / Total Aboriginal	F = A / Total Canadians	G = (E-F)	H = G*Total Aboriginal
Child and Family Services	4,521	1,188	385	1,573	1,199	139	1,060	1,390

Source: Statistics Canada (2008a), Treasury Board Secretariat (2005) and Federal-Provincial Working Group on Child and Family Services Information (2004). *General Expenditure data for this program area is available only for 2001. We assume no nominal increase in spending between 2001 and 2006. **Based on the APS and LOU from Summary Table 30.

According to the Federal-Provincial Working Group on Child and Family Services report, the total cost borne by provinces for child and family services was $4.5 billion in 2001 in Canada (Summary Table 31). Given that Aboriginal children living off-reserve make up roughly 27 per cent of provincial child care cases, it is estimated that general expenditure on Aboriginal people for this program area is $1.2 billion. In addition, according to the 2005 Aboriginal Horizontal Framework, the federal government contributed $385 million dollars through INAC for child and family services specifically targeting Aboriginal communities, translating into total expenditures of roughly $1.6 billion. Assuming no increase in expenditure between 2001 and 2006 - a conservative assumption - Canadian governments spent an estimated total of $1,199 on child and family services for each Aboriginal Canadian in 2006, significantly more than the $139 average per capita expenditure in Canada. If the level of Aboriginal per-capita expenditure had been at the national average, a total of $1.4 billion would have been saved.

ii. Protection of Persons and Property

Protection of persons and property is a broad category encompassing national defense, policing, corrections and rehabilitation, courts of law, regulatory measures and other programs aimed at protecting persons and property. While the social and economic conditions of Aboriginal Canadians have no effect on a number of these expenditures, they surely lead to higher demand for corrections and rehabilitation, courts of law and policing (Sharpe, Arsenault and Lapointe, 2007). In fiscal year 2006-07, the federal government spent $591 million on courts of law, $2.3 billion on corrections and rehabilitation and $3.8 billion on policing. Local governments spent $289 million on courts of law and $6.4 billion on policing.[24]

Summary Table 32: Level of Use - Protection of Persons and Property

Sentenced to Federal or Provincial Custody- weighted by total Incarcerated (%)		Adult Population Share		Level of Use - Corrections	Level of Use - Police, Courts
Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal		
A	B	C	D	E = (A/C)/(B/D)	F = E*0.45
0.198	0.802	0.030	0.970	8.13	3.70

Source: Statistics Canada (2005), Statistics Canada (2008a).

[24] In 2005, consolidated government expenditures on protection of persons and property, excluding national defence, was roughly $27 billion. Other than policing, courts of law and correctional and rehabilitation services, the only other categories are firefighting ($3.1 billion from local government) regulatory measures ($1.7 billion from local and federal governments) and other protection of persons and property services (2.8 billion from local and federal governments). These three categories sum up to roughly $7.6 billion. If we add them to our estimates for total expenditures on policing, courts of law and correctional and rehabilitation services ($19.3 billion), we obtain $27 billion. As such, our estimates suggest that almost no provincial expenditures on firefighting, regulatory measures and other protection of persons and services.

Unfortunately, Statistics Canada only provides a decomposition of protection of persons and property expenditure at the federal and local level making it difficult to discern how much provinces spend on these issues. A rough estimate was ascertained by assuming that the share of policing, courts of law and corrections and rehabilitation in provincial spending on protection of persons and property was identical to that of the federal government (excluding national defense). It was thus estimated that provincial governments spend roughly $519 million on courts of law, $3.3 billion on policing and $2 billion on corrections and rehabilitation.

For fiscal year 2003-04, Statistics Canada reported that Aboriginal Canadians made up approximately one fifth of Canadians sentenced to federal or provincial custody while only representing three per cent of Canada's adult population (Statistics Canada, 2004). This equates to a level of use eight times higher for Aboriginal people than non-Aboriginal people (Summary Table 32). Levels of use for courts of law and policing are more ambiguous. While higher incarceration rates probably correlate to higher court expenditure, the exact relationship is unclear considering the many functions of the court system other than criminal proceedings. Similarly, while a fall in Aboriginal crime rates would likely result in a lower need for policing, the magnitude of this effect is unclear. Lacking better information, the RCAP final report assumed the level of use for policing and courts of law was slightly less than half the level of use for corrections and rehabilitation. This report does the same.

Summary Table 33: Excess Government Expenditure - Courts of Law, Policing and Corrections and Rehabilitation (2006-07)

	Total General Expenditure on Courts, Policing and Corrections ($ millions)	Aboriginal Component of Total General Expenditure ($ millions)	Expenditure Specifically Targeting Aboriginal people ($ millions)	Total Aboriginal Expenditure	Total Expenditure per Aboriginal	Per capita Expenditure	Per Capita Excess Expenditure	Excess Expenditure ($ millions)
	A	B*	C	D = B+C	E = D / Total Aboriginal	F = A / Total Canadians	G = E-F	H = G*Total Aboriginal
Total	19,319	2,718	94	2,812	2,145	595	1,549	2,031
Total Local	6,710	706		706	538	207	332	435
Courts of law	289	39	0	39	30	9	21	27
Policing	6,420	667	0	667	509	198	311	408
Total Provincial	5,895	941	0	941	717	182	536	702
Courts of law	519	70	0	70	53	16	37	49
Corrections	2,066	527	0	527	402	64	338	443
Policing	3,310	344	0	344	262	102	160	210
Total Federal	6,714	1,071	94	1,165	889	207	682	894
Courts of law	591	80	0	80	61	18	42	56
Corrections	2,353	600	0	600	458	73	385	505
Policing	3,770	392	94	486	370	116	254	333

Source: Statistics Canada (2008a), Statistics Canada (2008b) and the Treasury Board Secretariat (2005). *Based on LOUs from Summary Table 32 and an APS of 0.030 for policing (population share of off-reserve Aboriginal Canadians) and 0.040 for courts of law and correction services (population share of all Aboriginal Canadians).

Given total government expenditure on this program area and Aboriginal levels of use, it was calculated that the Aboriginal share of government spending on courts of law, policing and corrections and rehabilitation was $2.7 billion in 2006-07 (Summary Table 33). General government expenditures on courts of law and corrections and rehabilitation cover Aboriginal people living both on and off reserves, while policing services for Aboriginal reserves are provided by the federal First Nations Policing Program. In 2004-05, the federal government spent $94 million on this program and a few smaller policing programs specifically targeting Aboriginal communities. In total, disparities in protection of persons and property between Aboriginal and non-Aboriginal people are estimated to have resulted in an excess cost of $2.0 billion in 2006-07 for local, provincial and federal governments.

iii. Housing

Expenditure on housing includes all government programs aimed at providing affordable housing, with the exception of the rent supplement which is included under social assistance. Consolidated federal, provincial, territorial and local government general expenditure on housing in 2006-07 was $4.4 billion. Additionally, in fiscal year 2004-05, INAC and CMHC allocated a combined $248 million to on-reserve housing (Horizontal Aboriginal Framework, 2005). Information concerning the number or proportion of Aboriginal people using government subsidized housing is very scarce. Indeed, the RCAP was forced to rely on a single informal survey administered only in Saskatchewan, and the opinion of "someone familiar" with the government subsidized housing program in Manitoba (George and Kuhn, 1997). The estimates obtained from these two sources were extrapolated for all of Canada. Controlling for different variables related to costs (e.g. family size), a level of use of 1.5 was selected.

Summary Table 34: Excess Government Expenditure - Housing (2006-07)

	Total General Expenditure on Housing ($ millions)	Aboriginal Component of Total General Expenditure ($ millions)	Expenditure Specifically Targeting Aboriginal people ($ millions)	Total Aboriginal Expenditure	Total Expenditure per Aboriginal	Per capita Expenditure	Per Capita Excess Expenditure	Excess Expenditure ($ millions)
	A	B*	C	D = B+C	E = D / Total Aboriginal	F = A / Total Canadians	G = E-F	H= G * Total Aboriginal
Housing	4,435	199	248	448	341	137	205	268

Only includes targeted expenditure allocated directly for housing. Excludes targeted expenditure on community infrastructure.

Source: Statistics Canada (2008a), Statistics Canada (2008b) and the Treasury Board Secretariat (2005). *Based on a LOU of 1.5 obtained from George and Kuhn (1997) and an APS of 0.030 (population share of off-reserve Aboriginal Canadians).

Given that no new information has emerged since the RCAP on the proportion of Aboriginal Canadians using government-provided housing, we adopt the level of use of the RCAP. By applying this level of use and the share of Aboriginal people living off-reserve to total government expenditure on housing, general government expenditure on housing for Aboriginal people living off reserve was estimated at $199 million in 2006-

07. Including the $248 million in targeted expenditure, government housing expenditure per capita was $205 higher for Aboriginal Canadians than for all Canadians. This translated into a total excess expenditure of $268 million in 2006-07 (Summary Table 34).

iv. Transfer Payments

Consolidated federal, provincial, territorial and local government, plus the Canada and Quebec Pension Plan, expenditure on transfer payments to persons in 2006-07 was $174 billion. Federal, provincial, territorial and local expenditure on social assistance – the key subgroup of transfer payments - in 2006-07 was $75 billion. At the federal level, social assistance expenditure is decomposed into income maintenance ($13 billion), social security[25] ($31 billion), family allowance[26] ($11 billion) and miscellaneous assistance ($4 billion). Unfortunately, no decomposition of transfers is available at the provincial or local level in the public accounts. The distinction between federal and provincial and local expenditure is crucial because – for the most part - only Aboriginal people living off reserves are eligible for provincial social assistance (Aboriginal people on reserve receive welfare from the federal government) while all Aboriginal Canadians are eligible for federal social assistance programs such as Old-Age Security and the Child Tax Benefit. In the few cases where Aboriginal people living on reserves are eligible for provincial funding, the provincial government is reimbursed by INAC. In addition to the three levels of governments' general expenditure, the federal government spent $657 million through INAC on income assistance specifically for on-reserves Aboriginal people.

Summary Table 35: Level of Use - Transfer Payments

Percentage of personal income from Government Transfers		Average Income		Per client transfer payment expenditure		Level of Use
Aboriginal people	Total Canadians	Aboriginal people	Total Canadians	Aboriginal people	Total Canadians	
A	B	C	D	E = A*C	F = B*D	G = E/F
18.1	11.1	26,291	35,934	4,759	3,989	1.19

Source: Statistics Canada (2008a), 2006 Census Tabulations.

The method used by the RCAP to calculate excess expenditure on transfer payments is somewhat ambiguous. First, there is no Statistics Canada expenditure category called transfer payments. Instead, transfer payments are included in the social services category. Second, no level of use or explanation of how a level of use was calculated is included in either the RCAP final report, or related documents such as Waslander (1997) and George and Kuhn (1997). Finally, although a level of use is specified for social assistance, the exact definition of what is included in social assistance is unclear. While expenditure on the Canada and Quebec Pension Plan is categorized as social assistance by Statistics Canada, it is not in the RCAP report. Given this lack of

[25] Social Security includes Old Age Security and its subgroups (such as the Guaranteed Income Supplement)
[26] Family allowance remains the Statistics Canada category although the family allowance was amalgamated into the Child Tax Benefit in 1993.

information, both excess expenditure for social assistance (not including pension plans) and excess expenditure for all transfer payments were calculated. In keeping with the final report, however, this report's final tally of excess expenditure includes all transfer payments. A social assistance level of use of 3.0 was taken from the RCAP report while the level of use for transfer payments of 1.19 was calculated using data from the 2006 Census and the 2006 Aboriginal People's Profile (Summary Table 35). To remain consistent with the methodology, this level of use corresponds only to those who are eligible to receive transfer payments (those aged 15 or over) even though many transfer programs are used by children. Transfer payment expenditure per Aboriginal and non-Aboriginal is summarized in Summary Table 36.

Summary Table 36: Excess Government Expenditure – Transfer Payments, 2006-07*

	Total General Expenditure ($ millions)	Aboriginal Share of Total General Expenditure ($ millions)	Expenditure Specifically Targeting Aboriginal people ($ millions)	Total Aboriginal Expenditure ($ millions)	Total Expenditure per Aboriginal	Per capita Expenditure	Excess Expenditure per Aboriginal person	Excess Expenditure ($ millions)
	A	B**	C	D = B+C	E = D / Total Aboriginal	F = A / Total Canadians	G = E-F	H= G *Total Aboriginal
All Transfer Payments	173,812	6,523	0	6,523	4,975	5,357	-382	-501
Social Assistance (not including CPP or QPP)	77,779	8,449	657	9,105	6,944	2,397	4,547	5,962
Provincial	16,499	1,419	0	1,419	1,082	508	574	753
Local	3,831	330	0	330	251	118	133	175
Federal	57,449	6,700	657	7,356	5,610	1,771	3,840	5,035
Income maintenance	13,231	1,484	657	2,141	1,633	408	1,225	1,606
Other social assistance	46,500	5,216	0	5,216	3,978	1,433	2,545	3,337
Social security (OAS)	31,366	3,518	0	3,518	2,683	967	1,716	2,251
Family allowances	11,412	1,280	0	1,280	976	352	625	819
Miscellaneous	3,722	417	0	417	318	115	204	267

Source: Statistics Canada (2008a), Statistics Canada (2008b) and the Treasury Board Secretariat (2005). *Only the 'All Transfer Payments' category is used in the final estimates of this report. Estimates for social assistance are provided solely for the reader's own interest. **Based on the LOU from Summary Table 35 for 'All Transfer Payments' and a LOU of 3.0 for Social Assistance based on the RCAP report, as well as on an APS of 0.0316 (population share of Aboriginal Canadians within the 15 and over age group) for 'All Transfer Payments' and an APS of 0.030 for local and provincial social assistance (population share of off-reserve Aboriginal Canadians) and 0.040 for federal social assistance (population share of all Aboriginal Canadians).

Using the data outlined above and the RCAP methodology, it was calculated that Canadian governments spent $500 million less on transfer payments (including social assistance) for Aboriginal people than they would on an equal sized group of average Canadians (Summary Table 36). While Aboriginal receive more per eligible person (aged 15 and over), their share of the population in that age group is much below that of other Canadians. Excess expenditure on Aboriginal for social assistance specifically was estimated at 5.9 billion. These seemingly contradictory findings are explained by the

large portion of transfer payments that target the elderly, and thus do not benefit the Aboriginal population as much as the rest of Canadians.

Given that the RCAP found a similar level of transfer payment expenditure for Aboriginal and non-Aboriginal people, while maintaining that Aboriginal people were three times more likely to use social assistance than non-Aboriginal people, there is clearly an implicit assumption that Aboriginal people are far less likely to be beneficiaries of other transfer payments such as employment insurance, social security and pension plan expenditure. The Aboriginal level for these programs and the excess Aboriginal expenditure for these programs, however, are never discussed in the RCAP final report.

v. Health care

Health care expenditure includes all government outlays made to ensure the availability of health services. Statistics Canada divides health care expenditure into four categories: hospital care ($33 billion), medical care excluding hospitals ($42 billion), preventive care ($4 billion) and other health services ($20 billion). In total, consolidated government health care expenditure was $99 billion in 2006-07. Provincial governments are responsible for the insured health services of all Aboriginal people including those living on reserves except for the most remote Inuit and First-Nation communities. Conversely, public health services are the responsibility of the federal government for Aboriginal people living on reserves and the responsibility of provincial governments for everybody else. Unfortunately, Statistics Canada offers no clear distinction between insured hospital care and public health services. Additionally, there are provincial differences in the services included in their respective insured health care programs. For these reasons, a rather broad assumption is required. Because the Statistics Canada category "hospital care" closely resembles the type of services typically insured by provincial health care plans it is assumed that this category is analogous to insured medical and hospital care. Therefore, it is assumed that all Aboriginal Canadians make use of these services. On the other hand, it is assumed that only Aboriginal people living off reserves make use of other health services.

According to the RCAP final report, the level of use of both public health services and insured health services is the same for Aboriginal people and other Canadians. This level of use is adopted in this report with an important caveat. This level of use examines all Aboriginal people with respect to all non-Aboriginal Canadians. When specific age groups are compared, Aboriginal people invariably have higher levels of use (i.e. young Aboriginal use more health care services than young non-Aboriginal Canadians). The RCAP final report does not account for age differences and neither does this section of the report.

Summary Table 37: Excess Government Expenditure – Health care, 2006-07

	Total General Expenditure ($millions)	Aboriginal Share of Total General Expenditure ($ millions)*	Expenditure Specifically Targeting Aboriginal people ($ millions)	Total Aboriginal Expenditure ($millions)	Total Expenditure per Aboriginal	Per capita Expenditure	Excess Expenditure per Aboriginal person	Excess Expenditure ($ millions)
	A	B*	C	D= B+C	E = D / Total Aboriginal	F = A / Total Canadians	G = E-F	H = G*Total Aboriginal
Total	106,920	3,614	1,839	5,453	4,159	3,295	863	1,132
Hospital care	36,229	1,464						
Medical care	44,080	1,341						
Preventive care	4,778	145						
Other health services	21,833	664						

Source: Statistics Canada (2008a), Statistics Canada (2008b) and the Treasury Board Secretariat (2005). *Based on a LOU of 1.0 from the RCAP report, and an APS of 0.030 (population share of off-reserve Aboriginal Canadians), except for hospital care which is based on an APS of 0.040 (population share of all Aboriginal Canadians).

Based on the assumptions, levels of use and expenditure data outlined above, the Aboriginal share of general government expenditure on health care was calculated as $3.6 billion in 2006-07. Additionally, targeted expenditure on health care totaled $1.8 billion (Treasury Board Secretariat, 2005). Health expenditure for each Aboriginal totaled $3,954 compared to the $3,055 governments spent on health care for the average Canadian. If per capita Aboriginal health expenditure had been at the national average, Canadian governments would have saved $1.2 billion in 2006-07 (Summary Table 37).

C. Adjusting for Age

While both the first section of this report and the RCAP final report assume excess government expenditure on Aboriginal people can be attributed entirely to differences of in social and economic conditions, several other factors play a role. Crucially, differences in age structure between the Aboriginal and non-Aboriginal play a significant role. While the RCAP final report does not account for differences in age structure, the co-director of policy at RCAP, Bert Waslander, updated the RCAP findings to include age adjustment in an academic paper titled "Government Expenditures on Aboriginal People: The Costly Status Quo" and published in 1997 in the *Canadian Tax Journal*. In this paper, Waslander estimates an age factor for each program, which captures the magnitude of total expenditure increase or decrease which would occur if the total Canadian population shared the Aboriginal population's age structure. Predictably, it was found that adjusting for age differences lowered the expenditure gap in program areas used disproportionally by the young (such as protection of persons and property) and increased the expenditure gap in program areas used disproportionally by the old (such as health care).[27] Waslander also excluded Non-Insured Health Benefits because

[27] In other words, the measured excess expenditure in protection of persons and property is partly due to the larger proportion of young people in the Aboriginal population, and the gap would be reduced if we took that fact into

they have no direct counterpart for non-Aboriginal Canadians.[28] Additionally, he included the Family Allowance and Old Age Security.

Where possible, the age factors were updated with equivalent methodology and more recent sources. Relative health care expenditure in eight age groups was used to calculate the age factor for health care (Health Canada, 2001). Using this information, it was calculated that if the Canadian population had the Aboriginal population's age structure, health expenditure would fall to 68 per cent of its current level (Appendix Table 4). In Waslander's paper the health care age factor was 0.65. Waslander calculated the housing age factor based on a Statistic Canada publication which reported that 50 per cent of housing subsidies go to those aged 55 and over. Using this information and 2006 Canadian and Aboriginal demographic data it was found the housing age factor is 0.82, and identical to that calculated by Waslander (Appendix Table 5).

Due to limited information, no age factor was calculated for social services in the Waslander paper. A factor of 1.67 was calculated for this report based on the proportion of Aboriginal children aged zero to fourteen relative to the proportion of all Canadian children in that age group (Appendix Table 6). As in Waslander's report, the protection of persons and property age factor was calculated based on the age of those who were admitted to federal or provincial custody. The Statistics Canada catalogue, "Adult Correctional Services in Canada" includes a decomposition of Canadians sentenced to federal and provincial custody by age group (Statistics Canada, 2005). From this data, an age factor of 1.04 was calculated (Appendix Table 7). Based on an earlier version of the same Statistics Canada publication, Waslander found that the level of use for protection of persons and property was 1.28 in fiscal year 1992-93.

Finally, the age factor for transfer payments was calculated by dividing transfer payment expenditure into three categories: those for the young (less than 18), those for the old (65 and older) and other transfer payments. Transfer payments for the young include the family allowance (which is now in the form of a tax credit), while transfer payments for the elderly include Old Age Security, the Canada Pension Plan and Veteran's Benefits. An age factor of 1.7 was calculated for transfer payments directed at young people, an age factor of .35 was calculated for transfer payments targeting seniors and an age factor of 1 was assigned to other transfers. The average of these age factors – weighted by expenditure - is 0.79 and is nearly identical to the age factor of 0.77 calculated by Waslander (Appendix Table 8).

In total, adjusting for age increased total excess expenditure by about $2.7 billion. Conversely, removing INAC's Non-Insured Health Benefits program reduced excess expenditure by approximately $800 million (Summary Table 38). Therefore, the net effect of Waslander's methodological changes was an increase of $1.9 billion in the expenditure gap due to social and economic conditions of Aboriginal Canadians.

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account. The reverse is true for health care, where the failure to take into account the high proportion of Aboriginal young people leads to an underestimation of the expenditure gap.

[28] Non Insured Health Benefits is a federal program which provides health services to First-Nations and Intuits which are not insured elsewhere. The goal of this program is to raise the health of Aboriginal people to a level comparable with non-Aboriginal people.

Although the per person expenditure gap decreased slightly in the program areas which target young people (child and family services and protections of persons and properties), it increased dramatically in program areas which target the elderly (health care and transfer payments). Because health care and transfer payments represent the bulk of spending and are used disproportionately by the elderly, it is no surprise that adjusting for age increased the expenditure gap.

Summary Table 38: Excess Aboriginal Expenditure Including Adjustments using Waslander's Methodology, 2006-07

	Per Capita Expenditure – Total Population	Age Factor	Age Adjusted per Capita Expenditure – Total Population	Aboriginal Expenditure per Capita	Aboriginal Expenditure per Capita without NIHB	Age Adjusted Excess Expenditure without NIHB ($ millions)	Non-Age Adjusted Excess Expenditure	Difference
	A	B	C = A*B	D	E	F =(E-C)*Total Aboriginal	G	H = F - G
Transfer Payments	5,357	0.79	4,221	4,975	4,975	988	-501	1,489
Health Care	3,295	0.68	2,250	4,159	3,550	1,706	1,132	573
Housing	137	0.82	112	341	341	300	268	32
Child and Family Services	139	1.69	235	1,199	1,199	1,265	1,390	-125
Protection of Persons and Property	595	1.04	618	2,145	2,145	2,002	2,032	-30
Total ($ billion)						6,261	4,321	1,940

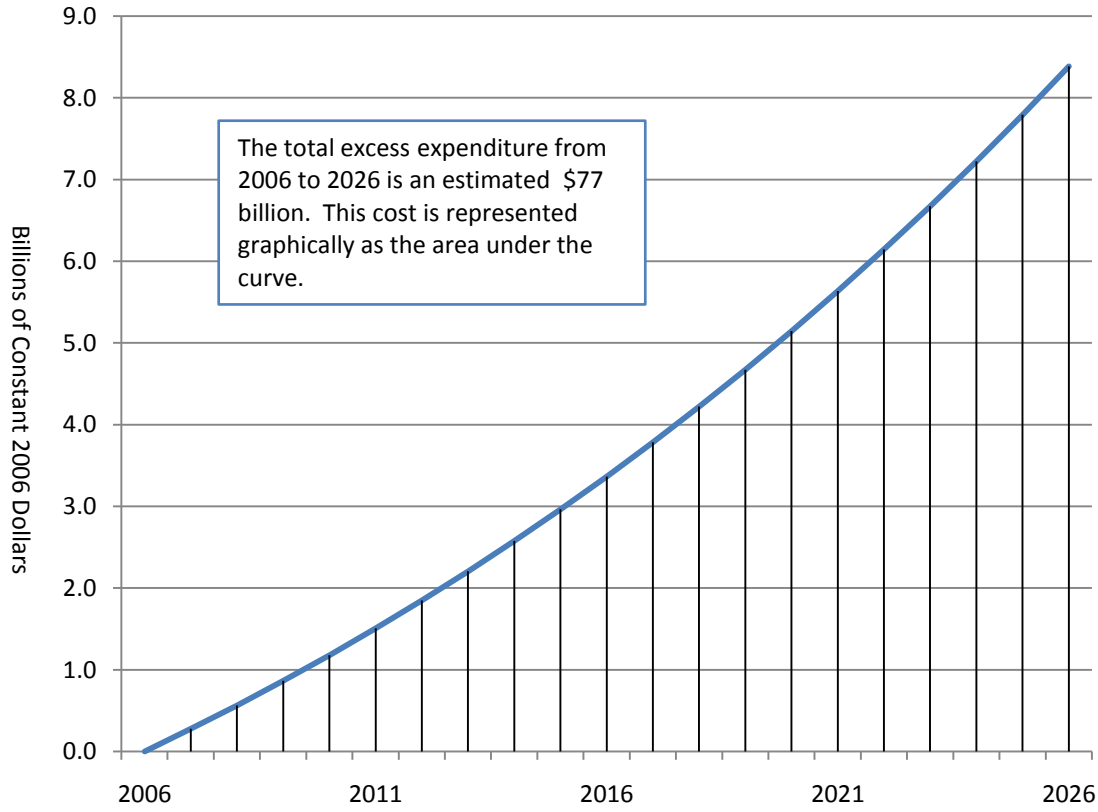
Source: Summary Table 31 to Summary Table 37 and Waslander (1997)

While the precise magnitude of the relationship between education and social well being is unknown, there is clearly a very strong positive effect. Numerous studies have shown that rates of poverty, crime and ill-health decrease as education increases (Sharpe, Arsenault and Lapointe, 2007, pp. 27-31). Therefore, it can be inferred that if the educational attainment of Aboriginal people increases, the social well-being of one of Canada's most marginalized groups will improve dramatically. Because of the enormous fiscal costs associated with high rates of crime, poverty and poor health, the benefits of increased educational attainment among Aboriginal Canadians would extend beyond the Aboriginal community. Using the methodology developed by RCAP and Waslander, this report found that if the social well-being of Aboriginal Canadians had been at the average Canadian level in 2006-07, Canadian governments would have saved $6.2 billion (adjusted for age). Given the rapid growth of the Aboriginal population relative to the Canadian population, the fiscal incentive to address the Aboriginal education gap will undoubtedly continue to grow.

In fact, if the fiscal cost grows at the same rate as the Aboriginal population (which is expected to grow by 34 per cent from 2006 to 2026 (INAC and CMHC, 2007) the fiscal cost will rise to $8.4 billion in 2026 (in $2006). Therefore, by investing in the Aboriginal population today, the Canadian government stands to save up to $8.4 billion

in 2026. Assuming that Aboriginal economic and social well-being improves at a constant rate between 2006 and 2026 and that the fiscal benefits follow a similar path, total cumulative government savings are estimated at $77 billion (Chart 13).

Chart 13: Cumulative Excess Government Expenditure, 2006-2026



D. Potential Increase in Tax Revenue

Should the educational attainment, employment income and employment rate gaps between the Aboriginal and non-Aboriginal populations close by 2026, Aboriginal people will not be the sole beneficiary of the economic windfall. All levels of Canadian government will incur a significant increase in tax revenue which can be used to reduce the overall tax burden, increase services or reduce public debt. Due to the complexity of Canada's tax system in general, and the Aboriginal population's unique tax status in particular, only a rough of estimate of the potential increase in tax revenue is feasible.

In this section, we project that the Aboriginal population could contribute up to $3.5 billion in additional tax revenue in 2006. This estimate represents tax revenue solely attributable to increases in the Aboriginal population's earnings caused by increased educational attainment and improved labour market outcomes, and it does not include the increase in tax revenue that would occur simply due to population growth. It also fails to

include additional increases in Aboriginal earnings that would occur if improvements in social conditions took place.[29]

To project the Aboriginal population's potential contribution to government revenue, we apply the government tax revenue share of GDP to earnings that would accrue to the Aboriginal population assuming improvements in educational attainment and labour market outcomes calculated in earlier sections. This simple methodology is made slightly more complicated by adjustments made to take into account of exemptions for on-reserves transactions.[30] Indeed, Registered Indians are exempt from income tax on all income earned on reserves, from sales tax on goods purchased on reserves or delivered to reserves by vendor and from property tax on property situated on reserves.[31]

Summary Table 39: Potential Increased Tax Revenue Attributable to Improved Aboriginal Education and Education-Specific Labour Market Outcomes

	Total Earnings (millions of 2006 $)				Tax Revenue (millions of 2006 $)		
	All Aboriginal	North American Indians	North American Indians Living on Reserves	Aboriginal people Living off Reserve	North American Indians on Reserve	Aboriginal people Living off Reserves	Total
	A	B	B/2=C	A-C=D	E = C * 0.073 / 2	F = D * 0.295	G = E+F
Status Quo	22,980	12,594	6,297	16,683	229	4,922	5,151
Best Case Scenario	41,222	26,797	13,398	27,823	486	8,209	8,696
Difference*	18,242	14,203	7,101	11,141	258	3,287	3,545

Source: 2001 Census Custom Tabulations, Cansim Table 385-0001

To account for these exemptions, the RCAP final report excluded all income and property tax revenue and half of sales tax revenue for Aboriginal people living on reserves. This article adopts the same methodology, but in addition excludes other taxes and non-tax related government revenues. The only channel through which on-reserve Aboriginal people are assumed to contribute to taxation is through the various sales tax. Based on the population share, it is assumed that North-American Indians living on reserve account for half of the North-American Indian population's increase in income. This is a reasonable estimate given that North-American Indians living on reserve make up slightly less than half of all North-American Indians, but have more potential to

[29] Canada's income tax system is progressive suggesting that a smaller portion of the Aboriginal population's income is paid in taxes because Aboriginal people tend to earn less than the non-Aboriginal population. This is not an issue in this scenario as it assumes that Aboriginal employment income will reach 2006 non-Aboriginal employment income levels by 2026.

[30] This estimate is very conservative, as it is applies only to increases in Aboriginal earnings, as opposed to increases in Aboriginal GDP estimated in the previous section. It we were to use GDP rather than earnings, the estimated increase in tax revenue would be roughly twice as large.

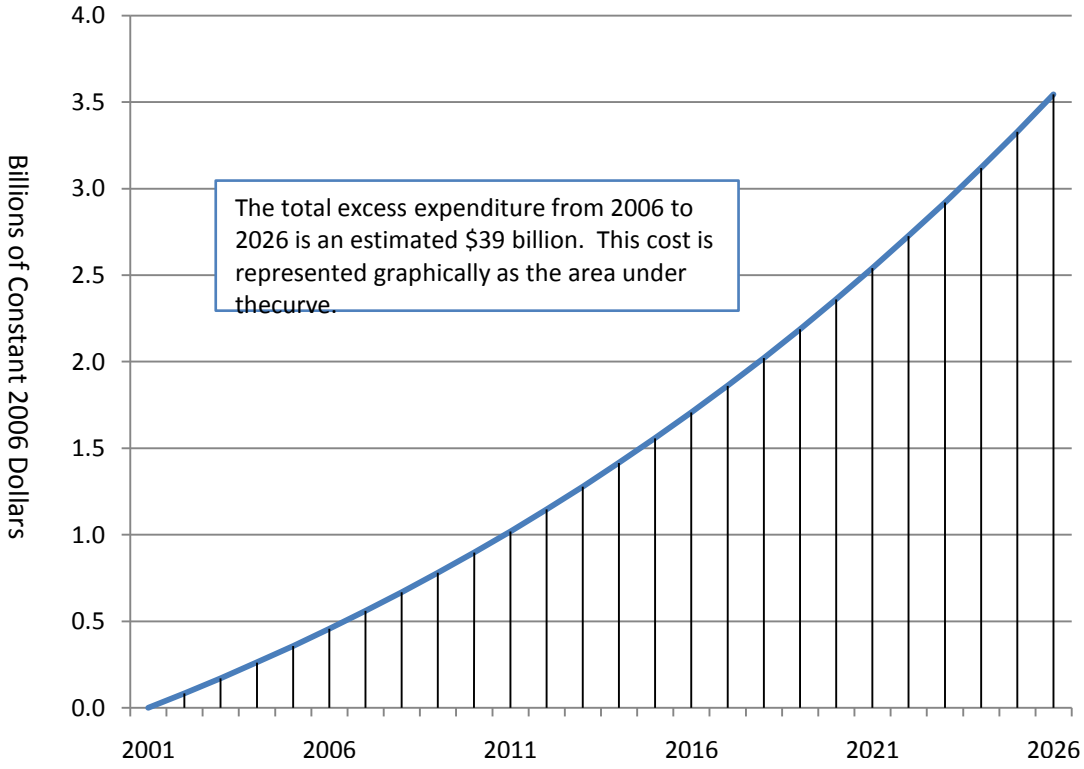
[31] The Canada Revenue Agency has extensive information on the different tax exemptions available to Aboriginal Canadians (see http://www.cra-arc.gc.ca/brgnls/ndns-eng.html). In a nutshell, "As an Indian, you are subject to the same tax rules as other Canadian residents unless your income is eligible for the tax exemption under section 87 of the *Indian Act*. That exemption applies to the income of an Indian that is earned on a reserve or that is considered to be earned on a reserve, as well as to goods bought on, or delivered to, a reserve."

improve their economic situation due to their below average labour market outcomes and educational attainment.

In 2007, total Canadian nominal GDP was $1,535 billion. In fiscal year 2007-08, consolidated government tax revenue was $453 billion or 29.5 per cent of GDP. Consumption taxes in particular accounts for 7.3 per cent of GDP. It is assumed that government revenue's share of GDP remains at the 2007 levels up to 2026.

Summary Table 39 demonstrates by how much government revenue would increase above the base scenario should the best case scenario developed in Sharpe *et al.* (2009) materialize.[32] Without any increases in educational attainment or education specific labour market outcomes, the Aboriginal population is expected to contribute about $5.2 billion in tax revenue in 2026. Conversely, if the best case scenario materializes, the Aboriginal population would contribute about $8.7 billion in tax revenue in 2026. In other words, education and labour market improvements have the potential to increase tax revenues by $3.5 billion in 2026.

Chart 14: Cumulative Increased Tax Revenue Attributable to Increased Aboriginal Education and improved Education-Specific Labour Market Outcomes.



[32] As was noted earlier, this scenario assumes that Aboriginal Canadians will reach the 2001 level of non-Aboriginal in terms of education, employment rates (at a given level of education) and earnings (at a given level of education). Sharpe *et.al* (2009) developed ten scenarios, each with different assumptions about which of the three variables improves (educational attainment, employment rate and earnings) or whether the improvement is partial (half of the 2001 gap) or complete (Aboriginal levels reaching 2001 non-Aboriginal levels in 2026).

The cumulative impact of improved Aboriginal education and education specific labour market outcomes from 2001 to 2026 on tax revenue is an estimated $39 billion (Chart 14). Given the magnitude of the Aboriginal population potential contribution to public sector revenue, it is clear that in additional to providing a much needed boost to Aboriginal earnings, prioritizing Aboriginal education today will pay significant dividends for all levels of Canadian government in the future.

E. Total Cumulative Effect on Consolidated Governments Balance Sheet

Because increased tax revenue and decreased government spending both affect Canadian governments' balance sheets, they can be added up to produce a single estimate of the impact of increased Aboriginal education and social well-being on consolidated government's bottom line. This report estimates that in 2026 alone, the total benefit could be as high as $11.9 billion (2006 dollars). By assuming the fiscal benefits of improved Aboriginal economic and social well-being will grow at a constant rate, its effect on consolidated government's fiscal balance can be estimated for each year during the 2006 to 2026 period. Summing each year's benefits yields the total cumulative effect from 2006 to 2026.

It is estimated that Canadian governments would gain approximately $115 billion during the 2006-2026 period if all fiscal savings and additional tax revenues materialize. Of that sum, slightly less than $40 billion is attributable to increased tax revenue and slightly more than $75 billion is attributable to fiscal savings related to health care, social assistance, protection of persons and property, transfer payments and housing.

It must be emphasized that these estimates represent a best case scenario. Moreover, although indicators of social well-being are positively correlated with education, it is not reasonable to expect that all Aboriginal indicators of social well-being will increase to the average Canadian level if education is the only determinant to improve. A strategy encompassing other areas of intervention would be needed to realize the entirety of the benefits calculated in this report.

VII. Conclusion

In addition to updating the potential contribution of Canada's Aboriginal population to output and productivity to 2026, this report includes a decomposition of the potential Aboriginal contribution to labour force growth and estimates the effect of substandard Aboriginal social and economic well being on public sector balance sheets. The key message, however, remains the same. Investing in Aboriginal education will not only benefit the Aboriginal population itself, but will also benefit Canadian government, and, by extension, the entire Canadian population.

A few specific results and recommendations can be taken from this report. First, assuming Aboriginal Canadians increase their level of educational attainment, their potential contribution to Canada's economy, while small in aggregate terms, is still significant. Second, the key to increasing educational attainment is to increase the number of Aboriginal Canadians graduating from high school, as this not only increases the potential economic contribution of these individuals but also creates a larger pool of potential university graduates. Third, to maximize the potential of Aboriginal Canadians, not only should the educational level of their youth be increased but also that of their older people. In this context, programs to provide high school education targeted at all Aboriginal Canadians without high school education under 35 years old or even older could be considered. Fourth, the analysis in this paper ignores the dynamic effect that increased education can have on the leadership capacity of the Aboriginal community and therefore may underestimate the contribution of increased education of Aboriginal Canadians to future output and productivity growth. Better educated Aboriginal Canadians will be more effective leaders and thereby provide better direction for the economic development of Aboriginal communities.

Investing in disadvantaged children is one of the rare public policy with no equity-efficiency tradeoff. This report estimated the potential benefit for the Canadian economy of increasing the educational attainment level of Aboriginal Canadians. We found that increasing the number of Aboriginal Canadians who complete high school is a low-hanging fruit with far-reaching and considerable economic and social benefits for Canadians. Not only would it significantly contribute to the personal well-being of Aboriginal Canadians, but it would also contribute to alleviating two of the most pressing challenges facing the Canadian economy; slower labour force growth and lackluster labour productivity growth.

In fact, we found that if in 2026 the educational attainment of Aboriginal Canadians reaches the same level non-Aboriginal Canadians had attained in 2001, the potential contribution of Aboriginal Canadians is up to an additional cumulative $400.5 billion over the 2001-2026 period ($2006). This represents a 0.068 percentage point increase in the annual average growth rate of GDP. Their potential contribution to Canadian GDP average annual growth rate related only to an increase in educational attainment is 0.030 percentage points per year, or a cumulative $179.3 billion ($2006) over the 2001-2026 period. Finally, we find that the potential contribution of Aboriginal Canadians to the annual growth rate of labour productivity in Canada is up to 0.033

percentage point, of which 0.014 percentage point is directly attributable to an increase in educational attainment. Aboriginal Canadians are without doubt one of the groups where the potential benefits of increasing educational attainment clearly outweigh the costs.

Furthermore, higher levels of educational attainment among Aboriginal people will have a positive effect on the public balance sheets due to lower social expenditure and higher tax revenue. It is calculated that the government would have saved $6.2 billion in 2006 if Aboriginal Canadians had enjoyed the same levels of educational attainment and social well-being as non-Aboriginal people. If these figures increase at the same rate as total Aboriginal population growth, Canadian taxpayers could save up to $8.4 billion in 2026. Additionally, a better educated Aboriginal labour force could contribute up to $3.5 billion in additional tax revenue in 2026. The potential net savings for consolidated government balance sheets attributable to Aboriginal educational attainment and social well-being, therefore, is $11.9 billion in 2026 alone. Over the 2006-2026 period, the cumulative effect on public sector balance sheets could be as high as $115 billion.

It should be noted that the lack of a more frequent survey tracking education trends of the Aboriginal population at a detailed level make it difficult to conduct timely analysis of the situation. The development of specific survey or of over-sampling Aboriginal people in existing survey could help enhance the quality and timeliness of Aboriginal education analysis and provide valuable input to the policy development process.

Despite the significant new ground covered by the report, a number of opportunities for future research remain.

- Most obvious is the continuous monitoring and updating of the potential contribution of Aboriginal Canadians to the national economy. The new 2006 census micro data files should be available in 2009 and will provide an opportunity to assess the progress of Aboriginal Canadians since 2001 at a more detailed level and adjust projections of their future potential contribution.

- Another possible research direction is the development of forecasts for non-Aboriginal educational attainment so that the potential contribution of Aboriginal Canadians in the case where they actually bridge the gap and reach educational parity with non-Aboriginal Canadians can be assessed.[33] This analysis has the potential to significantly increase the projected contribution of Aboriginal Canadians to Canadian economic growth. A third avenue would be to adjust projections to account for differences in current and future age structures between Aboriginal and non-Aboriginal population.

[33] Statistics Canada released on November 21, 2007 a study forecasting post-secondary enrolments in Canada to 2031. This study might be a good benchmark for projecting educational attainment for non-Aboriginal Canadians. Information on the study is available on The Daily at http://www.statcan.ca/Daily/English/071121/d071121c.htm .

- Provincial labour market projections adjusting for age and Aboriginal identity could be developed to shed light on the importance of relative importance of Aboriginal to different parts of the country.

- Gender-based labour market and output projections could be developed, including an econometric analysis, providing new insights on the gender gaps existing among the Aboriginal population.

- Another avenue would be to adjust output projections to account for differences in current and future age structures between Aboriginal and non-Aboriginal population, as was done for labour market projections.

- Another interesting opportunity lies in the new Labour Force Survey which now includes a question about Aboriginal identity. LFS estimates could be uses to update and monitor the progress of Aboriginal Canadians in-between censuses. The relatively small sample size, however, may make it inadequate for in-depth analysis.

- Exploring the potential interaction between education and fertility could provide interesting insights into the very long-term effects of education.

- An in-depth analysis of the implications of our findings in terms of the flow of new Aboriginal graduates needed by age group would help bring our findings closer to policy development.

- Finally, along with a review of current practices and existing recommendations designed to increase the level of human capital for Aboriginal Canadians, the development of new policies and strategies aimed specifically at increasing Aboriginal educational attainment in Canada should be considered.

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Appendix 1: Decomposition of the Wage Differential

Education plays an important role in the well-being of individuals. The relationship was explored in Sharpe, Arsenault and Lapointe (2007) and underpins this report. Particularly, educational attainment determines in large part wages. This is also true for Aboriginal Canadians, which have both lower educational attainment and lower average employment incomes than other Canadians.

This section decomposes the 2001 wage-differential between Aboriginal and non-Aboriginal Canadians and finds that, while a portion is due to differences in employment opportunities and in the geographical distribution of the two populations, an important portion is directly related to educational outcomes. This relative importance of education is quantified, and so is the relative importance of other factors. The method used was developed by Oaxaca and Blinder in 1973 (Oaxaca, 1973; Blinder, 1973), and has been previously applied to Aboriginal Canadians using 1991 Census data by De Silva (1999).

First, we provide a brief explanation of the methodology. Then, the results are presented, both for Aboriginal Canadians as a whole and for North American Indians only. We find that most of the wage gap is explained by the average characteristics of Aboriginal Canadians, notably lower educational attainment. The remaining of the gap, which is fairly small, is unexplained by the variables included in the analysis.

A. Methodology

The methodology used in this report is based on the method developed in Oaxaca (1973) and Blinder (1973). The broad idea behind this decomposition is to estimate how much Aboriginal Canadians would receive in annual wages if they were treated like non-Aboriginal Canadians. We apply the method to a sample of 412,638 individual from the 2001 Census micro-data, which includes 10,062 Aboriginal Canadians. The key elements of the methodology are as follows:[34]

- We calculate the difference between the average annual wages and salaries of Aboriginal Canadians and that of non-Aboriginal Canadians. This is the total wage differential.
- We estimate a regression with the logarithm of wages as the dependent variable, first for Aboriginal Canadians, and then for non-Aboriginal Canadians. The explanatory variables included are, among others, education, experience, province of residence, and whether the person was working full-time or not.[35]

[34] Persons interested in a detailed explanation of the methodology can consult De Silva (1999) and Benjamin et al. (2007:366).

[35] The detailed list of independent variables is: 10 variables for educational categories, experience, experience squared, province, not living in a selected CMA, full-time employment, marital status, knowledge of official languages, weeks worked (10 categories). Further explanations can be found in Appendix 1.

- We compute the mean of the variables for each group (e.g. the proportion of Aboriginal Canadians who live in Manitoba, average work experience, etc).
- We estimate the average wage of Aboriginal Canadians using the regression coefficients of the non-Aboriginal equation and the mean values of Aboriginal Canadians. This represents the "ideal" wages of Aboriginal Canadians, i.e. the wages they would receive if they were treated like non-Aboriginal Canadians (shown as $\ln(W^a)$* in Figure 1).

The difference between the "ideal" wage and the average wage of non-Aboriginal Canadians is the portion of the wage differential between the two groups that is explained by the variables included in the regressions. The difference between average Aboriginal earnings and the "ideal" average wages is the portion that is unexplained by variables of human capital (often referred to as potential discrimination in the literature).

Figure 1: Illustration of the Wage Gap Decomposition Method

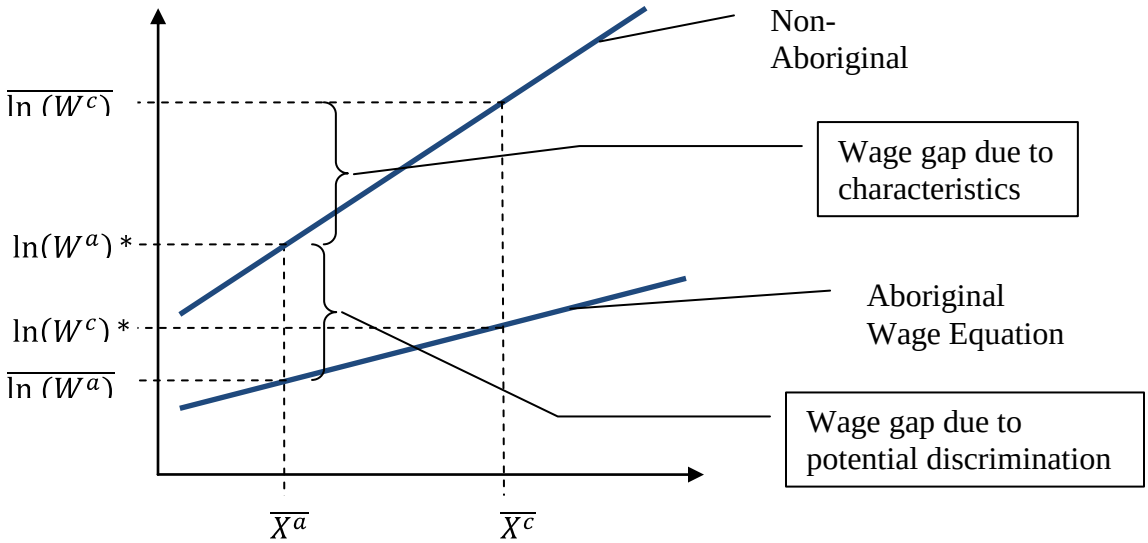

Figure 1 summarizes the methodology. The vertical axis measures the logarithm of wages and the horizontal axis productive characteristics (education, experience, etc) and other explanatory variables (geography, marital status, etc). The average characteristics of Aboriginal Canadians are shown as lower than those of non-Aboriginal individuals. The wage equations represent the relationship between the productive characteristics and wages, separately for the two groups. These equations are estimated by our regressions. The average wages for each group, as well as the "ideal" wage of Aboriginal Canadians, are shown along with the decomposition of the gap as it is done in this report. Similarly, the average wage of non-Aboriginal Canadians if they were treated the same way as Aboriginal Canadians (therefore using non-Aboriginal weights) can be estimated (shown as $\ln(W^c)$ * in Figure 1). In this case, $\ln(W^c)* - \overline{\ln(W^a)}$ is the portion of the gap that is explained and $\overline{\ln(W^c)} - \ln(W^c)*$ represents potential discrimination.

The portion of the wage gap that is due to characteristics can be further decomposed into its components: education, experience, province of residence and others. This analysis allows us to determine the role of education, of central interest to this report, in the lower wages of Aboriginal Canadians.

B. Results

The results of two decompositions are presented in this section. The first wage differential analyzed is that between Aboriginal and non-Aboriginal Canadians. The former group includes persons that identified as North American Indians, Métis, Inuit or a combination of the three. The second decomposition focuses on North American Indians, who are more likely to live on reserves, and also suffer from lower educational attainment on average. In both cases, the complete regression results can be found on Appendix Table 2 and Appendix Table 3.

Appendix Table 1: Decomposition of the Aboriginal vs. non-Aboriginal Wage Differential in 2001 in Canada

	Aboriginal vs. non-Aboriginal				North American Indian vs. non-Aboriginal			
	Using Aboriginal Weights		Using non-Aboriginal Weights		Using N.A.I. Weights		Using non-Aboriginal Weights	
	Income Gap	Share of the adjusted gap	Income Gap	Share of the adjusted gap	Income Gap	Share of the adjusted gap	Income Gap	Share of the adjusted gap
Wage differential:	48.1 %	n.a.	48.1 %	n.a.	54.8 %	n.a.	54.8 %	n.a.
Adjusted for weeks worked:	29.2	100.0 %	30.0	100.0 %	32.2	100.0 %	33.5	100.0 %
Characteristics	**24.4**	**83.6**	**21.1**	**70.2**	**24.8**	**77.1**	**21.6**	**64.3**
Education	*8.9*	*30.5*	*8.5*	*28.4*	*9.3*	*29.0*	*8.7*	*25.8*
Experience	2.7	9.1	2.2	7.3	1.6	4.9	1.1	3.2
Residing in a selected CMA	2.9	9.9	2.0	6.6	2.9	8.9	2.3	6.7
Marital status	1.5	5.2	1.1	3.8	1.4	4.4	1.0	3.1
Knowledge of official languages	-0.1	-0.4	-0.3	-0.9	-1.5	-4.7	-0.1	-0.4
Full-time employment	5.8	19.9	7.3	24.4	6.4	19.9	8.3	24.8
Province of residence	2.8	9.5	0.2	0.7	4.7	14.6	0.3	1.0
Unexplained	**4.8**	**16.4**	**8.9**	**29.8**	**7.4**	**22.9**	**12.0**	**35.7**

The key results of the decompositions are contained in Appendix Table 1. The average annual wage of Aboriginal Canadians is 48.1 per cent lower than that of non-Aboriginal Canadians. As a larger proportion of Aboriginal Canadians work only for part of the year, we controlled for the number of weeks of work. The wage differential, when adjusted for weeks worked, is between 29.2 and 30.0 per cent (depending on whether Aboriginal or non-Aboriginal weights were used). It was slightly higher for North American Indians: between 32.2 and 33.5 per cent.

The portion of the wage gap explained by the differences in the characteristics of Aboriginal Canadians and those of non-Aboriginal Canadians is between 21.1 and 24.4 percentage points. This represents between 70.2 and 83.6 per cent of the adjusted gap, leaving only about 20 per cent to unexplained factors. A larger part of the gap was unexplained for North American Indians (between 22.9 and 35.7 per cent) but the difference in characteristics still explains up to three quarters of the difference in wages.

i. Education

Education explains the largest part of the wage gap in both decompositions: between 28.4 and 30.5 per cent of the gap for Aboriginal Canadians as a whole and between 25.8 and 29.0 per cent for North American Indians only. This analysis suggests that increasing the educational attainment of Aboriginal Canadians could bring their average wage much closer to the Canadian average, reducing the wage gap by up to 8.9 percentage points for Aboriginal population or 9.3 points for North American Indians alone.

This result is consistent with earlier work on the subject. George and Kuhn (1994) conclude that as much as forty per cent of the gap could be eliminated by increasing educational levels of Aboriginal Canadians using data from the 1986 Census while De Silva (1999) finds that almost a quarter of the gap could be eliminated in the same way with the 1991 Census. Both studies find that educational attainment is one of the main explanations for the wage gap between Aboriginal and non-Aboriginal Canadians. This is also consistent with Sharpe, Arsenault and Lapointe (2007), who find that about 40 per cent of the wage gap is directly due to differences in educational attainment.

ii. Other Factors

While education is an important factor, other characteristics of Aboriginal Canadians can explain the wage differential with non-Aboriginal Canadians. Aboriginal Canadians tend to be younger than the average population, and therefore have less work experience. That difference accounts for 7.3 to 9.1 per cent of the wage gap for Aboriginal Canadians and 3.2 to 4.9 per cent for North American Indians. An important problem with this particular number is the absence of actual data on work experience. Since we used a proxy ($experience = age - years\ of\ education - 5$), we over-estimate work experience for persons who stopped working for a certain number of years. Considering Aboriginal Canadians (and North American Indians even more) experience a higher unemployment rate than the average Canadian, work experience for Aboriginal Canadians is likely to be over-estimated. As a consequence, this variable may actually explain a higher proportion of the wage differential than reported.

Canada, much like other industrialized countries, is becoming more urbanized than ever and therefore a high proportion of employment opportunities are situated in large cities. As a consequence, urban dwellers tend to have higher incomes than their rural counterparts. Since most Indian reserves are situated in rural and remote areas, Aboriginal Canadians should tend to have a lower income. In fact, not living in a selected

CMA[36] does explain part of the difference between Aboriginal and non-Aboriginal wages. Between 6.6 and 9.9 per cent of the gap is due to the fact that a much larger proportion of the Aboriginal population lives in rural areas, particularly on reserves. The contribution of this variable to explaining the wage gap is similar for the North American Indian population (6.7 to 8.9 per cent).

Being married is in general associated with higher wages, especially for men. For women, the effect of marriage is not as clear. However, when combined, the effect on the whole population is positive. This fact has been extensively explored in the literature on wage determination but is still not completely understood. Possible explanations for this include the fact that men who marry can specialize in non-household tasks, and thus become responsible and more career-oriented, in turn working longer hours and earning higher wages (Chun and Lee, 2001). Another explanation is that men with higher abilities have on average better chances to be married. The proportion of Aboriginal Canadians who are married (54.5 per cent) is smaller than the corresponding proportion of non-Aboriginal Canadians (61.6 per cent). This is either due to fewer marriages or to a higher probability of separation or divorce. In either case, marital status helps explain, albeit only slightly, the wage gap between the Aboriginal and non-Aboriginal populations. Our decomposition shows that this variable is responsible for up to 5.2 per cent of that gap for Aboriginal Canadians, and slightly less for North American Indians (4.4 per cent).

Knowledge of one of the official languages of Canada is a great asset, if not a requirement, for finding employment. For this reason, the vast majority of Canadians, Aboriginal or not, know how to speak at least one of the two. As a consequence, this is not a major explanation of the wage gap between Aboriginal and non-Aboriginal Canadians. An interesting fact for the North American Indian population is that the wage penalty for not speaking either language is much smaller than for the Canadian population as a whole (see regression results in Appendix 1). Consequently, the variable on knowledge of official languages actually helps decrease the wage gap between North American Indians and the non-Aboriginal population by up to 4.7 per cent.

Full-time employment, however, is a major explanation of the difference in wages of Aboriginal versus non-Aboriginal Canadians. Working full-time is associated with higher wages (either because the individual is working more hours, or because full-time jobs tend to pay higher hourly wages). Aboriginal Canadians work part-time much more often than their non-Aboriginal counterparts (42 versus 31 per cent of respective populations), and this can explain a large part of the difference in the wages of the two groups: between 19.9 and 24.4 per cent of the gap is explained by this variable alone. The contribution of this explanatory variable for the North American Indians/non-Aboriginal wage gap is virtually the same: between 19.9 and 24.8 per cent.

Finally, as discussed earlier, Aboriginal Canadians represent a much higher proportion of the population in Western provinces than elsewhere in Canada. Those areas

[36] The Census includes data on residence in a CMA. Some 22 CMAs are included in the data, while persons living outside of these urban centers (including rural areas) are regrouped under one category. In the data used for the analysis, 64.2 per cent of the population lives in one of the selected CMAs.

(especially Saskatchewan and Manitoba) tend to be poorer than other provinces, and average wages tend to be lower than average. When these two facts are combined, they can partly explain why on average, Aboriginal Canadians have lower wages. Between 0.7 and 9.5 per cent of the gap is explained by the province of residence of Aboriginal Canadians, and between 1.0 and 14.6 per cent for North American Indians.

The remaining unexplained component, which represents 16.4 to 29.8 per cent of the gap for Aboriginal Canadians (4.8 to 8.9 percentage points) and 22.9 to 35.7 per cent for North American Indians (7.4 to 12.0 percentage points), must be interpreted carefully. While some proportion of it is may be due to discrimination, little evidence exists on this subject in the case of Aboriginal Canadians. More likely, some productive characteristics were not observable and were thus not included in the analysis (such the average quality of the education received, for example).

Appendix 2 : Detailed Regression Results

Appendix Table 2: Means for the Variables Included in the Regression for the Three Populations

	Aboriginal Canadians	North American Indians	Non-Aboriginal Canadians
Education (reference: Less than grade 9)			
Grades 9 to 13	27.59	27.20	17.15
Completed High School	10.99	10.43	14.88
Trades certificate (not from college)	4.78	5.30	3.52
Trades certificate (from college)	9.58	8.83	7.63
College diploma	12.22	11.85	14.61
Some college education	10.12	10.61	7.13
Some university education	5.26	5.39	5.19
University certificate below bachelor's degree	5.65	6.11	7.06
Bachelor's degree	4.83	4.61	13.20
Certificate above bachelor's, master's degree or doctorate	1.47	1.39	5.88
Experience	18.34	18.81	19.99
Experience squared	505.44	519.83	583.83
Full-time employment	58.22	56.73	69.00
Not living in a selected CMA	63.70	67.78	35.09
Marital Status (reference: Never married)			
Divorced	5.06	4.87	5.25
Married	54.45	55.14	61.59
Widowed	1.51	1.62	1.13
Separated	3.58	3.27	2.60
Language (reference: English only)			
French only	2.68	3.40	10.84
Bilingual	11.26	7.68	21.60
Neither French nor English	0.45	0.41	0.62
Province (reference: Ontario)			
Newfoundland	1.74	1.13	1.57
Prince Edward Island	0.09	0.15	0.48
Nova Scotia	1.61	1.96	2.92
New Brunswick	1.69	1.98	2.45
Quebec	7.59	9.01	23.94
Manitoba	15.07	12.31	3.39
Saskatchewan	9.44	8.63	2.86
Alberta	17.56	14.58	10.61
British Columbia	17.94	21.48	12.64
Territories	5.65	3.35	0.20

Weeks of work (reference: Less than 6 weeks)			
6 to 10 weeks	6.42	6.85	3.08
11 to 15 weeks	4.68	4.95	2.96
16 to 20 weeks	7.30	8.01	4.56
21 to 25 weeks	4.10	4.27	2.54
26 to 30 weeks	6.43	6.51	4.30
31 to 35 weeks	2.88	3.04	2.26
36 to 40 weeks	7.16	7.03	5.37
41 to 45 weeks	3.01	2.68	3.15
46 to 50 weeks	10.24	9.58	15.31
51 to 52 weeks	40.07	38.48	52.19

Appendix Table 3: Regression Results by Aboriginal Identity

	Aboriginal Canadians	**North American Indians**	**Non-Aboriginal Canadians**
Constant	6.997	6.998	7.177
Education (reference: Less than grade 9)			
Grades 9 to 13	0.070	0.087	-0.050
Completed High School	0.255	0.234	0.090
Trades certificate (not from college)	0.243	0.222	0.217
Trades certificate (from college)	0.372	0.306	0.283
College diploma	0.354	0.307	0.316
Some college education	0.148	0.122	0.163
Some university education	0.290	0.304	0.282
University certificate below bachelor's degree	0.456	0.387	0.365
Bachelor's degree	0.619	0.626	0.582
Certificate above bachelor's, master's degree or doctorate	0.792	0.853	0.642
Experience	0.035	0.032	0.043
Experience squared	0.000	0.000	-0.001
Full-time employment	0.539	0.523	0.678
Not living in a selected CMA	-0.101	-0.088	-0.069
Marital Status (reference: Never married)			
Divorced	0.014	0.010	0.037
Married	0.239	0.245	0.173
Widowed	0.173	0.066	0.071
Separated	0.120	0.188	0.085
Language (reference: English only)			
French only	-0.059	-0.095	-0.066
Bilingual	0.040	-0.054	0.031
Neither French nor English	-0.360	-0.210	-0.338
Province (reference: Ontario)			

Newfoundland	0.041	-0.010	-0.072
Prince Edward Island	-0.291	-0.311	-0.110
Nova Scotia	-0.071	-0.028	-0.191
New Brunswick	-0.140	-0.173	-0.122
Quebec	0.022	0.048	-0.067
Manitoba	-0.119	-0.219	-0.148
Saskatchewan	-0.226	-0.281	-0.175
Alberta	-0.070	-0.166	-0.028
British Columbia	-0.002	-0.051	-0.003
Territories	0.118	0.153	0.261
Weeks of work (reference: Less than 6 weeks)			
6 to 10 weeks	0.145	0.173	0.093
11 to 15 weeks	0.620	0.723	0.469
16 to 20 weeks	0.878	0.905	0.759
21 to 25 weeks	1.001	1.066	0.949
26 to 30 weeks	1.296	1.313	1.132
31 to 35 weeks	1.323	1.431	1.256
36 to 40 weeks	1.471	1.568	1.314
41 to 45 weeks	1.675	1.600	1.442
46 to 50 weeks	1.674	1.723	1.567
51 to 52 weeks	1.802	1.869	1.663

Appendix 3: Explanations of Different Assumptions for the Projection of Output and Productivity to 2026

A number of assumptions are made about the three variables (education, income, and employment rate) considered in our projections. This appendix explains all of them in detail. Appendix table 1 summarizes the assumptions for each scenario examined in the report.

A. Share of Aboriginal Population in Educational Attainment Groups

The Aboriginal population is separated into 14 categories according to their highest level of educational attainment. The shares of the population in each group are assumed to take three sets of values in 2017, namely:

- 2001 level: This assumes no change. The shares of the Aboriginal population in 2026 in each educational category are kept at their 2001 level.
- Half of the gap eliminated: The shares of the Aboriginal population in 2026 in each educational category are assumed to take the mid-point between the share of the Aboriginal population in 2001 and the share of the non-Aboriginal population in 2001.
- Complete elimination of the gap: The shares of the Aboriginal population in 2026 are assumed to take the values of the non-Aboriginal population in 2001.

B. Average Employment Income of the Aboriginal Population

The average employment income for the Aboriginal population in 2026 given the educational level is assumed to take two sets of values:

- It is assumed to increase at the same rate as that of the overall workforce, which is forecast to be 46.0 per cent over the 2001-2026 period in real terms (Dungan and Murphy, 2007).
- It is assumed to reach parity with that of the non-Aboriginal population. In this case, the average employment income of the Aboriginal population in 2017 at a given education level would be the same as the non-Aboriginal income in 2026.

C. Employment Rate of the Aboriginal Population

Employment rates of Aboriginal individuals are in general lower than the non-Aboriginal population at a given level of education. In 2026, the rates can be assumed to take two different sets of values:

- 2001 level: No change assumed in the education-specific Aboriginal employment rates from the 2001 level.

- Elimination of the Aboriginal/non-Aboriginal employment gap: The employment rates of the Aboriginal population in each education group are assumed to reach the level of the 2001.

Appendix 4: Levels of Use

Appendix Table 4: Age Factor – Health care

	Relative Health care expenditure per person - 2001	Aboriginal Population (%)	Total Canadian Population (%)		
	A	B	C	D = A*B	E = A*C
0-14	1	0.297	0.177	0.297	0.177
15-24	1.30	0.181	0.134	0.235	0.174
25-34	1.31	0.138	0.127	0.181	0.166
35-44	1.35	0.145	0.152	0.195	0.206
45-54	1.74	0.122	0.157	0.213	0.275
55-64	2.27	0.069	0.116	0.157	0.264
65-74	4.61	0.033	0.072	0.153	0.334
75-84	8.72	0.013	0.048	0.109	0.421
85+	18.88	0.003	0.016	0.048	0.311
Summation				1.588	2.327
Age Factor = [sum(D)/sum(E)]				**0.683**	

Source: Health Canada (2001)

Appendix Table 5: Age Factor - Housing

Age Group	Housing Expenditure (%)	Aboriginal Population (%)	Total Population (%)	Age Group Over (>1) or Under (<1) Represented	Spending Assuming Aboriginal Age Structure
	A	B	C	D = A/C	E = B*D
0-54	0.5	0.883	0.747	0.670	0.591
55+	0.5	0.117	0.253	1.973	0.231
Age Factor					**0.823**

Source: Waslander (1997)

Appendix Table 6: Age Factor - Child and Family Services

Age Group	Child and Family Services Expenditure (%)	Aboriginal Population (%)	Total Population (%)	Age Group Over (>1) or Under (<1) Represented	Spending Assuming Aboriginal Age Structure
	A	B	C	D = A/C	E = B*D
0-14	1	0.297	0.177	5.666	1.685
15+	0	0.703	0.823	0.000	0.000
Age Factor					**1.685**

Assumes all child and family services expenditure is directed towards children

Source: 2006 Census

Appendix Table 7: Age Factor - Protection of Persons and Property

Age Group	Percentage of Individuals Aged 15 and over Sentenced to Federal or Provincial Custody	Age Distribution of the Aboriginal Population (%)	Distribution of the Total Population (%)	Age Group Over (>1) or Under (<1) Represented	Spending Assuming Aboriginal Age Structure
	A	B	C	D = A/C	E = B*D
15-19	6.0	10.07	6.77	0.89	0.089
20-24	20.0	8.01	6.58	3.04	0.243
25-29	16.0	6.97	6.28	2.55	0.178
30-34	15.0	6.81	6.39	2.35	0.160
35-39	15.0	6.95	6.99	2.15	0.149
40-44	14.0	7.50	8.26	1.70	0.127
45-49	8.0	6.76	8.29	0.97	0.065
>50	7.0	17.19	32.79	0.21	0.037
SUM(E)	101.0	70.3	82.3		1.048
Age Factor = SUM(E)/SUM(A)					**1.039**

Source: Landry and Maire (2007)

Appendix Table 8: Age Factor - Transfer Payments

Percentage age 65 and over			Percentage below 18 years			Total Age Factor
Aboriginal	Total	Age Factor	Aboriginal	Total	Age Factor	
A	B	C = A/B	D	E	F = D/E	C and F weighted by expenditure
0.048	0.137	0.351	0.363	0.217	1.672	0.79

Source: 2006 Census, Statistics Canada (2008b)