Understanding Aboriginal Literacy Markets in Canada: A segmentation analysis

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Section 1

Introduction

The following report has been drafted by DataAngel Policy Research Incorporated under contract to Bow Valley College. The project has been funded by the Office of Literacy and Essential Skills at Human Resources and Skills Development Canada as one element in a larger project that is focused on the development of assessment and instruction tools for use by employers and providers of literacy programs. The report presents an economic analysis of literacy in Canada's Aboriginal adult populations. More specifically the report provides estimates of the level of literacy skill demand by occupation, of literacy skill supply by labour force status and occupation and estimates of the size of literacy skill shortages and surpluses and the costs and benefits of eliminating shortages through instruction provided to various groups of Aboriginal adults with each province and Territory.

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Evidence is mounting that Canada's future economic success will depend upon finding ways to raise the average level of literacy in the adult population (DataAngel, 2009). Canada's high level of dependence on inter-provincial and international trade implies that literacy skills will influence the nations's economic prospects more than other countries.

Higher levels of literacy would help to support higher levels of adult learning and will increase the rate at which firms can adopt more knowledge and information- intense technologies of production and work organization.

Higher literacy levels can also be expected to reduce the incidence and costs of workplace injury and accident.

The resultant productivity growth would help maintain the competitiveness of Canada's firms in what is becoming a fiercely competitive global economy.

On a positive note, Canada's overall average level of adult literacy skill is high relative to many of its trading partners (Statistics Canada and OECD, 2005)

Nevertheless a large proportion of Canada's adults do not appear to possess the level of skill that is needed for satisfactory job performance (HRSDC, 2008).

To make matters worse, recent analysis suggests that the proportion of adults with less than adequate skill levels will remain more or less unchanged over the coming decades (CCL, 2008).

As a group, Canada's adult Aboriginal populations appear to face higher levels of risk due to their literacy levels. They have lower average literacy scores, are more likely to have skills that fall in one of the two lowest proficiency levels and to live in rural areas where the labour market demand for literacy skills are lower than their non-Aboriginal peers. Aboriginal workers are also more likely to work in jobs that demand lower levels of literacy and, thus, earn lower wages than their non-Aboriginal peers.

On a positive note, Canada's Aboriginal adults are younger on average than their non-Aboriginal peers and the gap in educational attainment between Aboriginal and non-Aboriginal youth is closing rapidly.

Raising average Aboriginal literacy skill levels, and reducing the proportion of Aboriginal adults with skills below that needed to do their jobs, will require higher levels of investment and participation in adult literacy programs.

This report attempts to shed light on the economic dimensions of the literacy problem that Canada's Aboriginal adults face.

The report does so by providing estimates of:

- the labour market demand for prose literacy by industry and occupation for various groups of Aboriginal adults in each Canadian jurisdiction and how this demand compares to that facing non-Aboriginal adults
- how the demand for prose literacy skill is projected to evolve over the coming decades in response to shifts in the occupational distribution of employment
- the supply of prose literacy that Aboriginal adults possess and how much is utilized by the Canadian labour market
- the prose literacy skill shortages, balances and surpluses by industry and occupation for various groups of Aboriginal adults
- the cost of eliminating Aboriginal prose literacy skill shortages through the provision of remedial instruction designed to raise them to the level of prose literacy skills associated with satisfactory job performance
- the potential direct economic benefits that could be precipitated by the elimination of prose literacy skill shortages
- the implied rates of return on investment
- estimates of the proportion of Aboriginal workers in literacy skill shortage whose incomes fall below Statistics Canada's Low Income Cut-off

The goal of the report is to highlight how literacy skill shortage will impair the labour market success of Canada's Aboriginal adults and by extension, the performance of Canada's economy.

Section 2

Background

This chapter provides readers with an overview of the issues that motivated the production of the report, how the report is organized and who might benefit from reading the report. The authors apply an economic framework which explores the levels of literacy skill demand that prevail in Canada's provincial and territorial labour markets, that profiles the supply of literacy skill that Aboriginal and non-Aboriginal workers could bring to these markets and how Canada's labour market utilizes the literacy skills of both Aboriginal and non-Aboriginal workers. The overall goal of the report is to identify demand deficiencies, supply shortages and surpluses and instances when the markets that match worker skill to the occupational demands of their occupations appear to be inefficient.

The motivation for the report

Evidence is mounting that Canada's future economic success will depend upon finding ways to raise the average level of literacy in the adult population (DataAngel, 2009). A central assumption underlying this analysis is that literacy will have an even more pronounced impact on the relative economic and social success of Canada's adult Aboriginal populations.

Higher levels of literacy will help improve worker employability and productivity. The Canadian labour market is among one of the most efficient at recognizing and rewarding higher levels of literacy skill with more work and higher wages. This implies that workers with relatively low literacy skills will be less successful in getting and keeping high wage stable employment.

Higher levels of literacy will help to support higher levels of adult learning and will increase the rate at which firms can adopt more knowledge and information- intense technologies of production and work organization.

Higher literacy levels can also be expected to reduce the incidence and costs of workplace injury and accident. The resultant productivity growth will help maintain the competitiveness of Canada's firms in what is becoming a fiercely competitive global economy.

Improved literacy levels are also expected to precipitate other benefits, including higher levels of population health and social and democratic participation and reductions in current levels of social inequality in these outcomes.

On a positive note Canada's overall average level of adult literacy skill is high relative to many of its trading partners (Statistics Canada and OECD, 2005)

Nevertheless a large proportion of Canada's adults do not appear to possess the level of

skills that is needed for satisfactory job performance (HRSDC, 2008). As a group Aboriginal adults in Canada have significantly lower average literacy skills than their non-Aboriginal peers but there is considerable geographic variation in average scores and among sub-groups of the population and by age (Statistics Canada and HRSDC, 2005). Thus, literacy skill will influence the relative success of each group to a different degree. Those Aboriginal groups that have relatively high skill levels will, all other things being equal, experience relatively good outcomes.

To make matters worse recent analysis suggests that the proportion of adults with less than adequate skill levels will remain more or less unchanged over the coming decades (CCL, 2008). Although there is limited empirical evidence to confirm the fact, rapid increases over the past decade in the average years of schooling obtained by Aboriginal adults is likely to have precipitated a reduction in the proportions of Aboriginal adults with skills with skills below Level 3 - the skill level needed to take full advantage of education at the post-secondary level, to manage everyday health demands, to compete in Canada's labour markets and to participate democratically. Concerns about the relative quality of the education that Aboriginal students receive suggest, however, that the reduction in the proportion of low-skilled Aboriginal adults may not be as high as implied by the growth in years of schooling.

Moreover, the proportion of Aboriginal adults with literacy skills below Level 3 varies significantly geographically and among Aboriginal sub-groups of the population and by age (Statistics Canada and HRSDC, 2005). Thus, those groups of Aboriginal adults with the highest proportions of low literacy skill will see their relative labour market success constrained the most.

Canada's high level of dependence on inter-provincial and international trade implies that literacy skills will influence the nation's economic prospects more than other economies.

Raising average literacy skill levels, and reducing the proportions of adults with skills below that needed to do their jobs, will require higher levels of investment and participation in adult literacy programs. Additional investments might come from a variety of sources including individuals, employers and various levels of government. It is not clear who should assume responsibility for investments in Aboriginal adults.

Achieving higher levels of literacy investment and participation will depend, in turn, on engaging Canada's employers. The fact that most adults with what a judged to be inadequate levels of literacy skill are working creates incentives for their employers to invest and suggests that instructional programs need to be tailored for the workplace.

There is reason to believe that failing to eliminate prose literacy skill shortages rapidly will seriously constrain the rate at which firms can adopt more productive technologies of production and work organization. Thus, a failure to invest rapidly could force Canadian firms to either reduce wages and benefits or outsource production to lower cost locales. Both of these are business strategies that would reduce employment and income levels in Canada. As noted above, the geographic distribution of Aboriginal adults makes them particularly susceptible to these effects.

The recent economic turmoil in Canada is having a dramatic impact on the skill intensity of employment. Job losses have been concentrated in sectors with lower literacy levels. If the arguments set out in this volume prove to be true then the processes of economic disruption and displacement have only just begun – reason enough for Canadian policy makers to pay attention to literacy. Aboriginal workers will represent an increasingly important source of net labour growth so their skills will matter more than they have in the past.

Who should use this report

This report seeks to improve the productivity of Canada's markets for literacy goods and services by providing market intelligence to key industry players. More specifically, the report is designed to serve the information needs of six audiences.

First, the analyses will serve the needs of firms in the Aboriginal literacy "industry" by providing them with a nuanced portrait of the learning needs and characteristics of different groups of potential learners over the full range of industries and occupations. Armed with a clearer idea of the size of each of the important market segments and their revenue potential, institutions offering literacy goods and services can make better investment and marketing decisions.

Second, the analyses should help adult educators serving Aboriginal populations to engineer their products and services to better meet the specific needs of different groups of adult learners.

Third, the report is provides politicians, and their policy advisors, with a clearer set of policy options related to adult literacy. The efficiency and effectiveness of Canada's current remedial literacy investments are limited by the fact that current data provides little insight into the learning needs of different groups of adult Canadians with limited literacy skill nor how these skill deficits are likely to influence the prospects of various industry sectors. The available data have not provided a clear sense of which groups of learners need government support and where individuals and their employers should support skill upgrading. This is particularly true for Canada's Aboriginal adults.

Fourth, the report is designed to provide Aboriginal adults with low literacy skills with a better sense of what their learning needs might be, what kinds of programs would be best suited to their needs, what level of investment would be required for them to reach the level needed to do their jobs and what economic benefits they might expect as a result.

Fifth, the report is designed to serve the needs of Canada's employers, including the industry associations, sector councils and other groups that focus on the collective needs of their members. Armed with a clear idea of the magnitude of the literacy challenge within their respective industries and what level of investment would be required to eliminate any prospective skill shortages where Aboriginal workers represent an important potential source of workers would help them focus their recruitment and training.

Finally, the report has been designed to meet the needs of the voting public.

Despite the overwhelming evidence to the contrary, literacy has not been high on the public or private agenda. It is only once the voting public understands how much our economic future depends upon raising adult literacy levels that politicians will be willing to invest more public resources in the problem.

In meeting the needs of these audiences the report offers answers to a series of fundamental questions, including:

What groups of Aboriginal adults need what kinds of help to raise their literacy levels?

What kinds of literacy programs would best meet the needs of the different kinds of Aboriginal learners in Canada?

Which industries and occupations have the highest proportions of Aboriginal workers with inadequate literacy skills?

Which groups of Aboriginal adults have the financial resources to help themselves?

Which groups of adults have employers who could, and should, bear the cost of upgrading their skills?

The organization of the report

In order to respond to the issues identified in the background outlined above the report is organized into 9 chapters.

Chapter 2 provides readers with a sense of the policy issues that underlie the research and what related research has revealed about the impact that literacy has on the labour market outcomes of Aboriginal workers in Canada. The chapter identifies an ordered set of research questions that the report will attempt to answer.

Chapter 3 profiles the geographic, demographic and labour market participation of adult Aboriginal populations in Canada. The chapter relies on comparisons to Canada's non-Aboriginal populations by jurisdiction to highlight similarities and differences that are likely to influence the impact that literacy skill is likely to have on the labour market outcomes of Aboriginal adults. The analyses show that Aboriginal adults are younger, less educated and more likely to live in rural areas than their non-Aboriginal peers – all factors that will influence their literacy and labour market outcomes.

Chapter 4 documents the demand for literacy skill that prevails in Canada's labour markets and how the level of occupational demand facing Aboriginal adults differs from that facing non-Aboriginal populations. The analyses reveal that Aboriginal adults are much more likely to be working in occupations that demand lower levels of literacy skill.

Chapter 5 profiles the average level and distribution of literacy skills of Aboriginal adults and the relationship between literacy skill and labour market participation.

Chapter 6 compares the supply of literacy to the labour market demand for literacy skill at several levels. These analyses provide a range of measures that reflect on the efficiency of Canada's labour markets with respect to literacy skill. The chapter identifies significant inefficiencies in how labour markets utilize the available supply of literacy skill. The analyses identify significant inefficiencies in how the available supply of skill is utilized for economic ends – inefficiencies that imply a equally seriously of economic output.

Chapter 7 extends the analysis of the efficiency of labour markets to the individual level. The analyses document that Canada's labour markets do not seem to do a good job of matching the occupational demands of work with the skill levels of workers in those occupations. The analyses reveal that Aboriginal workers face a lower probability of being in literacy skill shortage and surplus than their non-Aboriginal peers. This finding must be interpreted with care. While it might be taken as a sign of efficiency in Aboriginal labour markets we believe that the effect is largely attributable to the fact that Aboriginal workers are much more likely to find themselves in occupations that demand lower levels of literacy skills.

Chapter 8 extends the analysis of literacy skill shortages to focus on what it would take to eliminate literacy skill shortages through "best practice" instruction and what direct and indirect benefits might be realized if the economy made use of the newly created skill. The chapter divides Aboriginal workers in literacy skill shortage into groups on the basis of their shared learning needs.

Chapter 9 summarizes key findings that were revealed by the analyses and reflects on what the evidence implies for policy.

The report is supported by 4 annexes.

Annex A provides references cited in the publication

Annex B includes the stastisticsl tables thast were used to produce the figure

Annex C

Annex D

Section 3

A profile of Aboriginal demography and labour market participation

This chapter begins by defining a set of sub-groups within Canada's adult Aboriginal population. This is not a straightforward as one might think. For the purposes of these analyses Aboriginal groups have been defined by a combination of status, urban density, residency on an Indian Reserve and self-reported Aboriginal ethnic origins. The resulting classification yields seven distinct groups each of which differs in absolute size and geographic distribution. The chapter then provides an overview of the demography and labour market participation of key groups of Aboriginal adults. The characteristics of various groups Aboriginal adults are compared to non-Aboriginal adults by province and territory.

The evidence presented confirms the presence of significant differences both among the various groups of Aboriginal adults and between Aboriginal adults and non-Aboriginal adults. Key findings include that, when compared to their non-Aboriginal peers, Aboriginal adults:

Are younger on average

Tend to have lower levels of formal education

Are less likely to be employed

Are more likely to be unemployed or not in the labour force

In addition Aboriginal women tend to more educated than Aboriginal men but are less likely to be active in the labour market.

The analysis reveals even larger differences among various groups of Aboriginal adults – differences that inevitably exert a profound influence on their relative labour market success. For the purposes of these analyses adulthood is defined as anyone over the age of 16.

3.1 Aboriginal groups in Canada

The analysis classified Aboriginal adults based upon whether they were:

A member of an Indian Band

Living in an urban or a rural area

Living on an Indian Reserve

Reported themselves as having Aboriginal ancestry on the 2006 Census of Population

Classification in this way yields four Aboriginal groups as follows:

Band members living on-Reserve: Adults aged 16 and over who are classified as members of an Indian Band (and who thus have status under the Indian Act) and who were resident on an Indian Reserve at the time of the 2006 Census of Population in May, 2006.

Band members living off Reserve: Adults aged 16 and over who are classified as members of an Indian Band (and who thus have status under the Indian Act) and who were resident other than on an Indian Reserve at the time of the 2006 Census of Population in May, 2006.

Non-band members living on reserve: Adults aged 16 and over who are not members of an Indian Band and who were resident on an Indian Reserve at the time of the 2006 Census of Population in May, 2006.

Non-band members living off reserve: Adults aged 16 and over who are not members of an Indian Band and who were resident other than on an Indian Reserve at the time of the 2006 Census of Population in May, 2006. This group is referred to as "Other Aboriginal" through out this volume.

The process of classification identifies three groups of non-Aboriginal adults as follows:

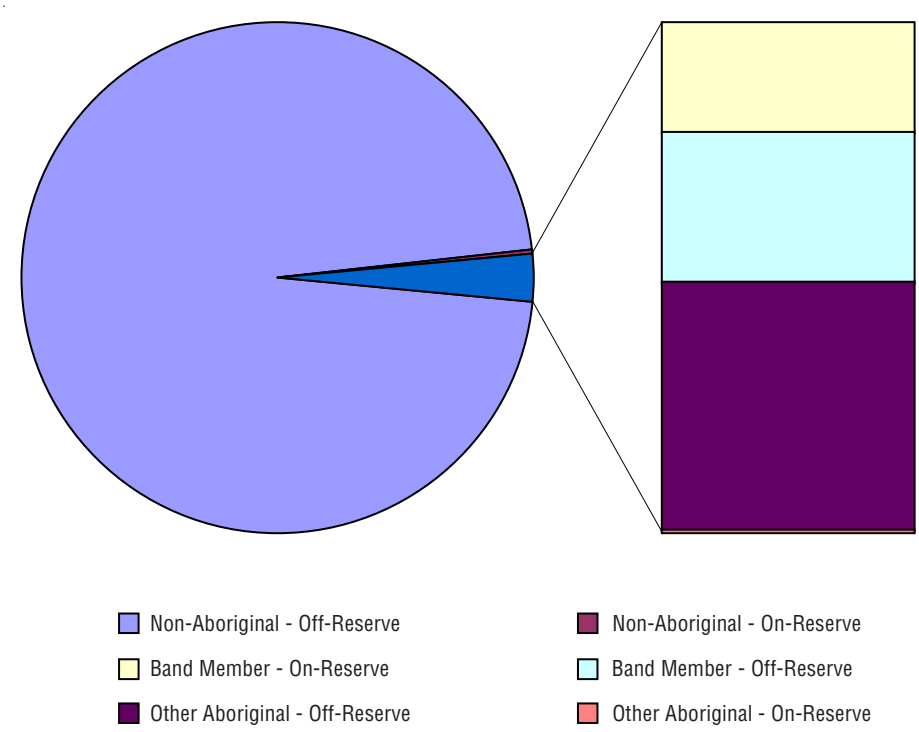
Non-Aboriginals living off Reserve: Adults aged 16 and over who are not members of an Indian Band, who reported no Aboriginal ancestry on the 2006 Census and who were resident on other than an Indian Reserve at the time of the 2006 Census of Population in May, 2006.

Non-Aboriginals living on Reserve: Adults aged 16 and over who are not members of an Indian Band, who reported no Aboriginal ancestry on the 2006 Census and who were resident on than an Indian Reserve at the time of the 2006 Census of Population in May, 2006.

3.2 A demographic profile of Canada's Aboriginal and non-Aboriginal populations

The economic theory that underlies the literacy measures that are employed in this analysis posits that a market mechanism is responsible for matching the occupational demand for literacy skill to the supply of literacy skill possessed by workers. Although literacy is only one of several skills and attributes upon which worker selection processes depend, the available evidence suggests that, all other things being equal, candidates with the highest literacy skills will be the first to be hired or promoted. Canada's labour markets appear to be among the most economically efficient in this respect as wages depend more on literacy skill than in any other country than the People's Republic of China. Given the degree to which Canada's labour markets select upon and reward literacy skill any difference in the relative skill levels of Canada's Aboriginal workers will impair their relative labour market success. Figure 3.1 provides readers with a sense of the relative size of each of the Aboriginal groups identified above.

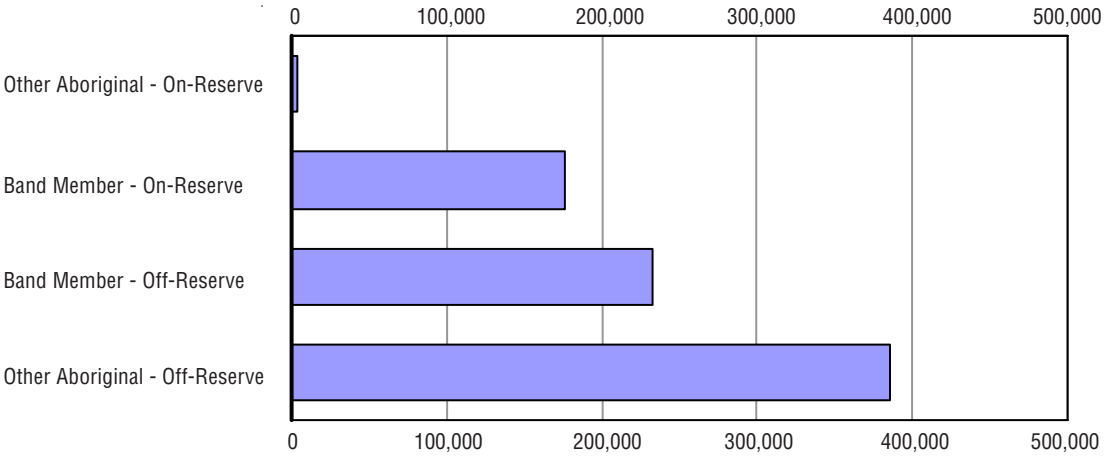
Figure 3.1
Distribution of the Aboriginal population by Band membership and residence, adults aged 16 and over, Canada



Source: 2006 Census of Population and IALSS, 2003.

Figure 3.2 plots the absolute size of the Aboriginal groups.

Figure 3.2
Population by Aboriginal groups, Canada, 2006



Source: 2006 Census of Population and IALSS, 2003.

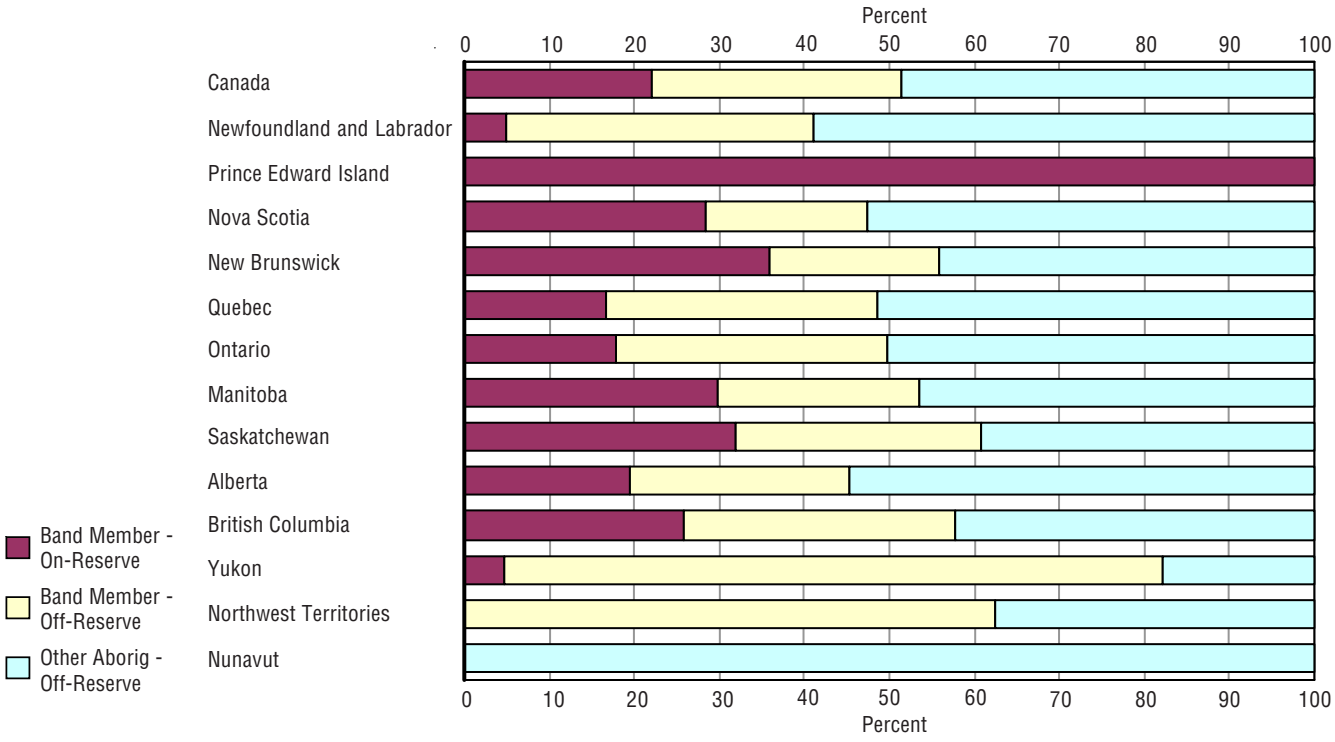
The figures reveal several important facts including that:

> Aboriginal adults represent only 3.1% of the adult population aged 16 and over in Canada.
>
> Three Aboriginal groups dominate the classification. Other Aboriginal adults living off reserve is the largest group representing an estimated 386,000 persons or 1.5% of the Canadian adult population. Band members living off reserve is the second largest group with 232,000 adults or 0.9% of the Canadian population aged 16 and over. Band members living on reserve represent only 0.7% of the adult population with 176,000 adults.
>
> Only 22.5% of Aboriginal adults are living on reserve.

These results hold implications for the present analysis. First, the relatively small proportions of Aboriginal adults means that their relative skill levels will have little impact on the performance of the Canadian economy at the Canada level. Second, the overwhelming majority (77.5%) of adults reporting Aboriginal ancestry live off reserve and hence compete for work directly in their local labour markets.

Figure 3.3 extends the profile of Aboriginal populations by breaking the initial classification by the more traditional classification by ethnic origin i.e. by Indian, Inuit and Metis.

Figure 3.3
The distribution of Aboriginal populations by group, Canada and the jurisdictions, 2006

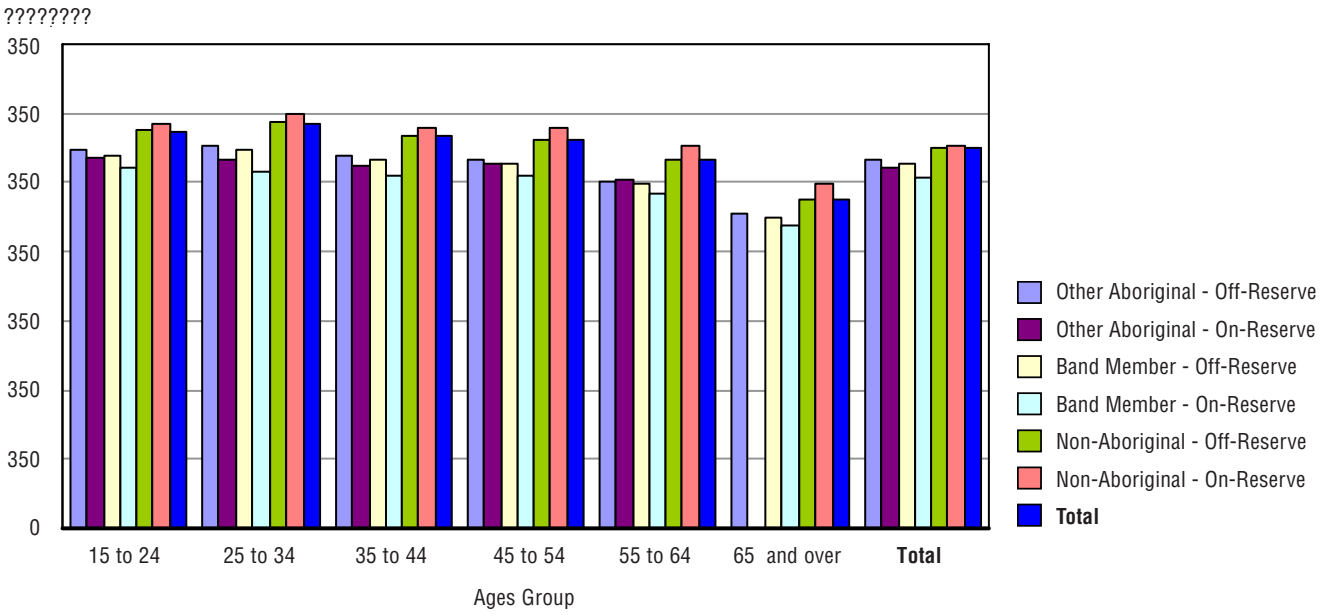


Source: 2006 Census of Population.

Figures 3.4, 3.5 and 3.6 profile the distribution of Canada's Aboriginal populations against the off-reserve adult population by age and gender, level of educational attainment and labour force status. The goal of these analyses is to highlight differences that might be expected to influence the relative economic and social success of Canada's Aboriginal adults in important ways.

Figure 3.4

The distribution of population by age group, Aboriginal and non-Aboriginal adults aged 16 and over living off reserve, Canada, 2006

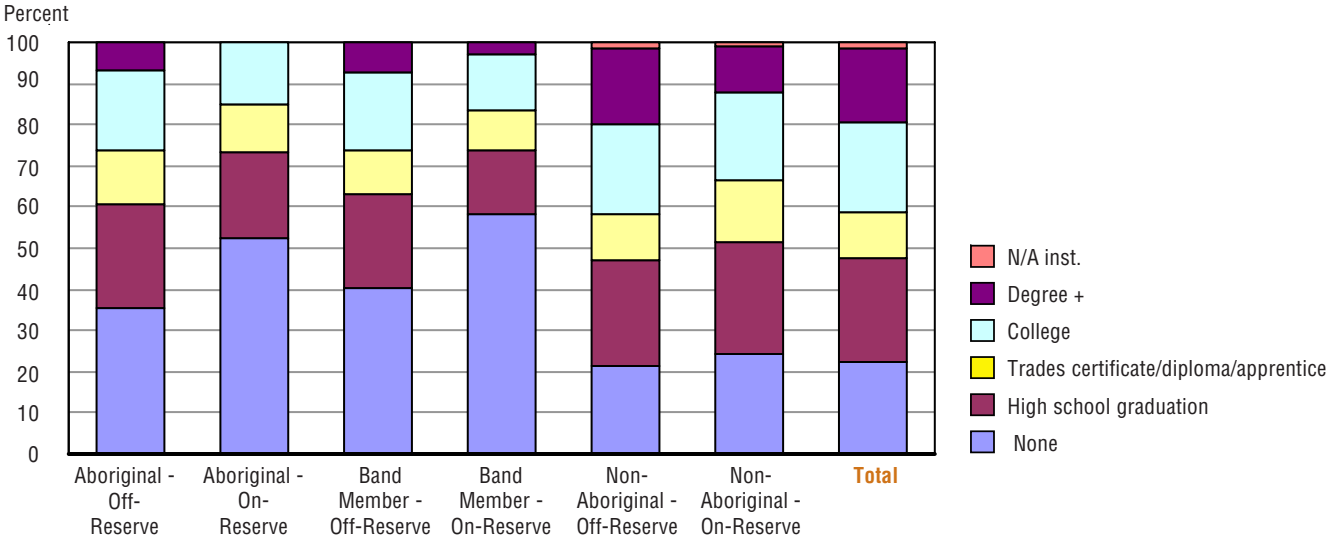


Source: 2006 Census of Population.

The figure reveals that the adult Aboriginal population of Canada generally have lower average literacy scores than their non-Aboriginal peers. Interestingly, the gap in scores is relatively constant by age group, a fact that suggests that the quality of education is more important than the quality of education. There also appears to be a significant amount of variation by Aboriginal sub-population with Band Members living on reserve having lower average scores than their Aboriginal peers.

Figure 3.5

The distribution of population by educational attainment, selected Aboriginal and non-Aboriginal adults aged 16 and over, Canada, 2006



Source: 2006 Census of Population and IALSS, 2003.

The figures reveal that Canada's Aboriginal adult population is much less educated than their non-Aboriginal peers living off reserve. More detailed observations include that:

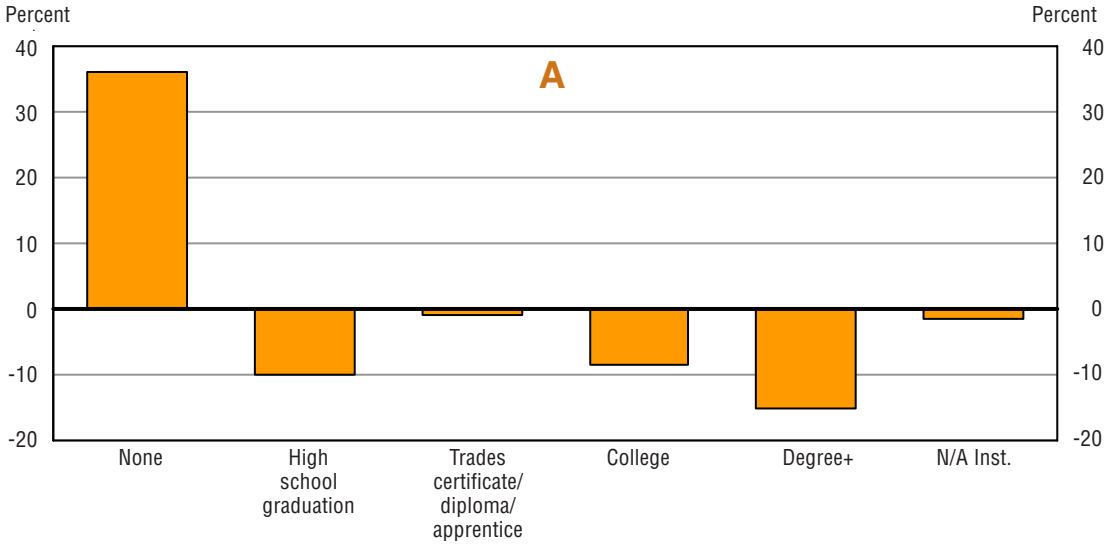
> The proportions of Band members on reserve (58%) and Aboriginals on reserve (49%) with less than a high school education is relatively high. This compares to 22% of non-Aboriginals living off reserve.
>
> The proportions of Aboriginals with university degrees are lower than for non-Aboriginals living off reserve. 19% of non-Aboriginals living off reserve have this level of qualification compared to 7% for band members and Aboriginals living off reserve.

Labour market selection and promotion processes depend on a great extent on educational qualifications as a screening device to reduce the number of candidates. Thus, the fact that off-reserve Aboriginal populations are much less likely to have post-secondary qualifications places them at a great disadvantage in their respective labour markets. The even lower attainment levels of Band members living on-reserve are likely to place them at an even greater disadvantage in their respective labour markets.

Figures 3.6 A to F compare the distribution of educational attainment to the national distribution by Aboriginal sub-group. These comparisons highlight cases where Aboriginal populations are either advantaged, or disadvantaged, by their educational attainment.

Figure 3.6 A

Comparative Educational Attainment Distribution by Aboriginal Group: Band Members - On Reserve, Canada, 2006

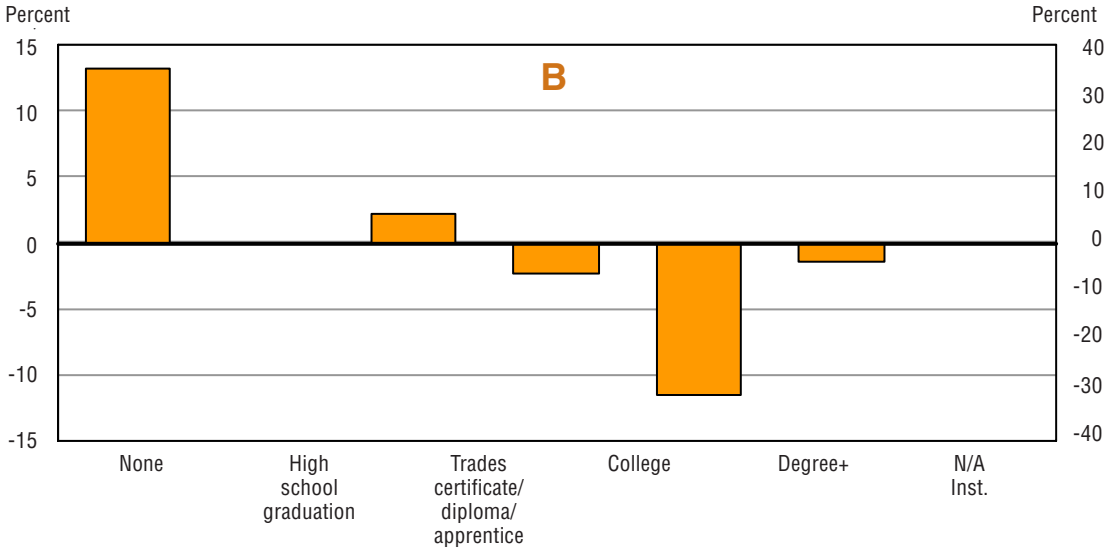


Source: 2006 Census of Population and IALSS, 2003.

Band members living on reserve have a higher proportion of adults with less than high school completion and lower proportions of adults with higher levels of educational attainment

Figure 3.6 B

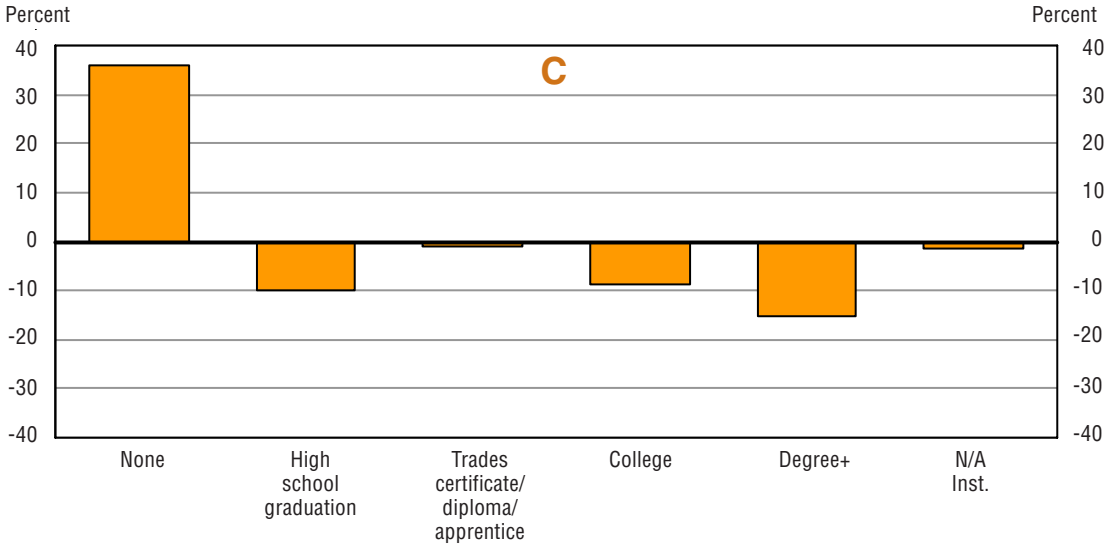
Comparative Educational Attainment Distribution by Aboriginal Group: Aboriginal - Off-Reserve, Canada, 2006



Source: 2006 Census of Population and IALSS, 2003.

Figure 3.6 C

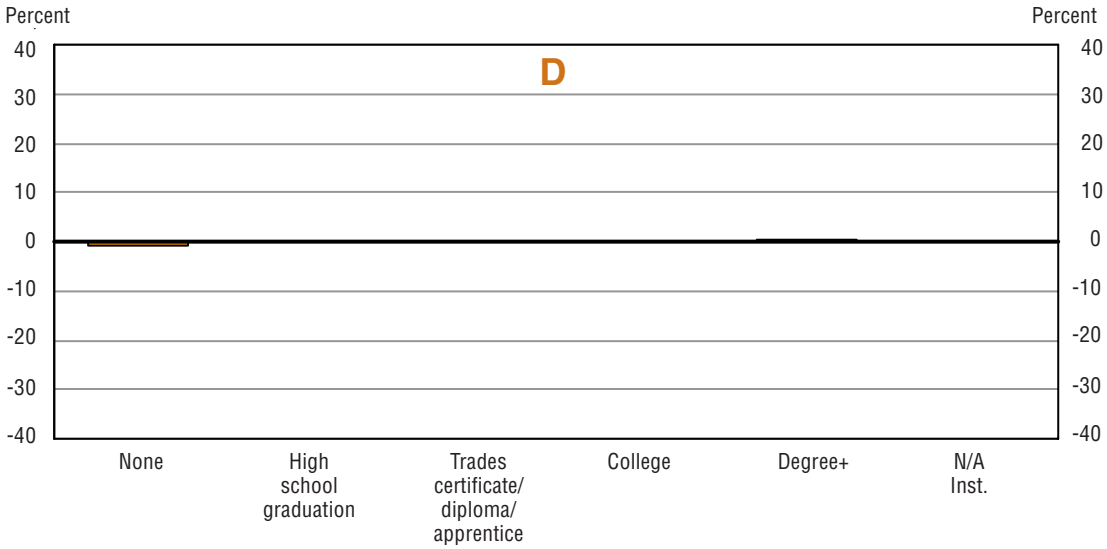
Comparative Educational Attainment Distribution by Aboriginal Group: Band Member - On-Reserve, Canada, 2006



Source: 2006 Census of Population and IALSS, 2003.

Figure 3.6 D

Comparative Educational Attainment Distribution by Aboriginal Group: Non-Aboriginal - On-Reserve, Canada, 2006



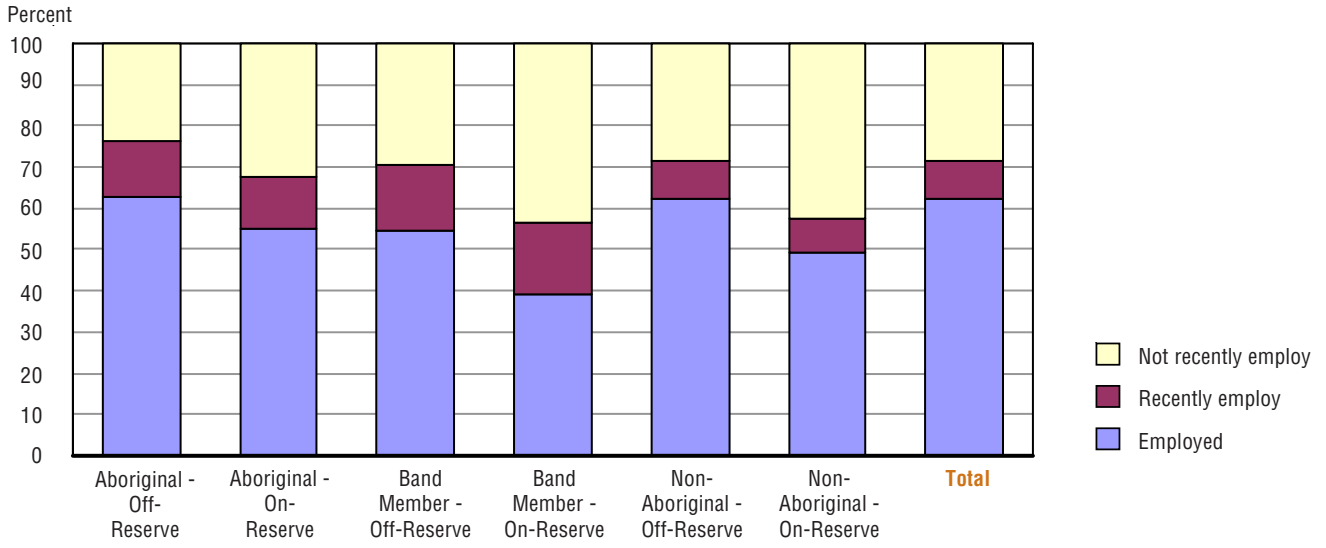
Source: 2006 Census of Population and IALSS, 2003.

Aboriginals living off reserve have a higher proportion of adults with less than high school completion and trades certificates, diplomas and apprenticeships. Aboriginals living off reserve have lower proportions of adults with the other higher levels of educational attainment. The gap in attainment is particularly pronounced at the university degree level.

Figure 3.7 plots the labour force participation of Aboriginal and non-Aboriginal groups. Those who are recently employed have worked at a job or business in the 5 years preceding the 2006 Census.

Figure 3.7

The distribution of population by labour force status, Aboriginal and non-Aboriginal adults aged 16 and over, Canada, 2006



Source: 2006 Census of Population and IALSS, 2003.

Figures 3.8 A to C compare the labour market participation of Aboriginal populations to the Canadian averages. These comparisons highlight cases where Aboriginal populations are either advantaged, or disadvantaged, in their access to the labour market.

Figure 3.8 A

Comparative Labour Force Distribution by Aboriginal Group: Other Aboriginal - On-Reserve, Canada, 2006

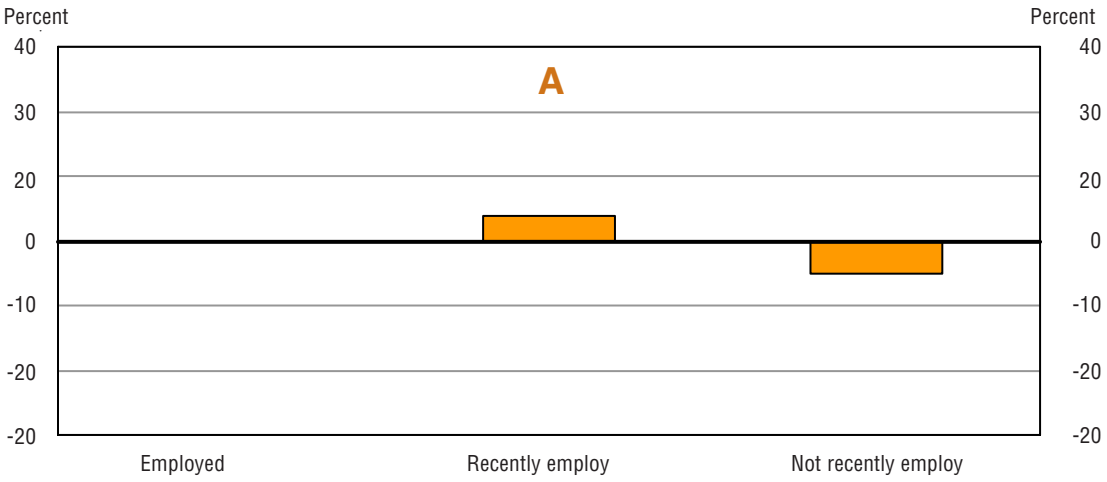


Figure 3.8 B

Comparative Labour Force Distribution by Aboriginal Group: Band Member - On-Reserve, Canada, 2006

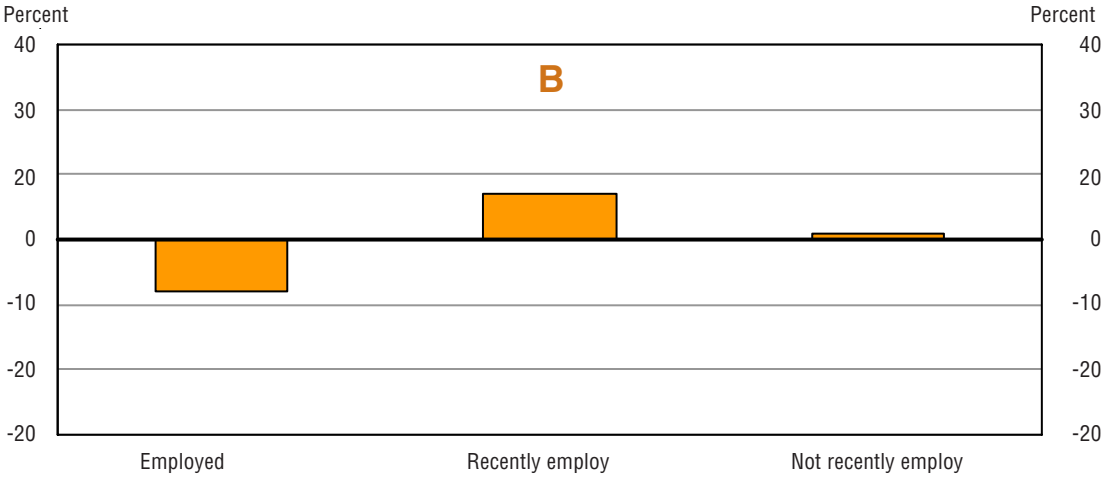
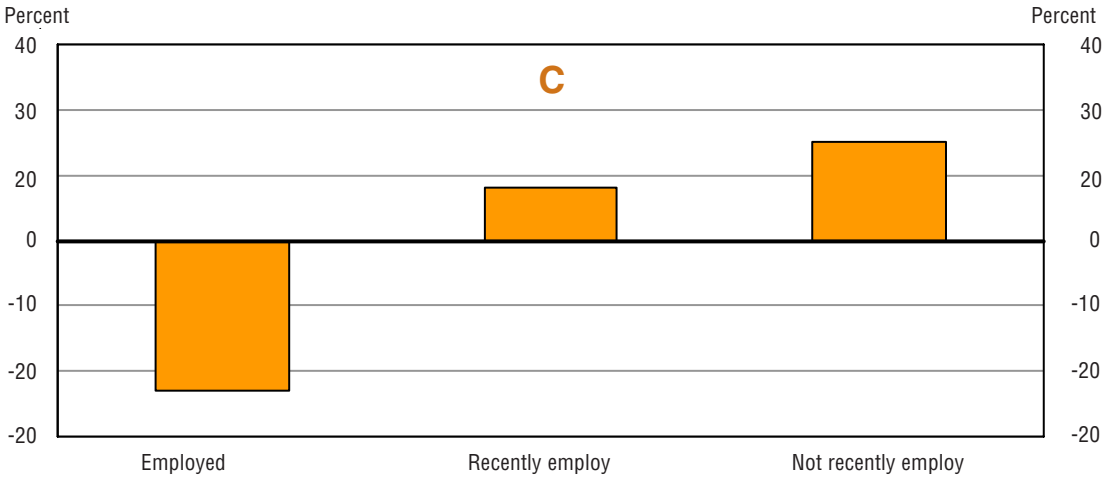


Figure 3.8 C

Comparative Labour Force Distribution by Aboriginal Group: Band Member - On-Reserve, Canada, 2006



The figure reveals that band members are less likely to be employed. Band members living on reserve appear to be at a significant disadvantage in the Canadian labour market - 23% fewer of these adults are employed. Band members living off reserve are less likely to be employed than the comparison group and are more likely to have worked in the past 5 years and to have been out of the labour market for the past 5 years.

These findings carry implications for policy. Lower rates of employment generally imply lower levels of labour income and, by extension, lower standards of living. Higher rates of unemployment and proportions of adults out of the labour force are likely to have the same effect on incomes. In addition, lower rates of labour market participation expose Aboriginal adults to higher risks of experiencing literacy skill loss associated with a lack of skill use in employment and reduces their access to workplace-based adult learning. Over time skill loss and reduced opportunities to engage in adult learning are likely to reinforce the relative skill disadvantage of Aboriginal adults.

Section 4

The demand for literacy skill in Aboriginal labour markets

The labour market demand for literacy skill is defined by the occupational distribution of employment, the technologies of production that are employed and how work is organized. This chapter compares estimates of the demand for literacy skill by literacy proficiency level of Aboriginal employment to non-Aboriginal employment. The estimates were derived by applying HRSDC's Essential Skill Profiles to the distribution of employment by occupation observed in the 2006 Census of Population. The text boxes below provide a capsule summary of these two data sources.

The Essential Skill Profiles

Human Resources and Skills Development Canada (HRSDC) has funded the Essential Skills Research Program (ESRP). One of the key products produced under the program are a set of Essential Skills Profiles, a statistical system designed to provide estimates of skill demand for each of the 576 occupations identified in Canada's National Occupational Classification (NOC). Each profile reveals the proficiency level of nine "essential" skills is associated with satisfactory job performance in that occupation. Reading text and document use are two of the essential skills included in the profiles. The ES literacy profiles provide two proficiency levels that are associated with satisfactory job performance – a usual level and an occasional level.

Interested readers may see http://www.hrsdc.gc.ca/es/ESprofiles.aspx for more detailed information on the ESRP and the Essential Skills Profiles.

Levels of proficiency in reading

The 2003 International Adult Literacy and Skills Survey (IALSS) was a large scale comparative assessment of adult prose literacy, document literacy, numeracy and problem solving skills in English and French (Statistics Canada, 2005). The sample size was large enough to support analysis at national and provincial level and was among the first national surveys to include samples large enough to produce estimates for each of Canada's three northern Territories. IALSS data is available for some 3,500 Aboriginal adults aged 16 and over – a large enough sample to support a detailed analysis of their proficiency levels and the relationship between literacy skill and various indicators of success including success in Canada's labour

markets. Proficiency on the IALSS prose literacy scale is estimated on a 500 point scale. This allows average proficiency levels to be computed for different groups of adults. The 500 point prose literacy scale has also been divided into five proficiency levels. The cut points between these levels are theoretically justified in that they represent points at which one observes shifts in the underlying skills needed to perform at a satisfactory level. The levels are also empirically justified in the sense that each level is associated with marked shifts in the impact of skill upon outcomes such as wages and employability. Individuals are placed at a level by having an 80% or better probability of getting tasks of that level of difficulty correct.

Both the demand-side ES profiles and the supply-side IALSS incorporate a scale of reading proficiency that is divided into 5 levels as shown in the table below.

Five levels of difficulty for the prose and document literacy scales

Levels	Prose	Document
Level 1 (0-225 points)	Most of the tasks in this level require the respondent to read relatively short text to locate a single piece of information that is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.	Tasks in this level tend to require the respondent either to locate a piece of information based on a literal match or to enter information from personal knowledge onto a document. Little, if any, distracting information is present.
Level 2 (226-275 points)	Some tasks in this level require respondents to locate a single piece of information in the text; however, several distractors or plausible but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the respondent to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.	Tasks in this level are more varied than those in Level 1. Some require the respondents to match a single piece of information; however, several distractors may be present, or the match may require low-level inferences. Tasks in this level may also ask the respondent to cycle through information in a document or to integrate information from various parts of a document.
Level 3 (276-325 points)	Tasks in this level tend to require respondents to make literal or synonymous matches between the text and information given in the task, or to make matches that require low-level inferences. Other tasks ask respondents to integrate information from dense or lengthy text that contains no organizational aids such as headings. Respondents may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present, but is not located near the correct information.	Some tasks in this level require the respondent to integrate multiple pieces of information from one or more documents. Others ask respondents to cycle through rather complex tables or graphs containing information that is irrelevant or inappropriate to the task.
Level 4 (326-375 points)	These tasks require respondents to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks at this level and must be taken into consideration by the respondent.	Tasks in this level, like those at the previous levels, ask respondents to perform multiple-feature matches, cycle through documents, and integrate information; however, they require a greater degree of inference. Many of these tasks require respondents to provide numerous responses but do not designate how many responses are needed. Conditional information is also present in the document tasks at this level and must be taken into account by the respondent.
Level 5 (376-500 points)	Some tasks in this level require the respondent to search for information in a dense text that contains a number of plausible distractors. Others ask respondents to make high-level inferences or use specialized background knowledge. Some tasks ask respondents to contrast complex information.	Tasks in this level require the respondent to search through complex displays that contain multiple distractors, to make high-level text-based inferences, and to use specialized knowledge.

Two charts are displayed for each jurisdiction. The first chart compares the distribution of the demand for prose literacy skill by the proficiency level faced by Aboriginal workers to that faced by non-Aboriginal workers. To the extent that Aboriginal workers find themselves working in jobs that demand lower levels of skill might explain some of why they have lower wage rates and earnings.

The second chart displays the difference in the percentage distribution of skill demand by proficiency level between Aboriginal and non-Aboriginal workers – a display that makes it easy to see where the gaps are greatest.

Figures 4.1 and 4.2 present results at the national level.

Figure 4.1 reveals that Aboriginal demand is skewed towards lower proficiency levels. Figure 4.2 shows that that 6% more of the jobs held by Aboriginal workers are at Level 2 and that there are fewer Level 3, 4 and 5 jobs.

Figure 4.1

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over, 2003

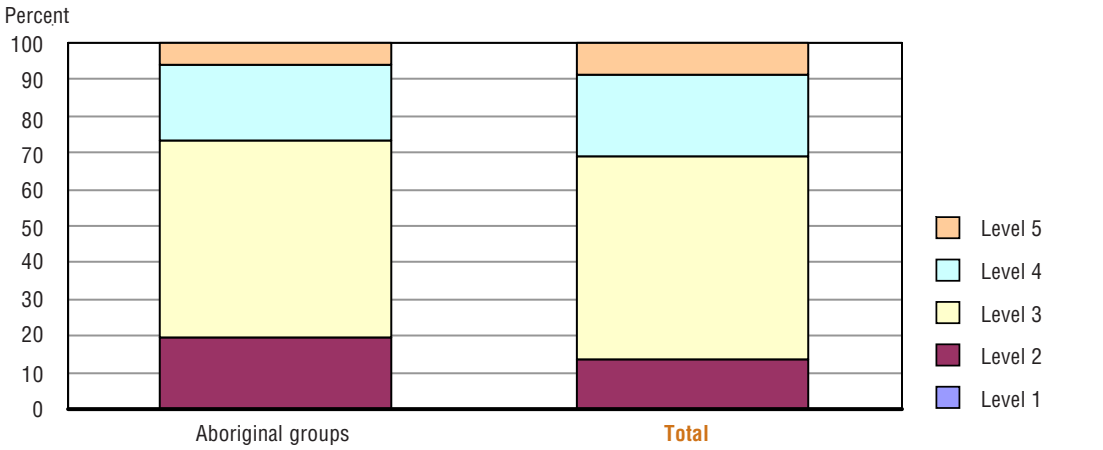
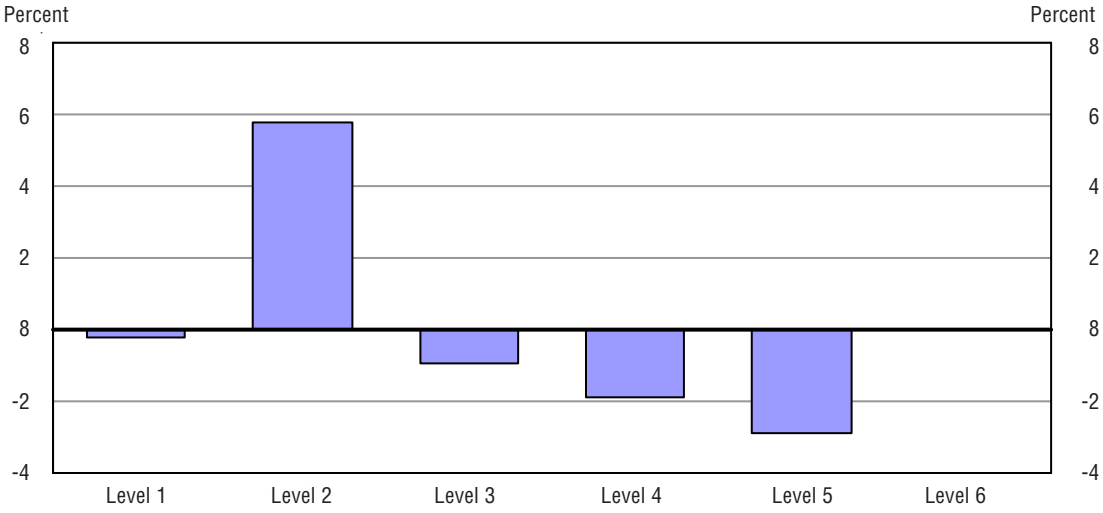


Figure 4.2

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for location



Figures 4.3 to Figure 4.26 present similar information for each jurisdiction save Prince Edward Island where the estimates of Aboriginal jobs by proficiency level are too small too release. The figures reveal roughly the same result prevails in all jurisdictions – Aboriginal workers occupy jobs that demand lower skill levels –but the relative magnitude of the demand disadvantage varies significantly from jurisdiction to jurisdiction.

Figure 4.3

Distribution over skill levels for Aboriginals and all Canadians for Newfoundland and Labrador, 2006

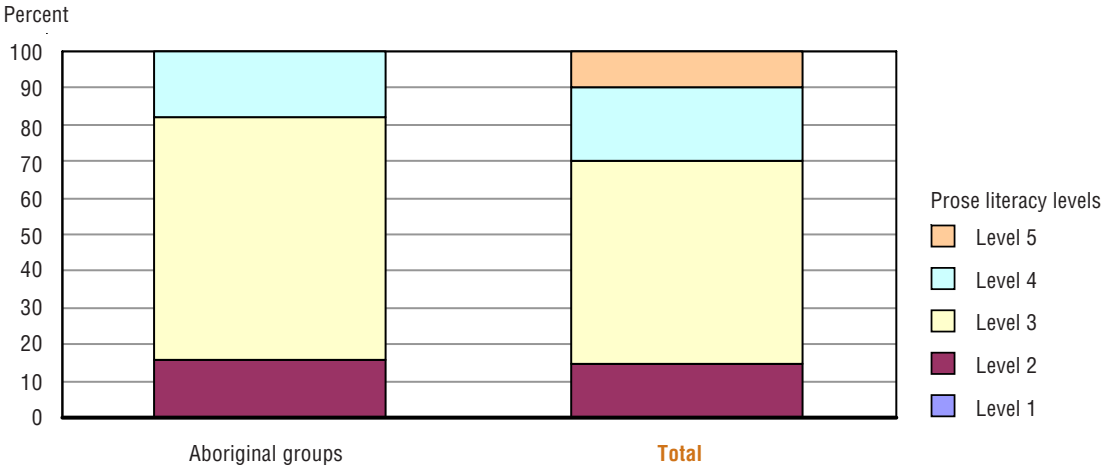
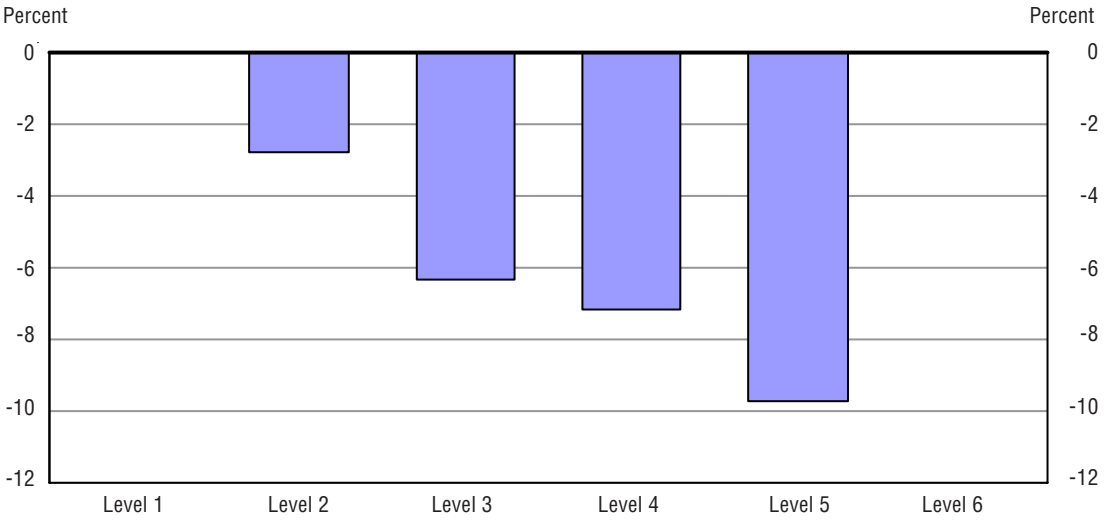


Figure 4.4

Difference in skill level between Aboriginal groups and the total population for Newfoundland and Labrador, 2006



In Newfoundland and Labrador Aboriginal demand is lower than that for the non-Aboriginal population at all proficiency levels but rises dramatically by level to almost 10%.

Figure 4.5

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 over for Nova Scotia, 2006

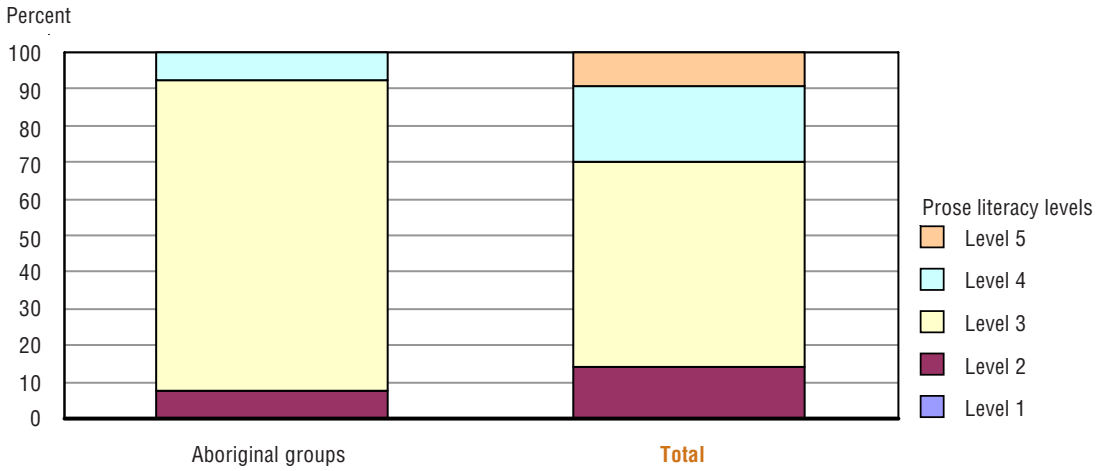
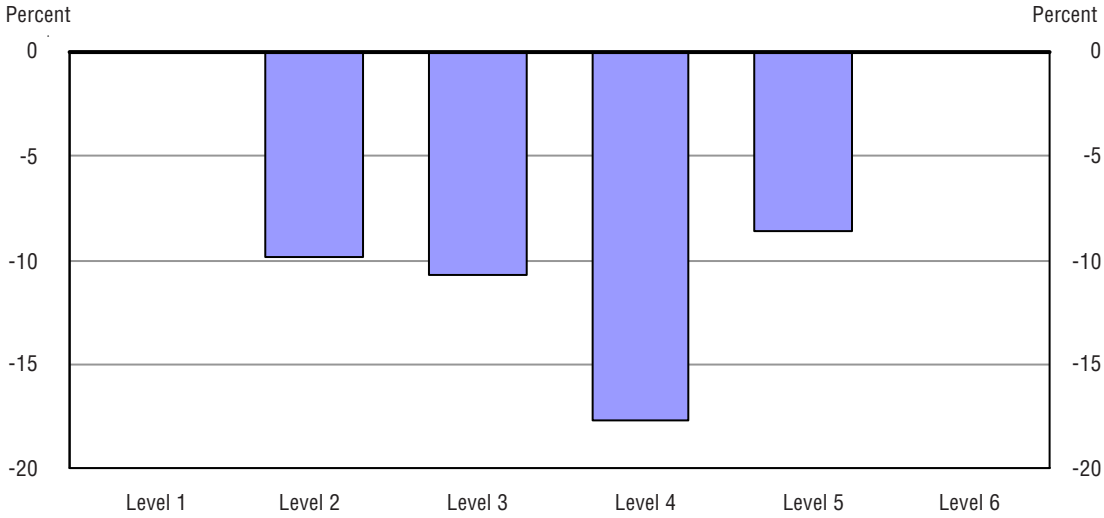


Figure 4.6

Difference in skill level between Aboriginal groups and the total Population, employed adults aged 16 and over for Nova Scotia, 2006



A much larger proportion of total Aboriginal employment in Nova Scotia s at Level 2 than in non-Aboriginal jobs. There is a significant lack of Aboriginal jobs at Level 4 in Nova Scotia.

Figure 4.7

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over for New Brunswick, 2006

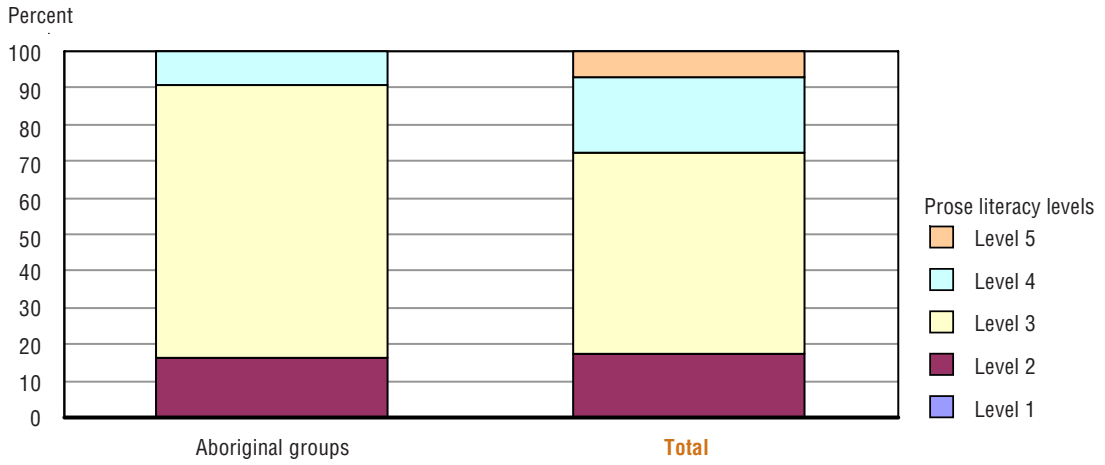
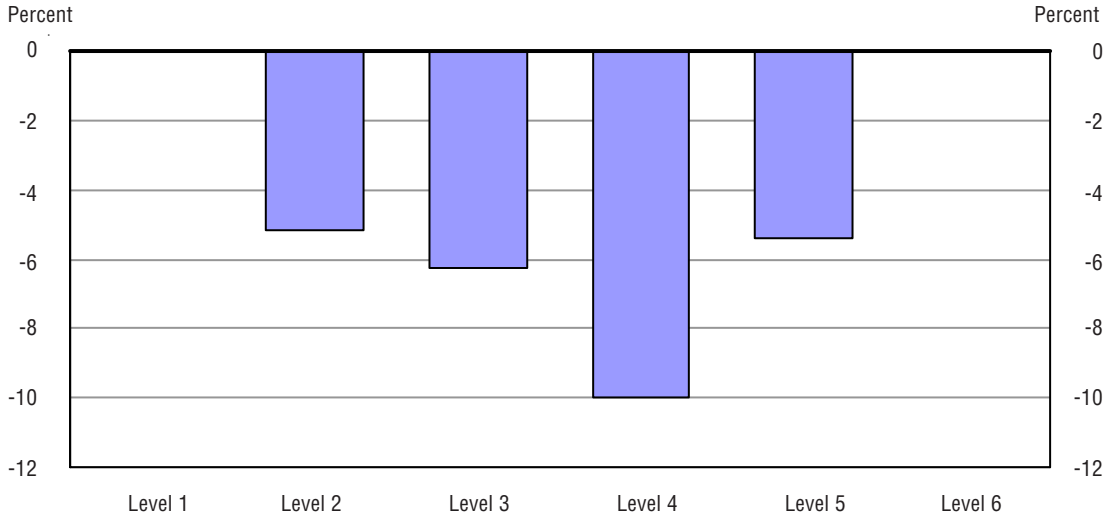


Figure 4.8

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for New Brunswick,2006



Like Nova Scotia there is a much larger proportion of total Aboriginal employment in New Brunswick at Level 2 than in non-Aboriginal jobs. Similarly, the demand deficit for Aboriginal jobs is particularly pronounced at Level 4.

Figure 4.9
Distribution over skill levels for Aboriginals and all Canadians for Quebec, 2006

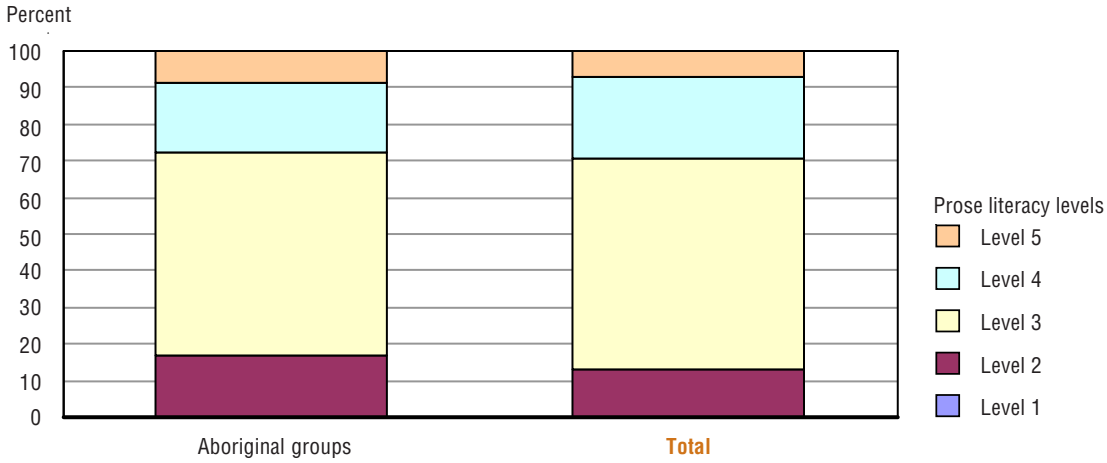
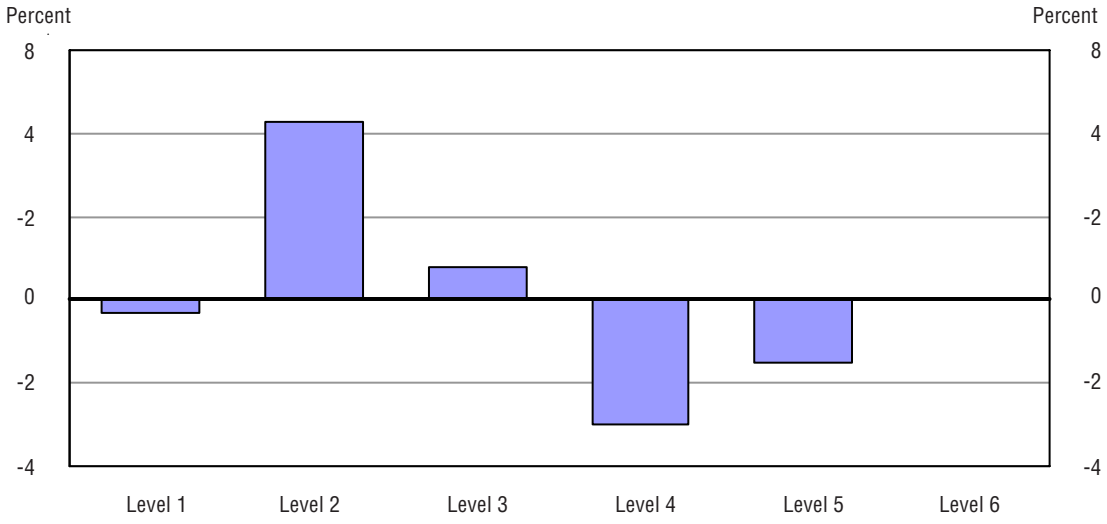


Figure 4.10
Difference in skill level between Aboriginal Groups and the total population, employed adults aged 16 and over for Quebec, 2006



In Quebec jobs held by Aboriginal workers are much more likely to be at Level 2 and are less likely to be at Levels 1, 4 and 5.

Figure 4.11

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over for Ontario, 2006

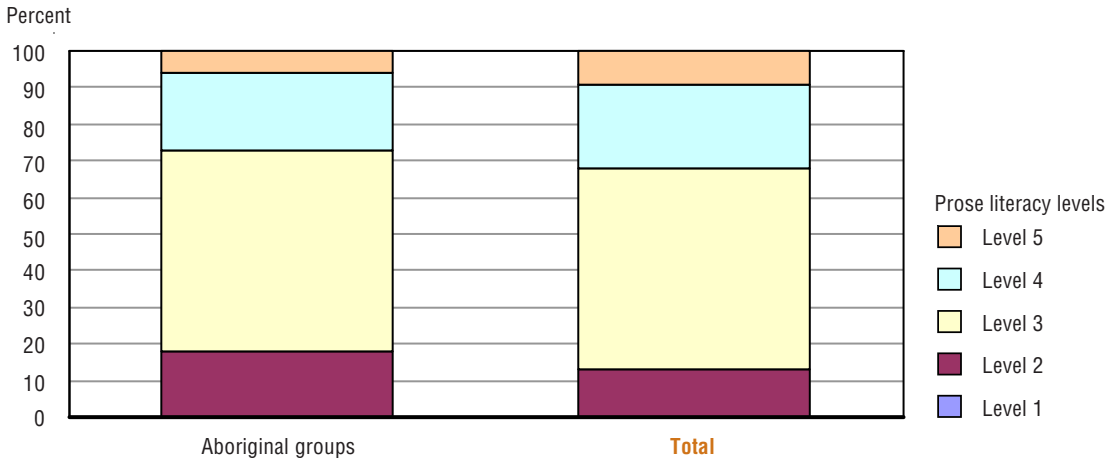
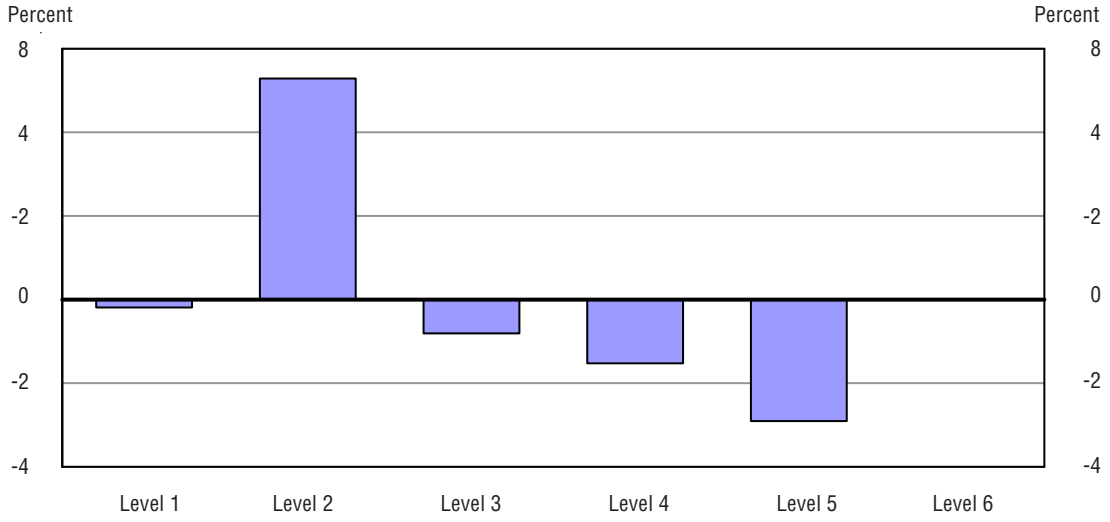


Figure 4.12

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for Ontario, 2006



The pattern of Aboriginal demand deficiency observed in Ontario is similar to that observed in Quebec. The Ontario economy appears to have created more Level 2 Aboriginal jobs.

Figure 4.13

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over for Manitoba, 2006

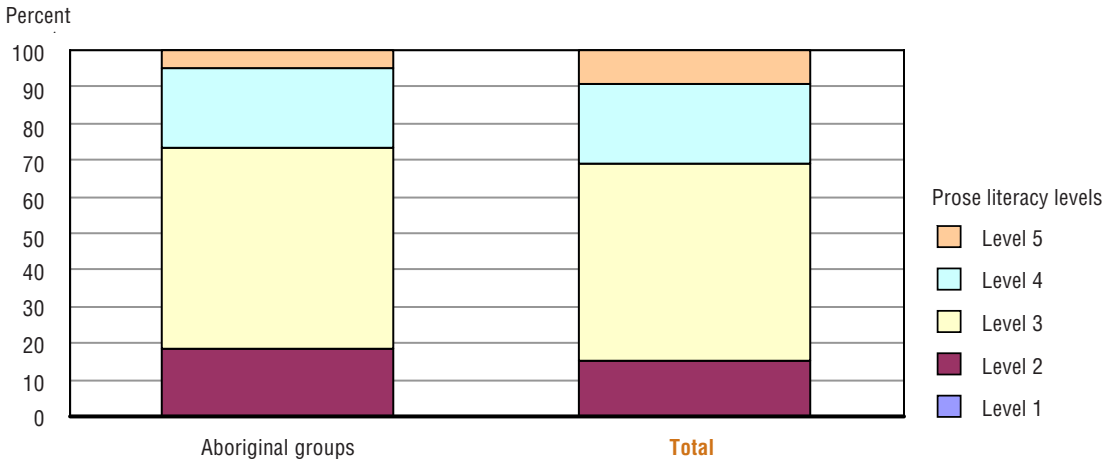
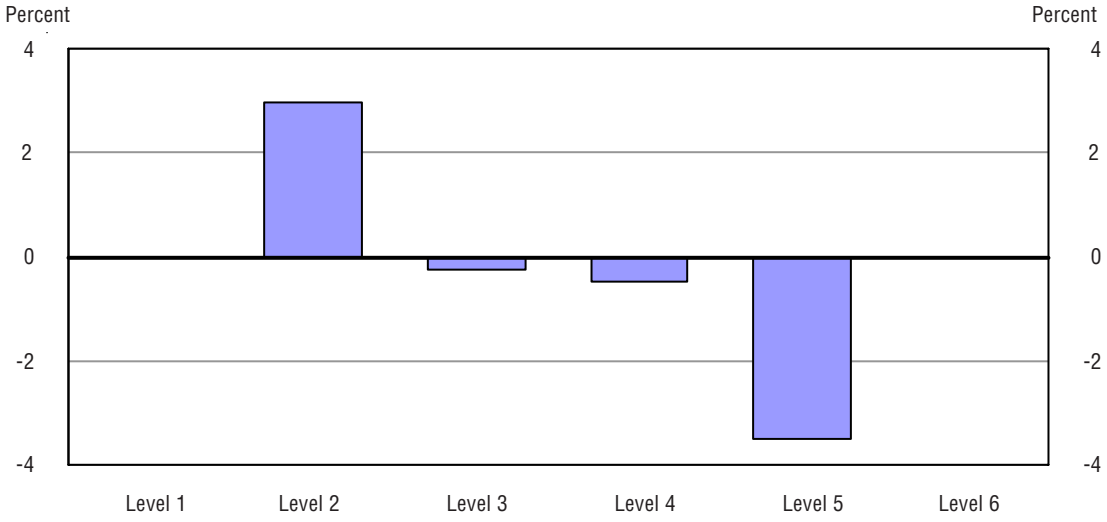


Figure 4.14

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for Manitoba, 2006



The pattern of demand differences observed in Manitoba and Saskatchewan are quite different.with a smaller surfeit of Level 2 and far fewer Level 5 jobs.

Figure 4.15

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over for Saskatchewan, 2006

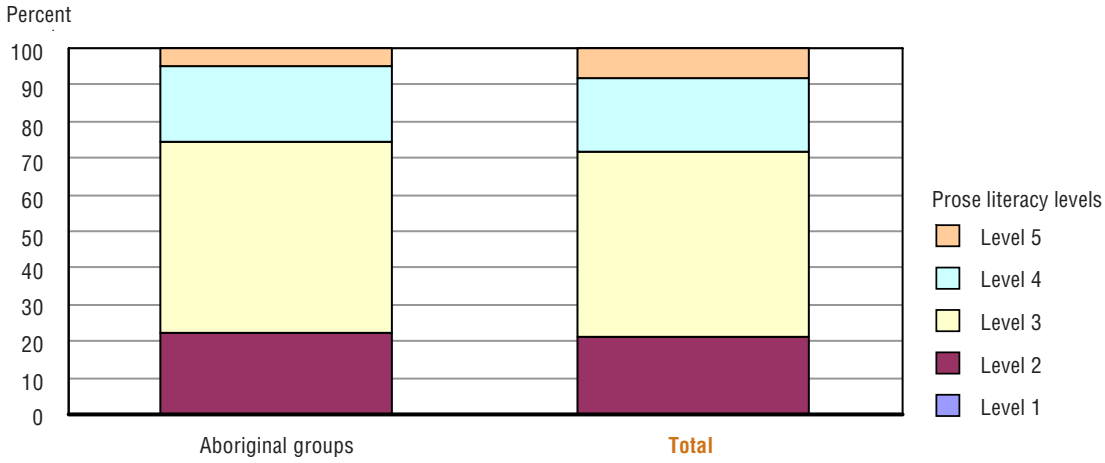


Figure 4.16

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for Saskatchewan, 2006

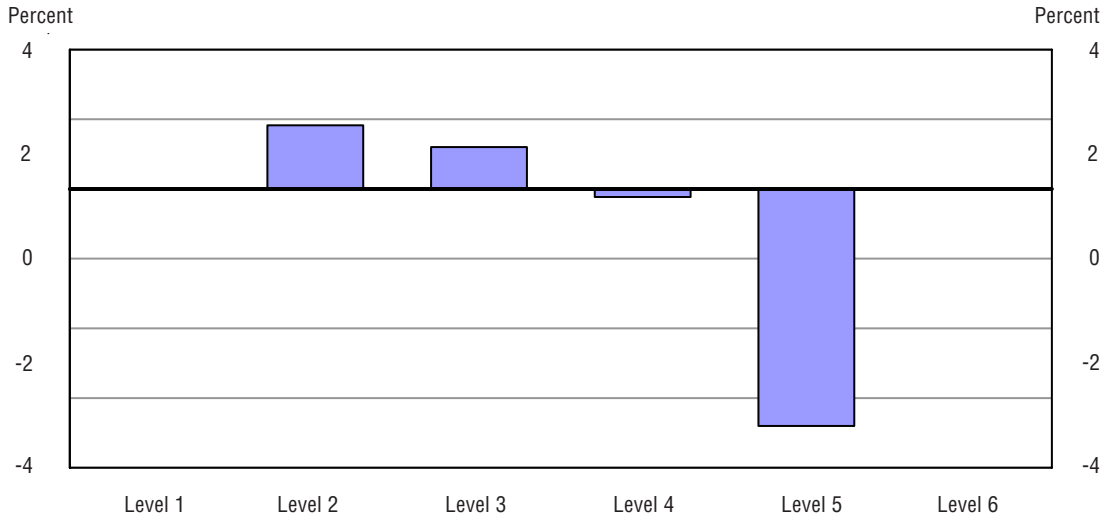


Figure 4.17

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over for Alberta, 2006

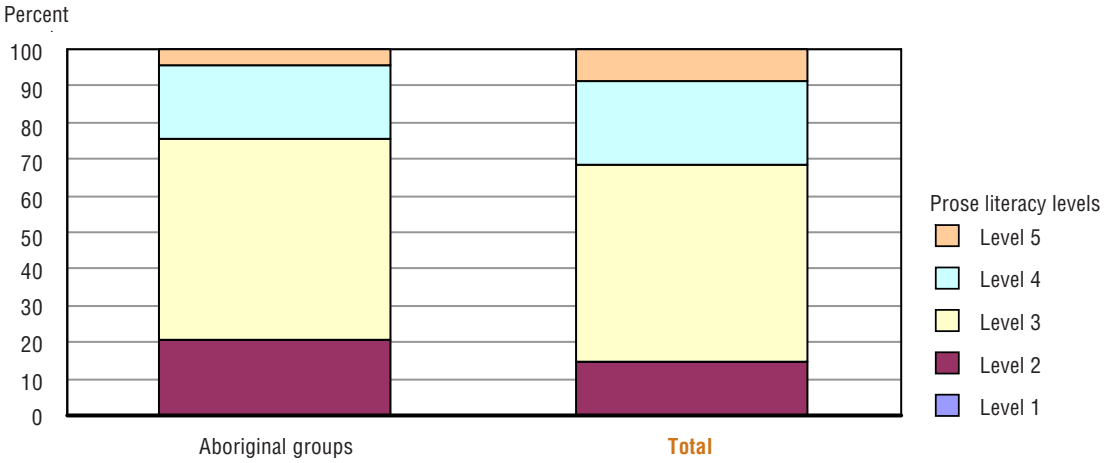
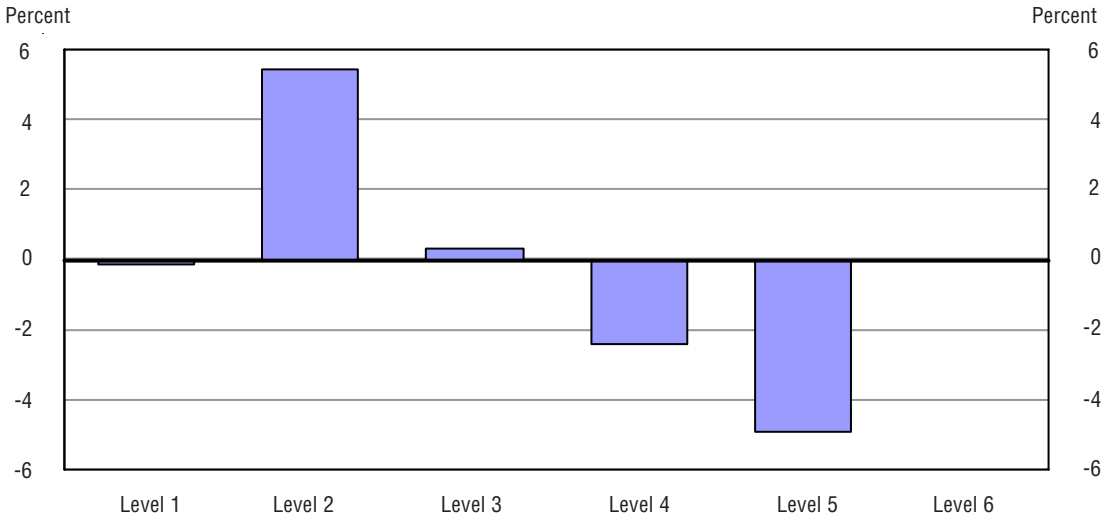


Figure 4.18

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for Alberta, 2006



Aboriginal workers in Alberta are more likely to be in Level 2 jobs and less likely to be in Level 4 and 5 jobs.

Figure 4.19

Distribution over skill levels for Aboriginals and all Canadians employed adults aged 16 and over for British Columbia, 2006

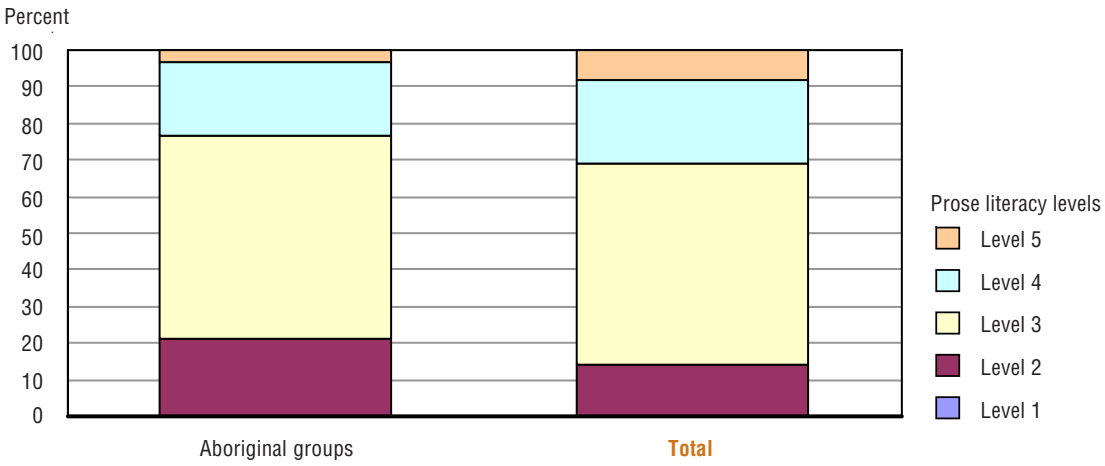
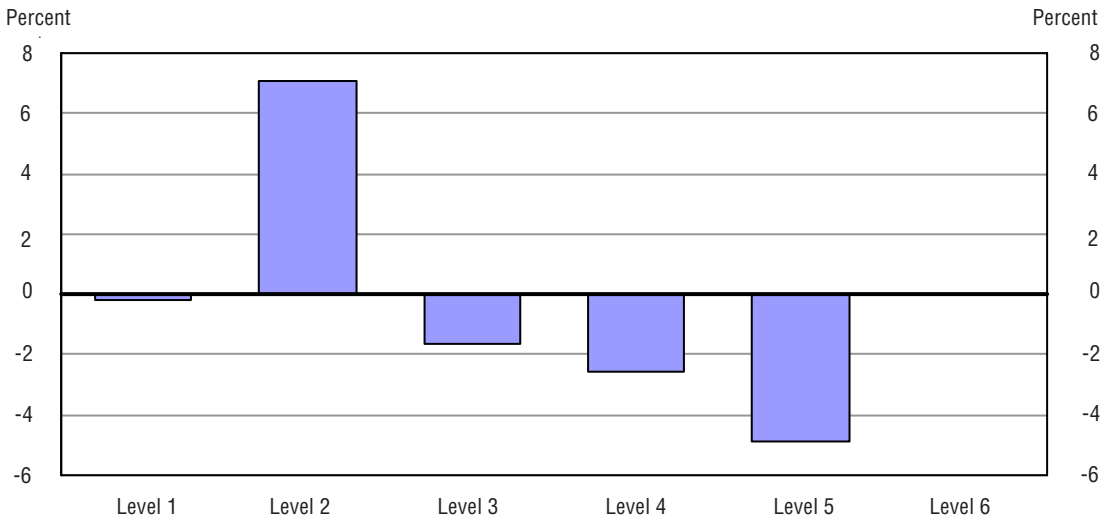


Figure 4.20

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for British Columbia, 2006



The pattern of difference is even more pronounced in British Columbia with more of jobs in the Aboriginal labour market being at Level 2 and fewer jobs at Levels 3, 4 and 5.

Figure 4.21

Distribution over skill levels for Aboriginals and all Canadians, employed adults age 16 and over for Yukon, 2006

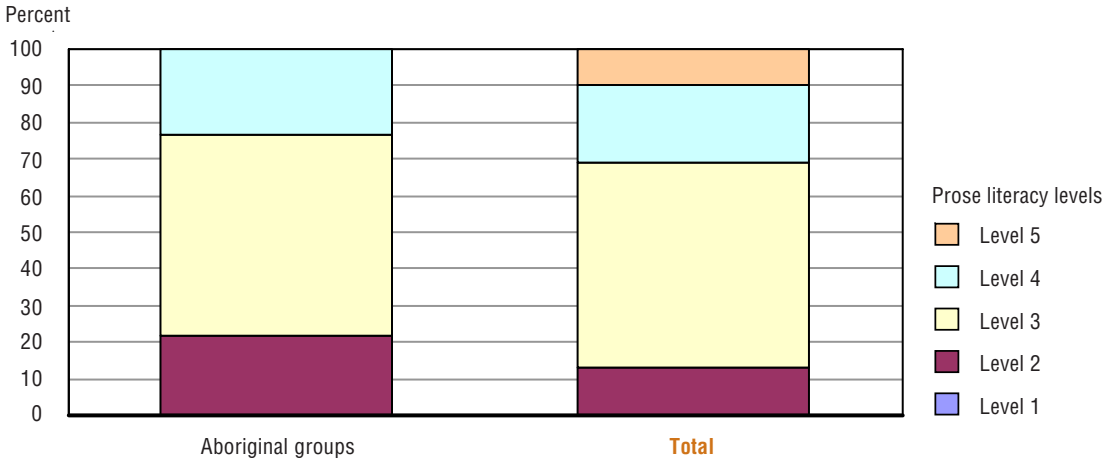
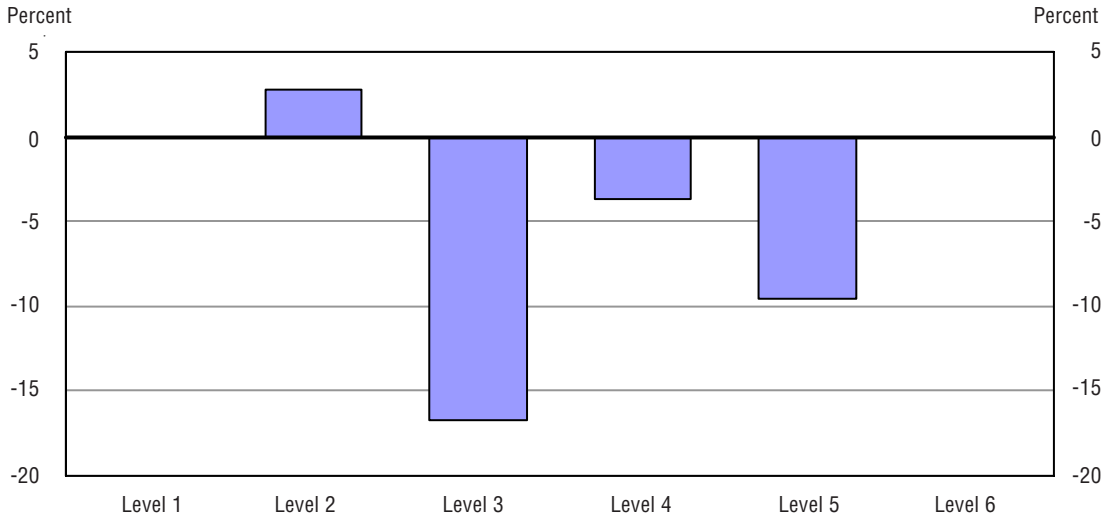


Figure 4.22

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for Yukon, 2006



The pattern of demand differences in the Yukon is quite different yet again. There appears to be far fewer Level 3 jobs in the Aboriginal labour market than in the general labour market.

Figure 4.23

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over for Northwest Territories, 2006

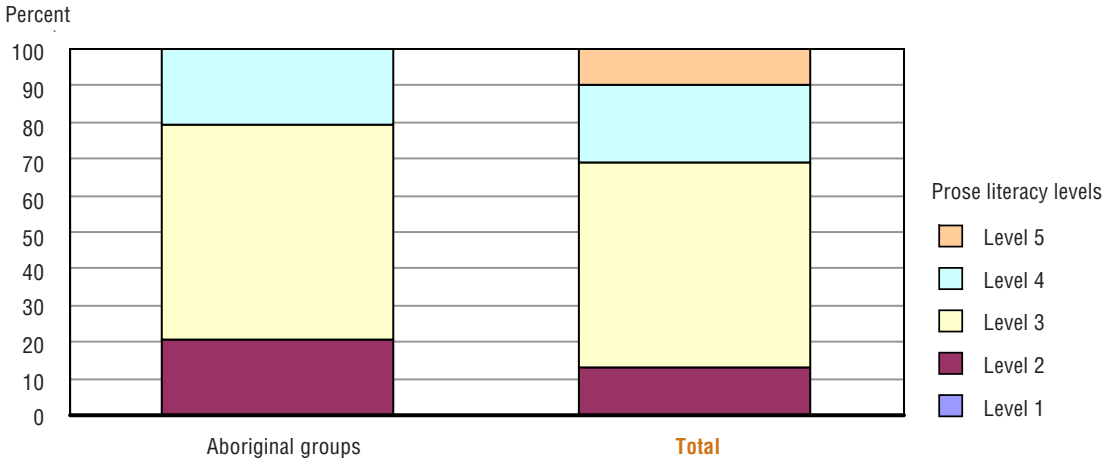
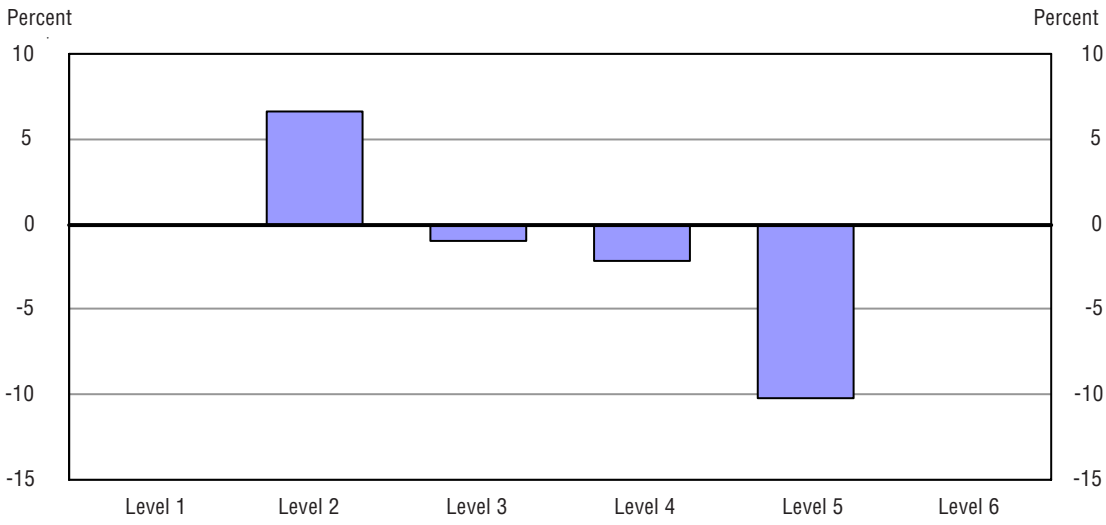


Figure 4.24

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for Northwest Territories, 2006



The NWT labour market demands far fewer Level 5 jobs for Aboriginal workers.

Figure 4.25

Distribution over skill levels for Aboriginals and all Canadians, employed adults aged 16 and over for Nunavut, 2006

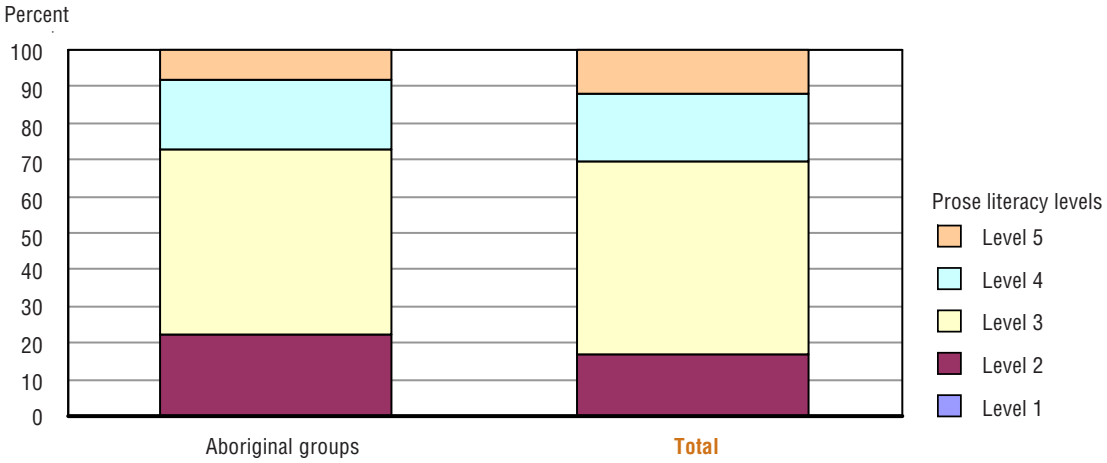
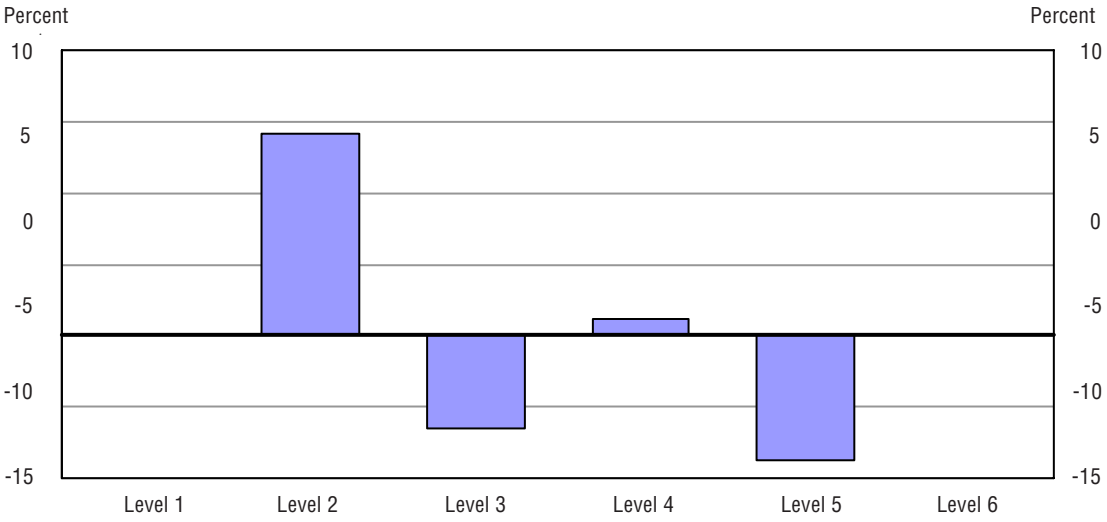


Figure 4.26

Difference in skill level between Aboriginal groups and the total population, employed adults aged 16 and over for Nunavut, 2006



In Nunavut demand for Aboriginal workers is higher at Level 2.

Section 5

The supply of literacy skill in Aboriginal labour markets

This chapter profiles the literacy skills of Canada's Aboriginal populations and compares their skill levels to national and provincial/territorial averages. The goal of this analysis is to confirm the existence of skill gaps between Aboriginal and non-Aboriginal adults that might impair the labour market success of Aboriginal adults. As expected, the analysis reveals that as a group Aboriginal adults have much lower levels of skill than their non-Aboriginal peers. Notwithstanding this general assertion the analysis confirms that there is significant skill variation among Aboriginal sub-groups. These differences are sufficiently large to imply that some groups will be relatively more successful in their respective labour markets.

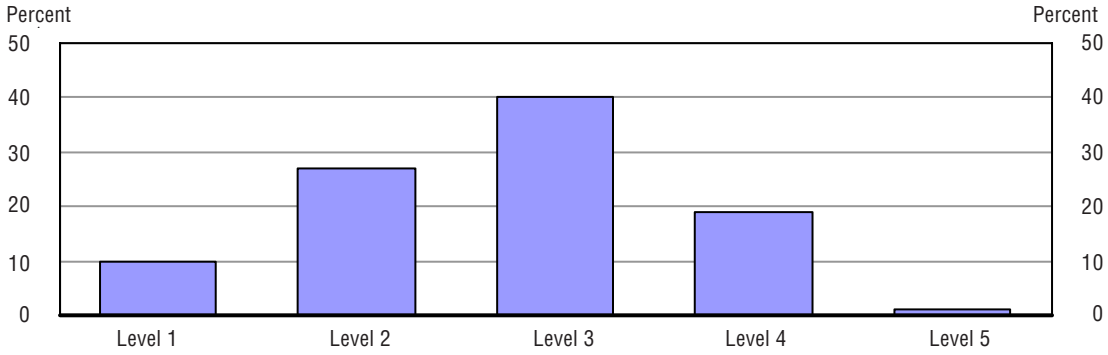
Research has shown that the supply of literacy skill possessed by adults is the product of a complex interplay of forces that operate over the entire life course. The quantity of education obtained during the initial cycle of education has the most pronounced impact on the observed skill level. Nevertheless other factors, including the quality of early childhood education and experience, the quality of initial education, rates of participation in adult education and training and the frequent use of literacy skill in employment and private life, have all been shown to have a positive impact on observed skill levels (Desjardins, 2007). In contrast adults who fail to use their literacy skills in their daily lives have been shown to lose some of their skills at a surprisingly rapid rate (Bynner, 2003; Willms and Murray, 2007). The estimates of skill supply presented in this chapter were derived by applying the relationships between literacy skill and background characteristics observed in the 2003 IALSS adult skill assessment to individual records in the 2006 Census of Population.

The following series of figures plot the distribution of prose literacy skill by jurisdiction and then compares the profiles of literacy skill of various Aboriginal sub groups to the jurisdictional average. Overall the figures reveal that Aboriginal adults are much more likely to be at level 1 and 2, and less likely to be levels 3, 4 and 5.

Figure 5.1 plots the distribution of prose literacy skill by proficiency level in the total adult population.

Figure 5.1

Distribution of prose literacy proficiency by proficiency level, adults aged 16 and over, Canada, 2006



The figure reveals that the largest number of adults have skills at prose literacy Level 3. Sizeable minorities have skills at Level 2 and at Level 4.

Figure 5.2

Comparative profile of literacy level, Other Aboriginal - Off-Reserve, Canada, 2006

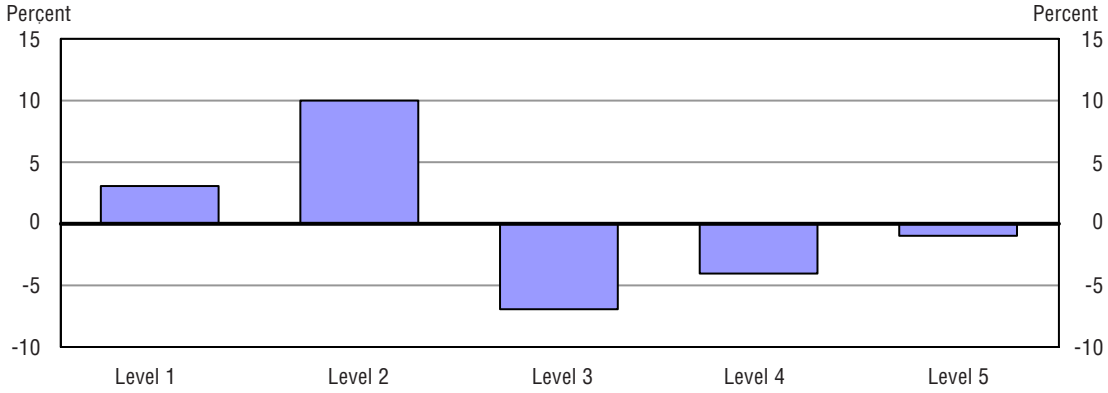


Figure 5.3

Comparative profile of literacy level, Band Member - Off-Reserve, Canada, 2006

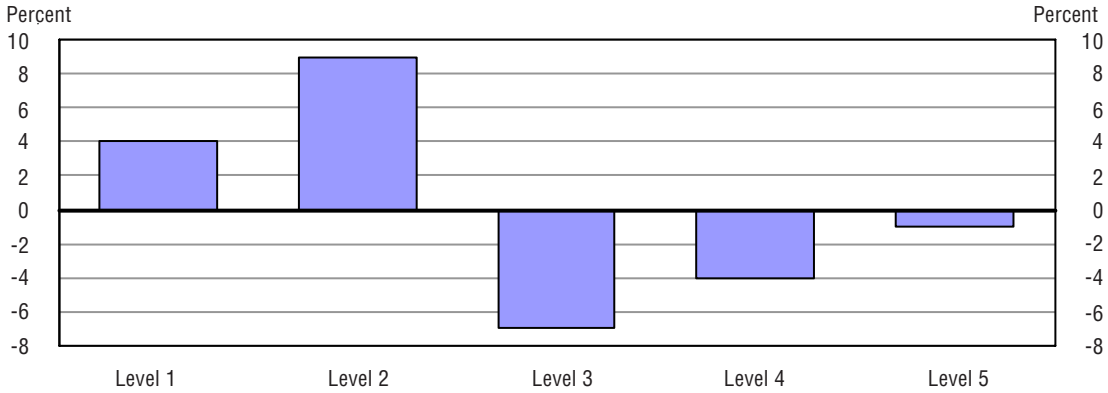
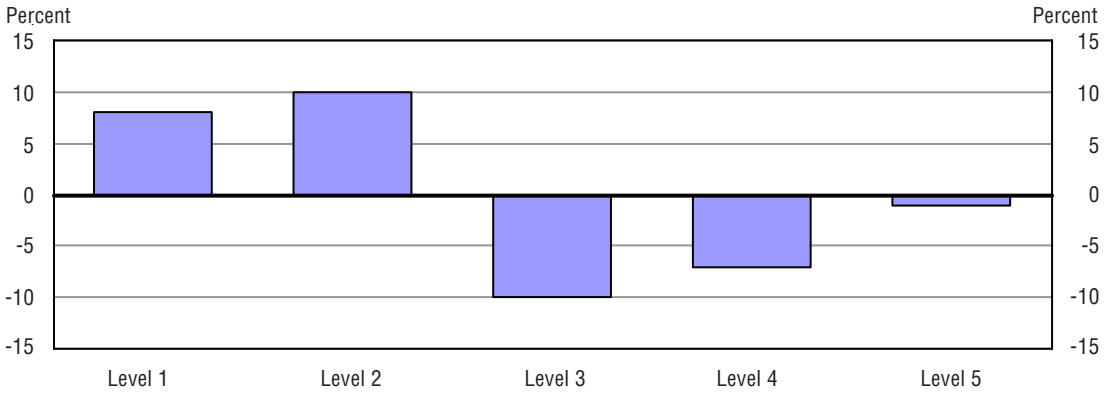
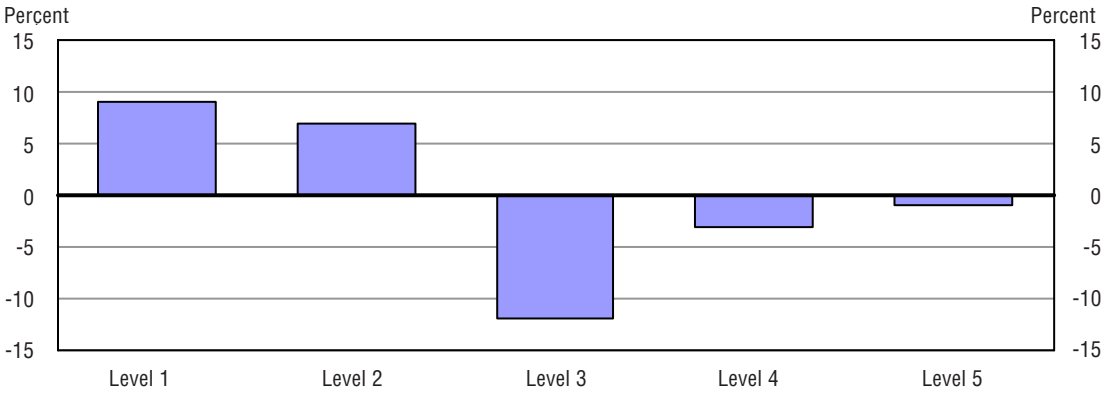


Figure 5.4
Comparative profile of literacy level, Band Member - On-Reserve, Canada, 2006



Newfoundland and Labrador

Figure 5.5
Comparative profile of literacy level, Other Aboriginal - Off-Reserve, Newfoundland and Labrador, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Newfoundland are significantly less skilled than the general population. The group has:

9% fewer workers with Level 1 skills
7% more workers with Level 2 skills
12% fewer Level 3 workers
3% fewer Level 4 workers and
1% fewer Level 5 workers

Figure 5.6

Comparative profile of literacy level, Band Member - Off-Reserve, Newfoundland and Labrador, 2006

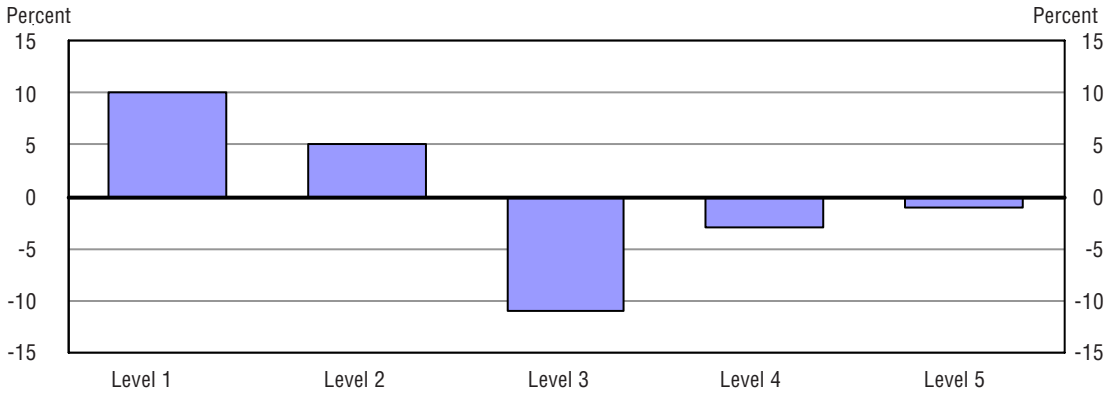
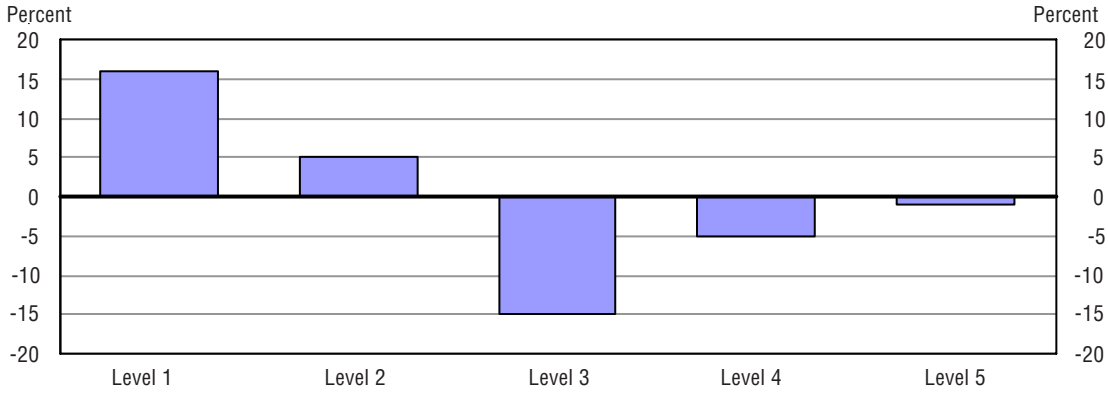


Figure 5.7

Comparative profile of literacy level, Band Member - On-Reserve, Newfoundland and Labrador, 2006



The figure reveals that, relative to the overall population, Band members living on reserve in Newfoundland are significantly less skilled than the general population. The group has:

16% more workers with Level 1 skills

5% more workers with Level 2 skills

15% fewer Level 3 workers

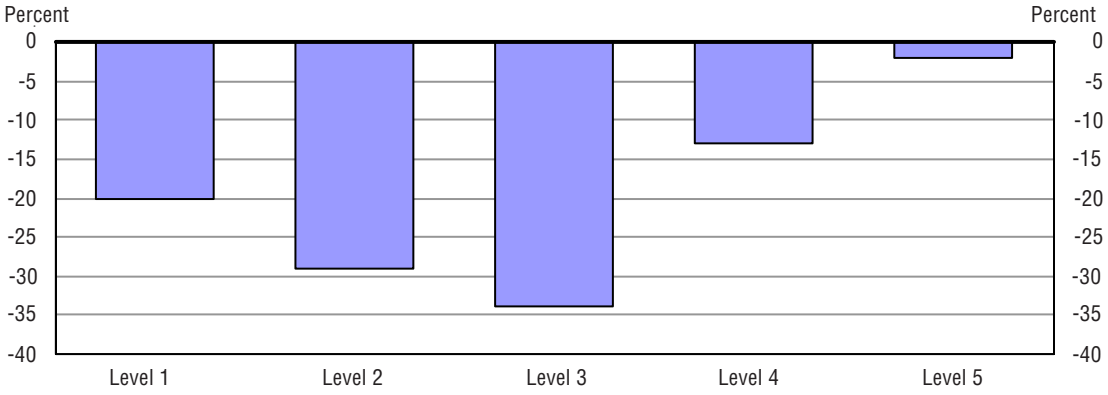
5% fewer Level 4 workers and

1% fewer Level 5 workers

Price Edward Island

Figure 5.8

Comparative profile of literacy level, other Aboriginal - Off-Reserve, Prince Edward Island, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Price Edward Island are significantly less skilled than the general population. The group has:

20% fewer workers with Level 1 skills

29% more workers with Level 2 skills

34% fewer Level 3 workers

13% fewer Level 4 workers and

2% fewer Level 5 workers

Figure 5.9

Comparative profile of literacy level, Band Member - Off-Reserve, Prince Edward Island, 2006

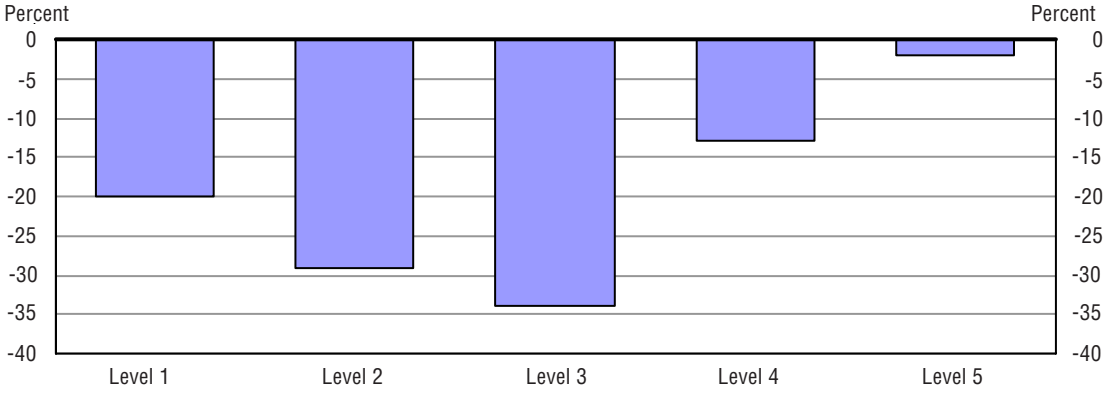
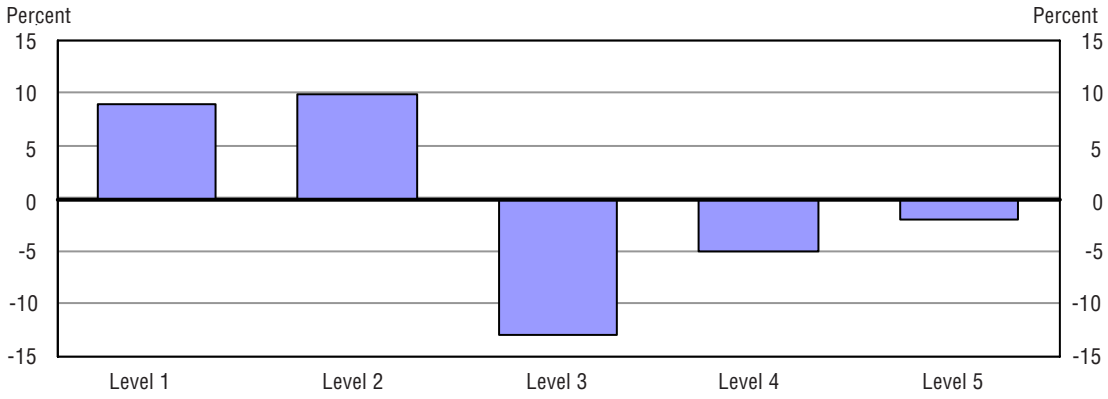


Figure 5.10

Comparative profile of literacy level, Band Member - On-Reserve, Prince Edward Island, 2006



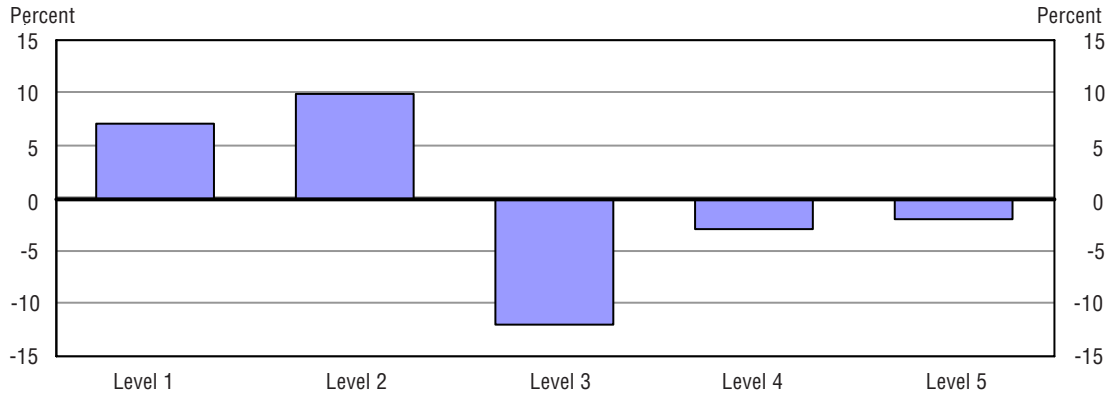
The figure reveals that, relative to the overall population, Band members living on reserve in Price Edward Island are significantly less skilled than the general population. The group has:

9% more workers with Level 1 skills
10% more workers with Level 2 skills
13% fewer Level 3 workers
5% fewer Level 4 workers and
2% fewer Level 5 workers

Nova Scotia

Figure 5.11

Comparative profile of literacy level, other Aboriginal - Off-Reserve, Nova Scotia, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Nova Scotia are significantly less skilled than the general population. The group has:

7% fewer workers with Level 1 skills
10% more workers with Level 2 skills
12% fewer Level 3 workers
3% fewer Level 4 workers and
2% fewer Level 5 workers

Figure 5.12
Comparative profile of literacy level, Band Member - Off-Reserve, Nova Scotia, 2006

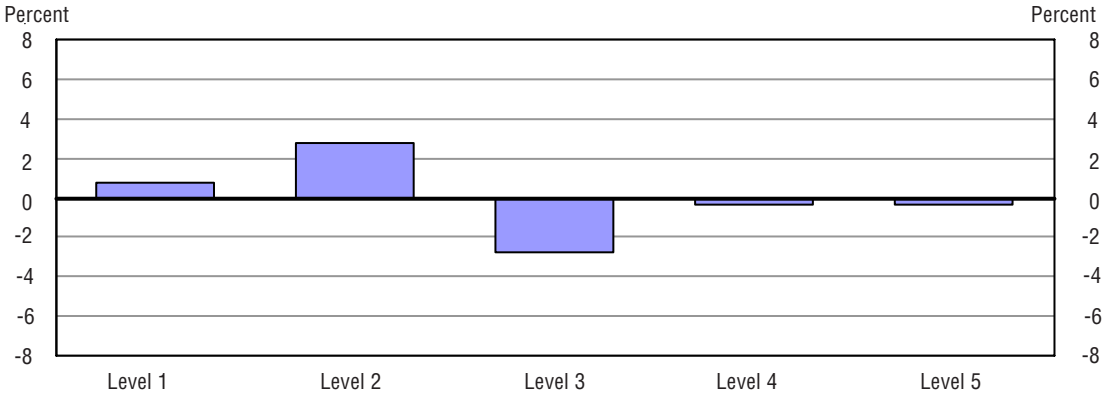
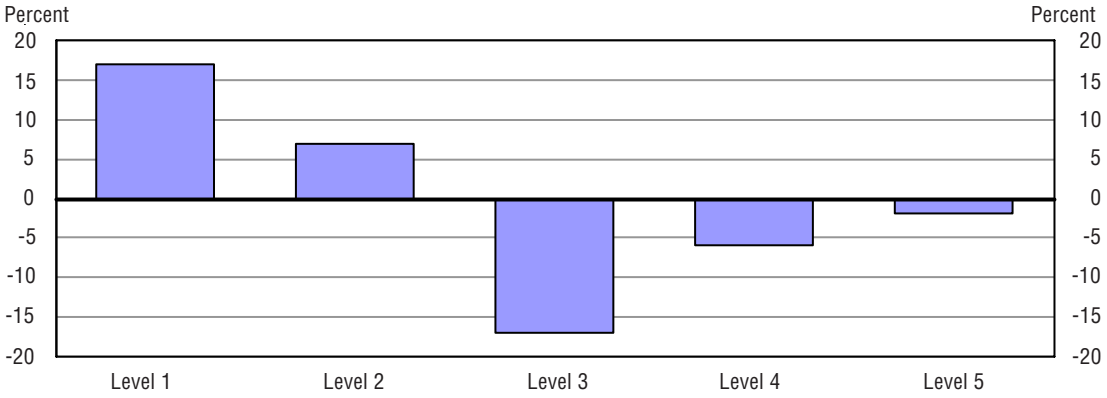


Figure 5.13
Comparative profile of literacy level, Band Member - On-Reserve, Nova Scotia, 2006



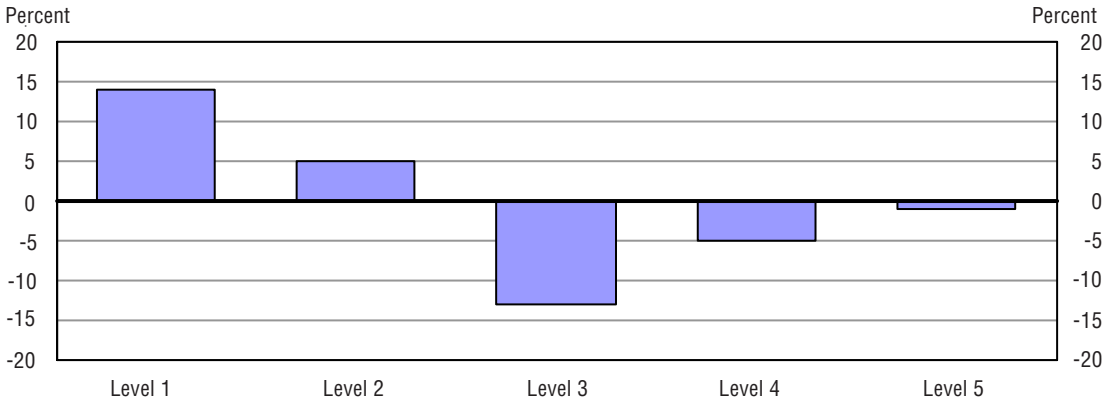
The figure reveals that, relative to the overall population, Band members living on reserve in Nova Scotia are significantly less skilled than the general population. The group has:

17% more workers with Level 1 skills
7% more workers with Level 2 skills
17% fewer Level 3 workers
6% fewer Level 4 workers and
2% fewer Level 5 workers

New Brunswick

Figure 5.14

Comparative profile of literacy level, other Aboriginal - Off-Reserve, New Brunswick, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in New Brunswick are significantly less skilled than the general population. The group has:

14% fewer workers with Level 1 skills

5% more workers with Level 2 skills

13% fewer Level 3 workers

5% fewer Level 4 workers and

1% fewer Level 5 workers

Figure 5.15

Comparative profile of literacy level, Band Member - Off-Reserve, New Brunswick, 2006

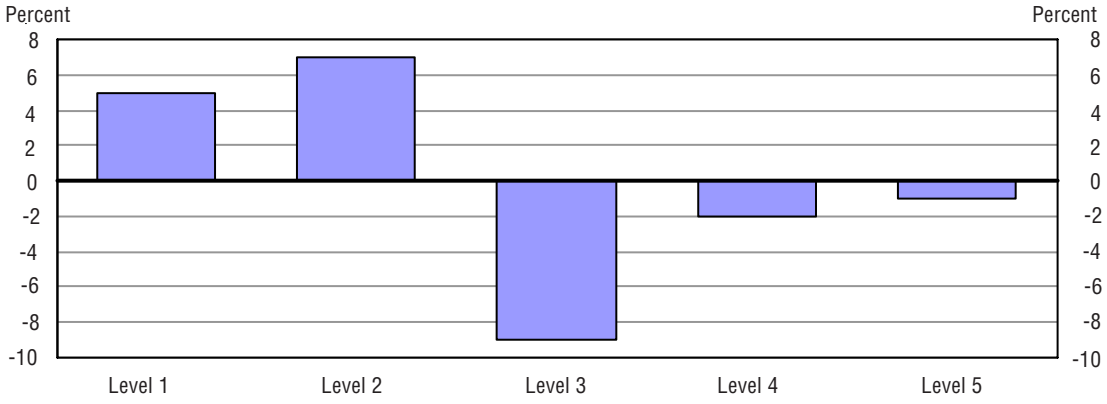
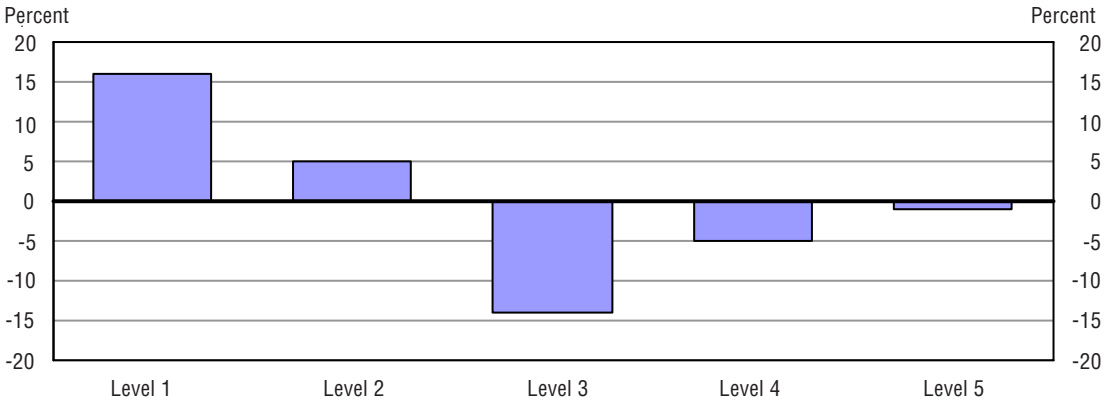


Figure 5.16

Comparative profile of literacy level, Band Member - On-Reserve, New Brunswick, 2006



The figure reveals that, relative to the overall population, Band members living on reserve in New Brunswick are significantly less skilled than the general population. The group has:

16% more workers with Level 1 skills

5% more workers with Level 2 skills

14% fewer Level 3 workers

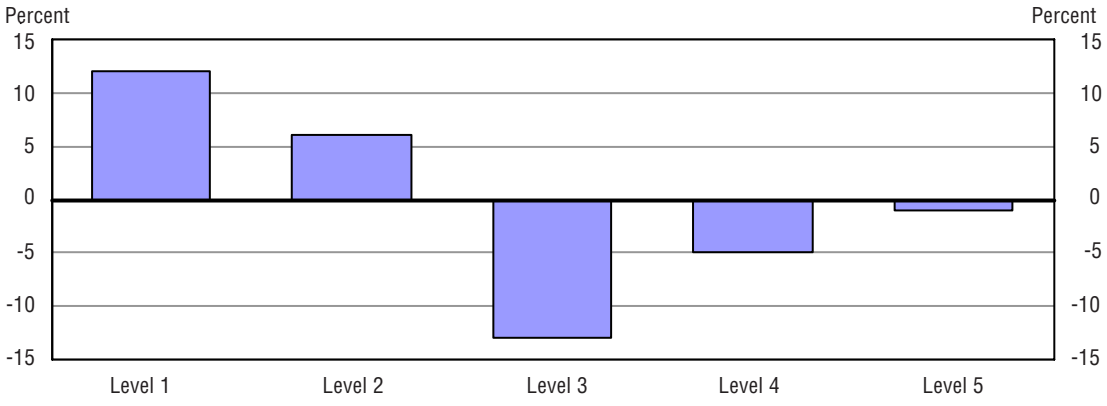
5% fewer Level 4 workers and

1% fewer Level 5 workers

Quebec

Figure 5.17

Comparative profile of literacy level, other Aboriginal - Off-Reserve, Quebec, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Quebec are significantly less skilled than the general population. The group has:

12% fewer workers with Level 1 skills
6% more workers with Level 2 skills
13% fewer Level 3 workers
5% fewer Level 4 workers and
1% fewer Level 5 workers

Figure 5.18
Comparative profile of literacy level, Band Member - Off-Reserve, Quebec, 2006

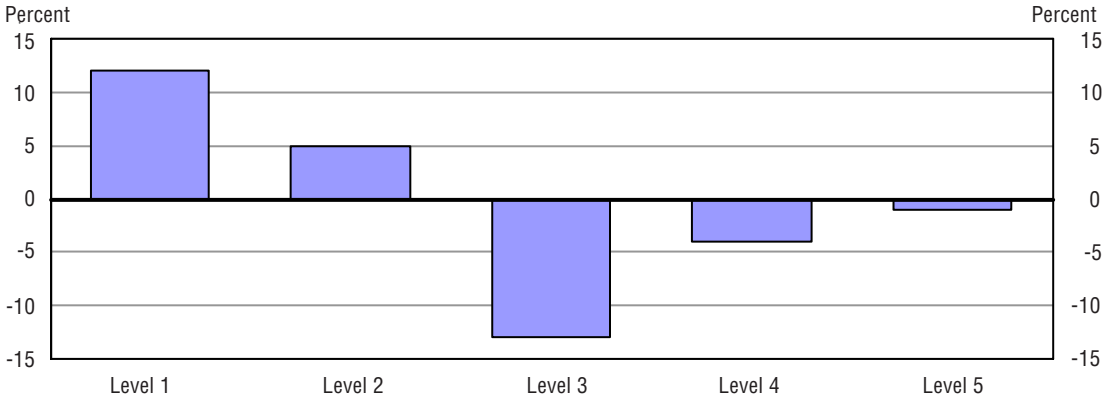
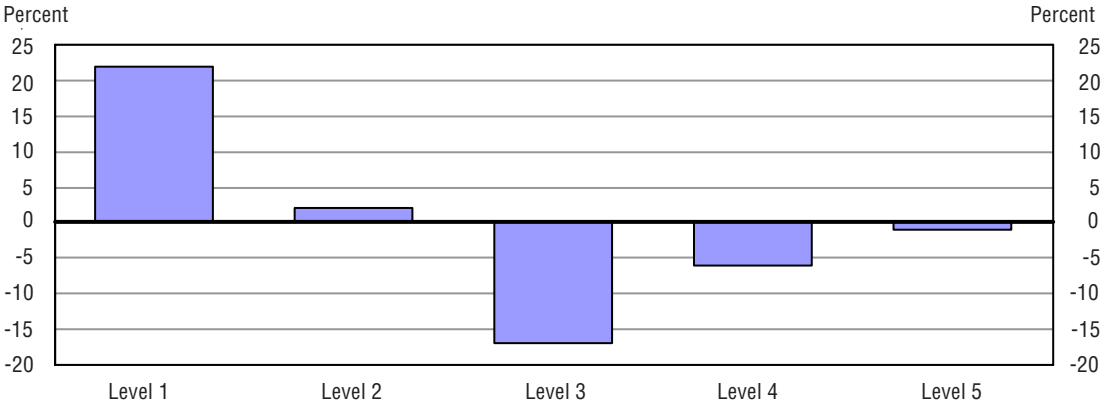


Figure 5.19
Comparative profile of literacy level, Band Member - On-Reserve, Quebec, 2006

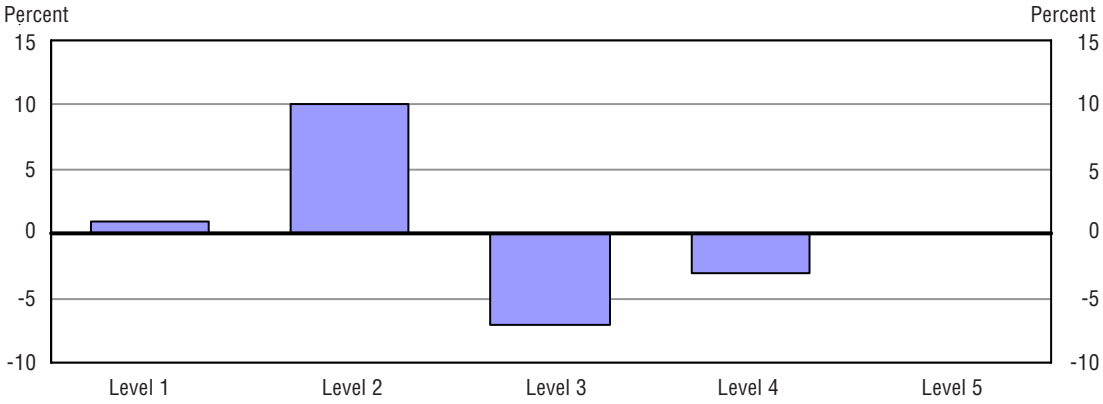


The figure reveals that, relative to the overall population, Band members living on reserve in Quebec are significantly less skilled than the general population. The group has:

22% more workers with Level 1 skills
2% more workers with Level 2 skills
17% fewer Level 3 workers
6% fewer Level 4 workers and
1% fewer Level 5 workers

Ontario

Figure 5.20
Comparative profile of literacy level, other Aboriginal - Off-Reserve, Ontario, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Ontario are significantly less skilled than the general population. The group has:

1% fewer workers with Level 1 skills
10% more workers with Level 2 skills
7% fewer Level 3 workers
3% fewer Level 4 workers and
0% fewer Level 5 workers

Figure 5.21
Comparative profile of literacy level, Band Member - Off-Reserve, Ontario, 2006

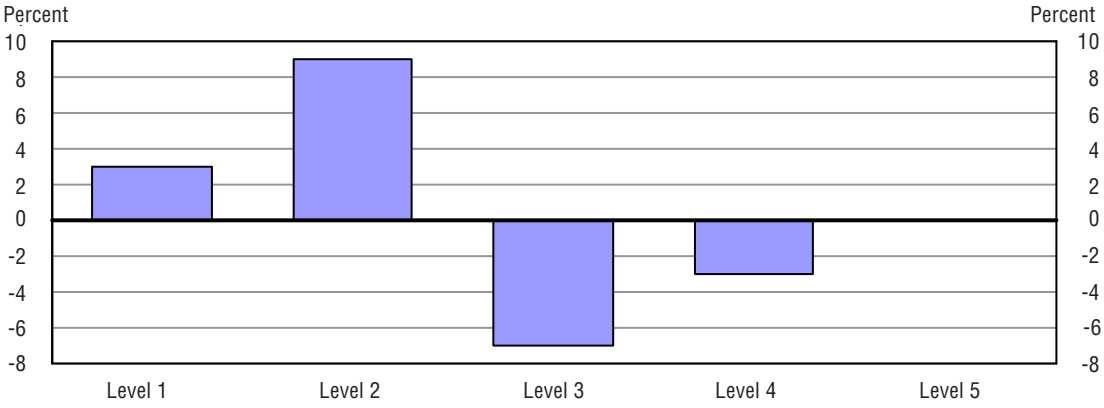
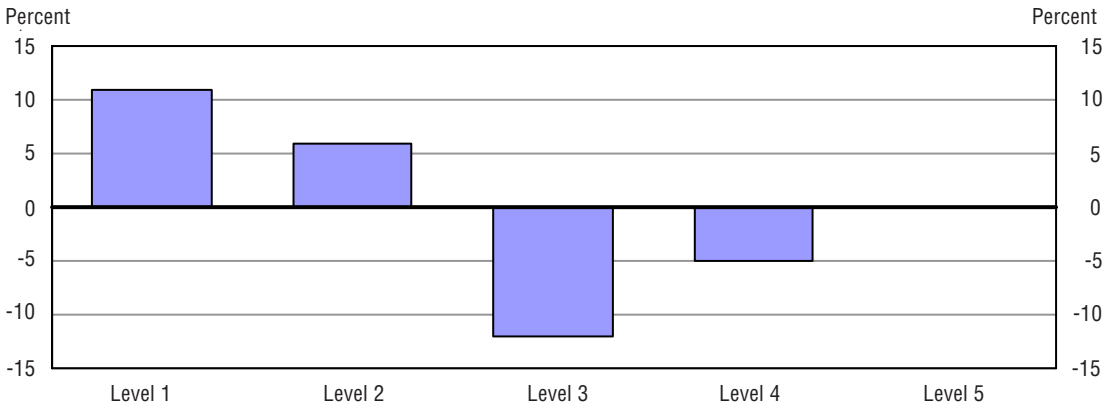


Figure 5.22
Comparative profile of literacy level, Band Member - On-Reserve, Ontario, 2006

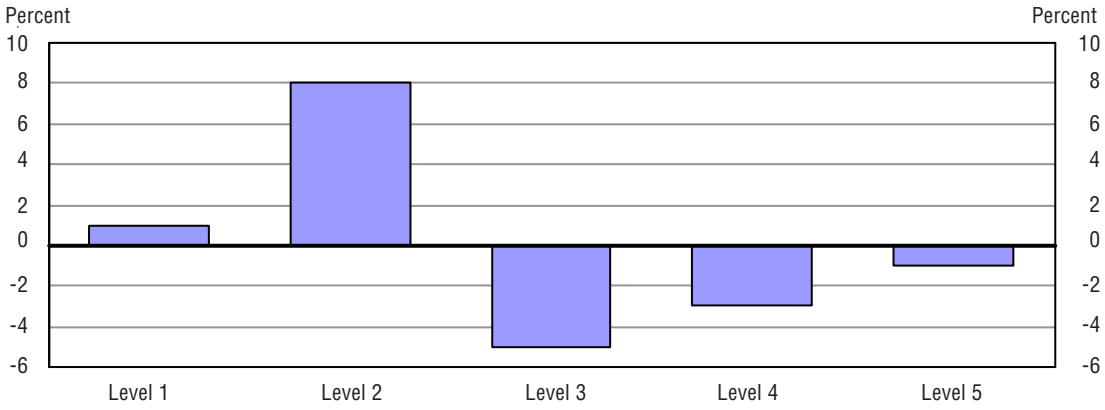


The figure reveals that, relative to the overall population, Band members living on reserve in Ontario are significantly less skilled than the general population. The group has:

11% more workers with Level 1 skills
6% more workers with Level 2 skills
12% fewer Level 3 workers
5% fewer Level 4 workers and
0% fewer Level 5 workers

Manitoba

Figure 5.23
Comparative profile of literacy level, other Aboriginal - Off-Reserve, Manitoba, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Manitoba are significantly less skilled than the general population. The group has:

1% fewer workers with Level 1 skills
8% more workers with Level 2 skills
5% fewer Level 3 workers
3% fewer Level 4 workers and
1% fewer Level 5 workers

Figure 5.24
Comparative profile of literacy level, Band Member - Off-Reserve, Manitoba, 2006

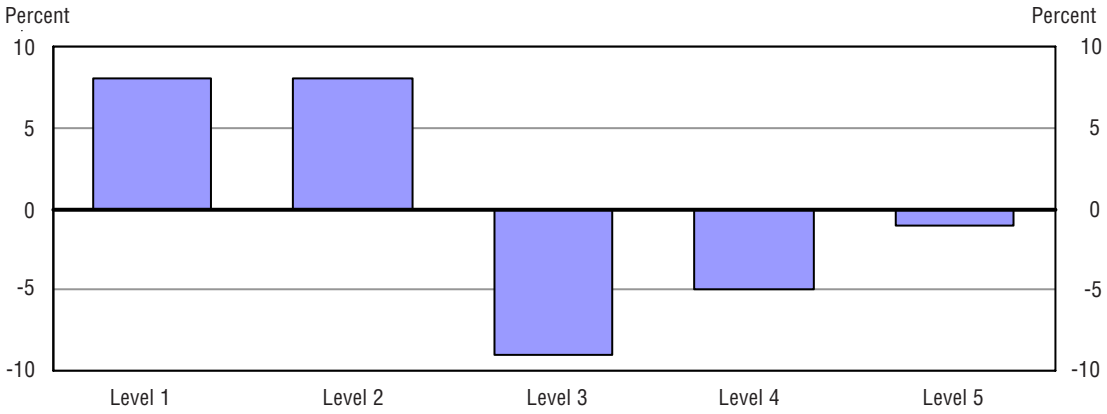
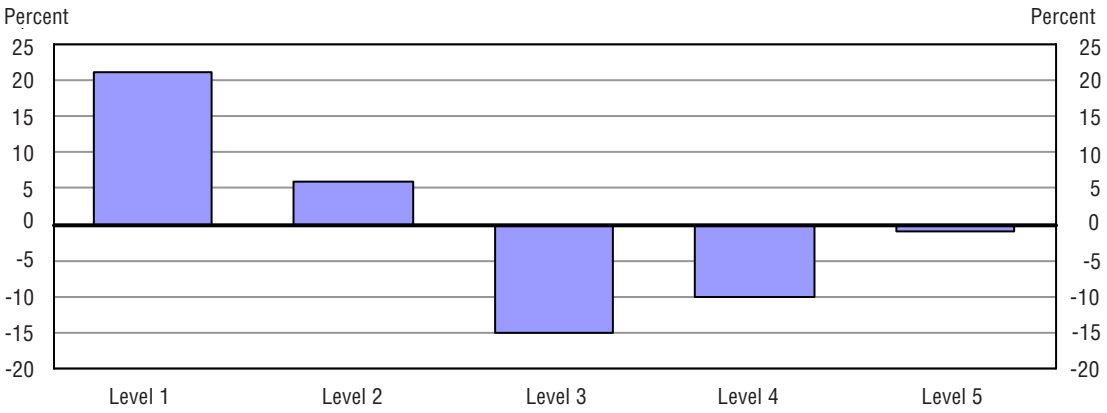


Figure 5.25
Comparative profile of literacy level, Band Member - On-Reserve, Manitoba, 2006



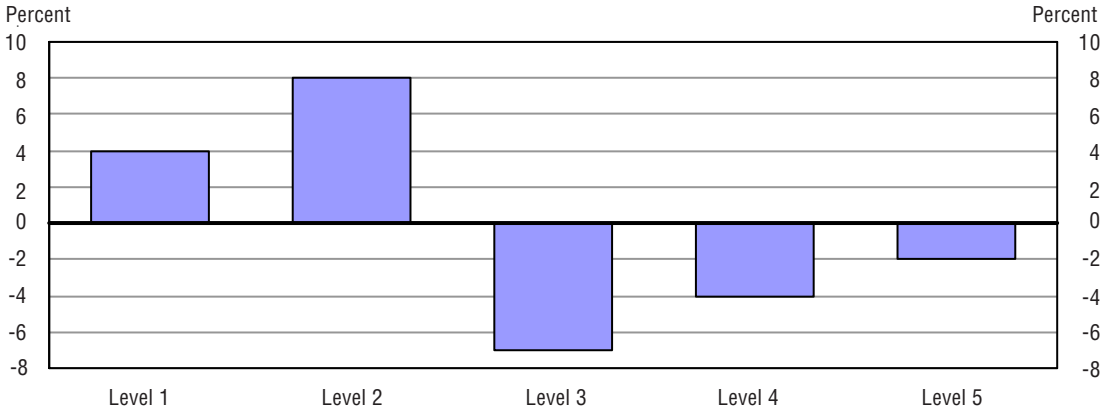
The figure reveals that, relative to the overall population, Band members living on reserve in Manitoba are significantly less skilled than the general population. The group has:

21% more workers with Level 1 skills
6% more workers with Level 2 skills
15% fewer Level 3 workers
10% fewer Level 4 workers and
1% fewer Level 5 workers

Saskatchewan

Figure 5.26

Comparative profile of literacy level, Other Aboriginal - Off-Reserve, Saskatchewan, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Saskatchewan are significantly less skilled than the general population. The group has:

- 4% fewer workers with Level 1 skills
- 8% more workers with Level 2 skills
- 7% fewer Level 3 workers
- 4% fewer Level 4 workers and
- 2% fewer Level 5 workers

Figure 5.27

Comparative profile of literacy level, Band Member - Off-Reserve, Saskatchewan, 2006

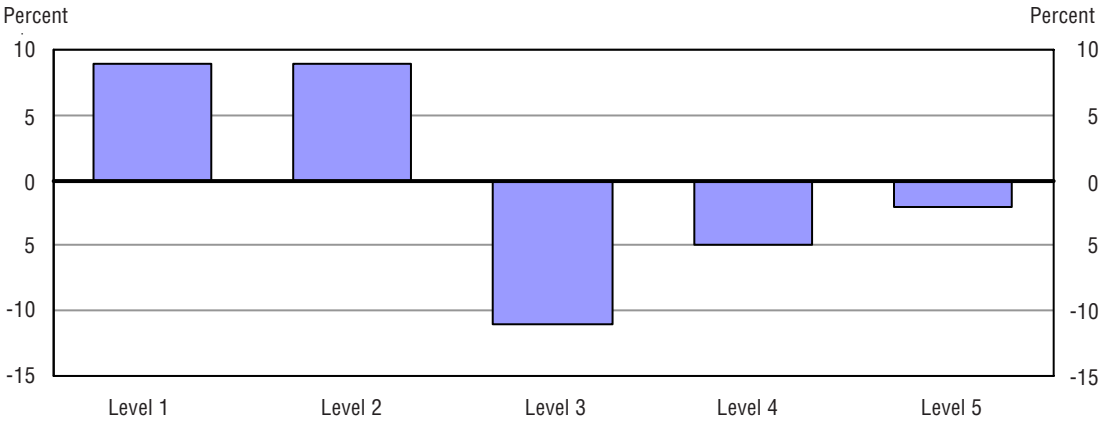
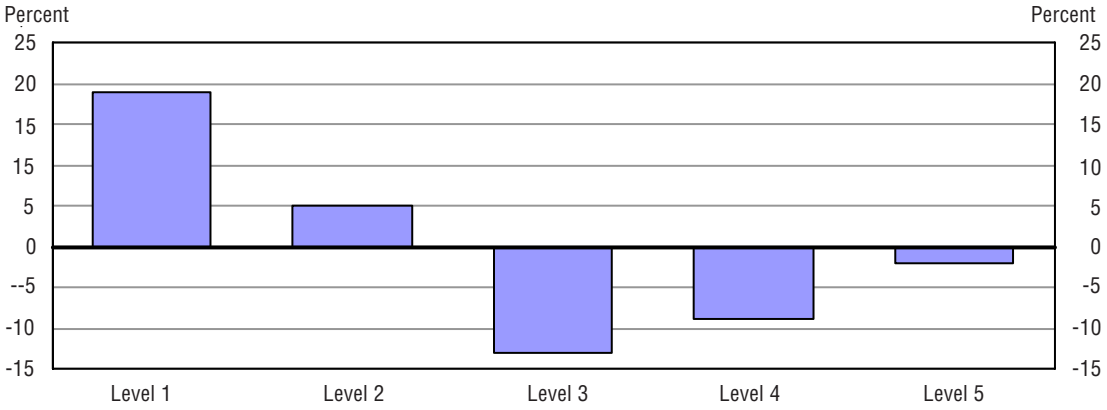


Figure 5.28
Comparative profile of literacy level, Band Member - On-Reserve, Saskatchewan, 2006

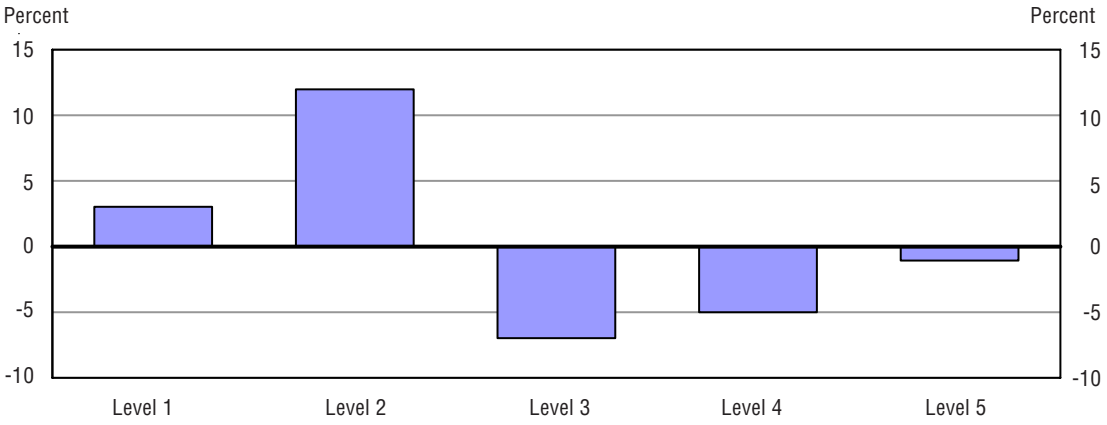


The figure reveals that, relative to the overall population, Band members living on reserve in Saskatchewan are significantly less skilled than the general population. The group has:

19% more workers with Level 1 skills
5% more workers with Level 2 skills
13% fewer Level 3 workers
9% fewer Level 4 workers and
2% fewer Level 5 workers

Alberta

Figure 5.29
Comparative profile of literacy level, Other Aboriginal - Off-Reserve, Alberta, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in Alberta are significantly less skilled than the general population. The group has:

3% fewer workers with Level 1 skills
12% more workers with Level 2 skills
7% fewer Level 3 workers
5% fewer Level 4 workers and
1% fewer Level 5 workers

Figure 5.30
Comparative profile of literacy level, Band Member - Off-Reserve, Alberta, 2006

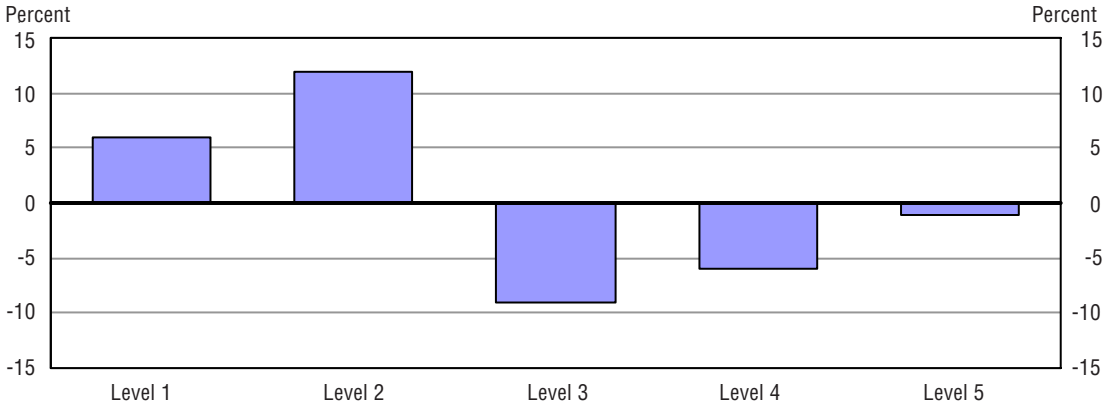
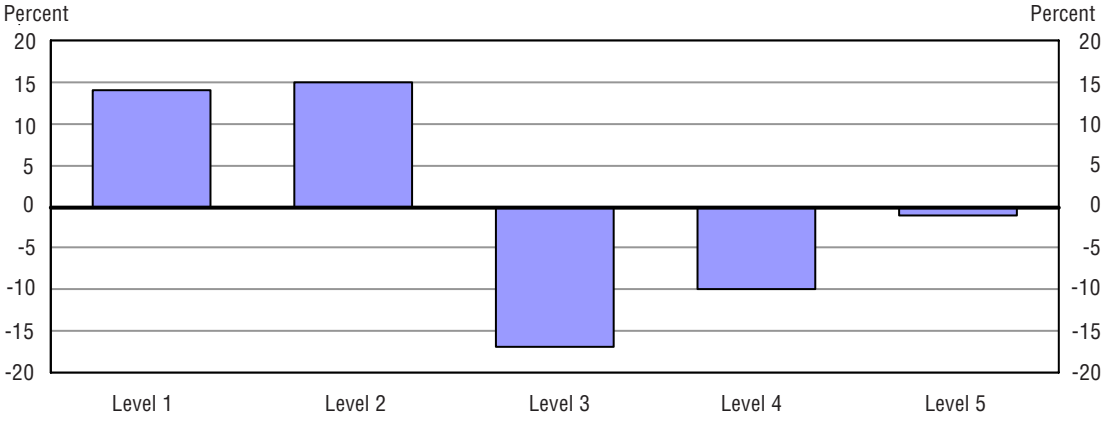


Figure 5.31
Comparative profile of literacy level, Band Member - On-Reserve, Alberta, 2006

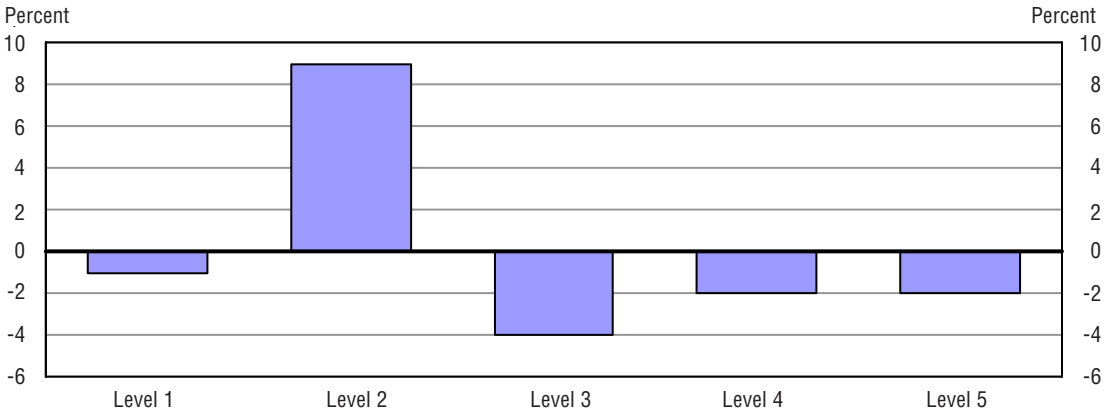


The figure reveals that, relative to the overall population, Band members living on reserve in Alberta are significantly less skilled than the general population. The group has:

14% more workers with Level 1 skills
15% more workers with Level 2 skills
17% fewer Level 3 workers
10% fewer Level 4 workers and
1% fewer Level 5 workers

British Columbia

Figure 5.32
Comparative profile of literacy level, Other Aboriginal - Off-Reserve, British Columbia, 2006



The figure reveals that, relative to the overall population, Aboriginals living off reserve in British Columbia are significantly less skilled than the general population. The group has:

1% fewer workers with Level 1 skills
9% more workers with Level 2 skills
4% fewer Level 3 workers
2% fewer Level 4 workers and
2% fewer Level 5 workers

Figure 5.33
Comparative profile of literacy level, Band Member - Off-Reserve, British Columbia, 2006

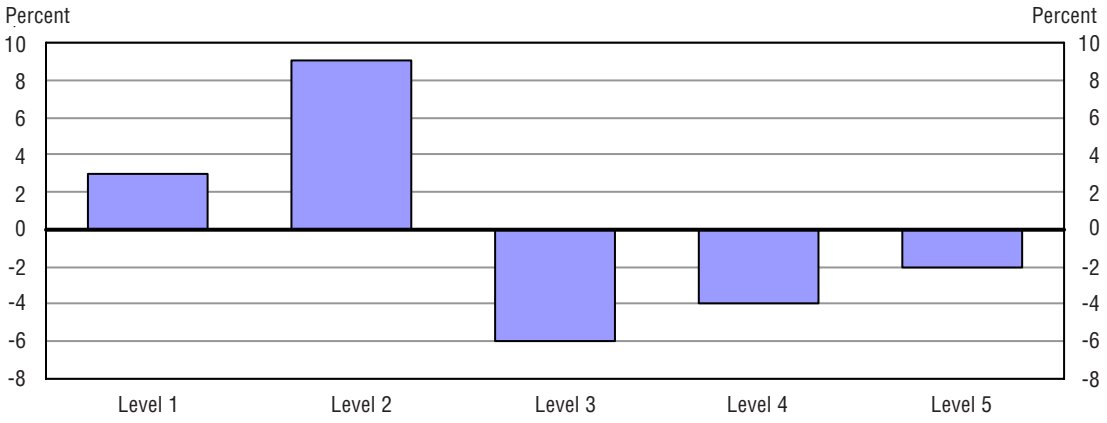
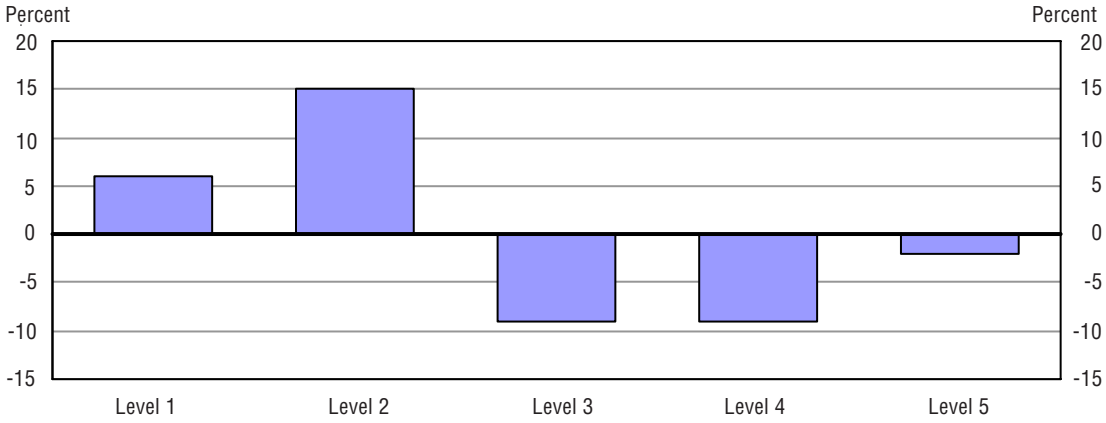


Figure 5.34

Comparative profile of literacy level, Band Member - On-Reserve, British Columbia, 2006



The figure reveals that, relative to the overall population, Band members living on reserve in British Columbia are significantly less skilled than the general population. The group has:

6% more workers with Level 1 skills
15% more workers with Level 2 skills
9% fewer Level 3 workers
9% fewer Level 4 workers and
2% fewer Level 5 workers

Yukon

Figure 5.35

Comparative profile of literacy level, Other Aboriginal - Off-Reserve, Yukon, 2006

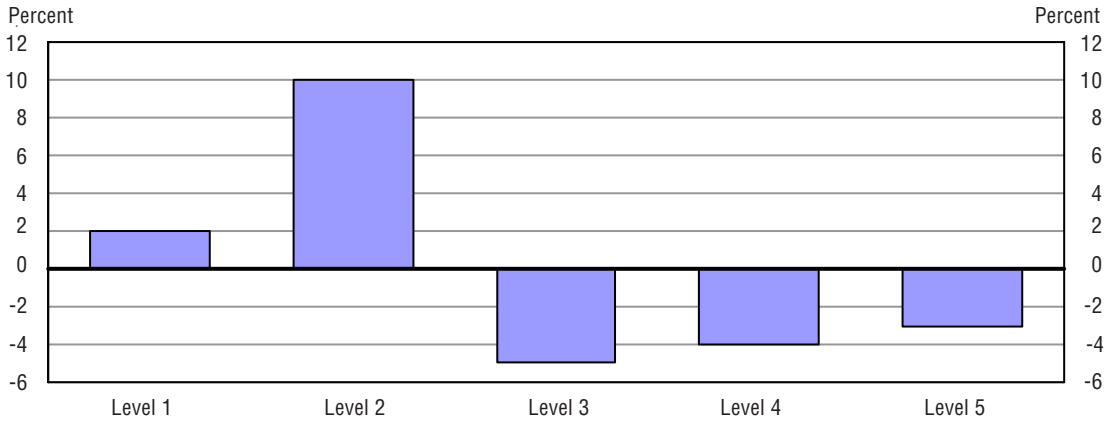


Figure 5.36
Comparative profile of literacy level, Band Member - Off-Reserve, Yukon, 2006

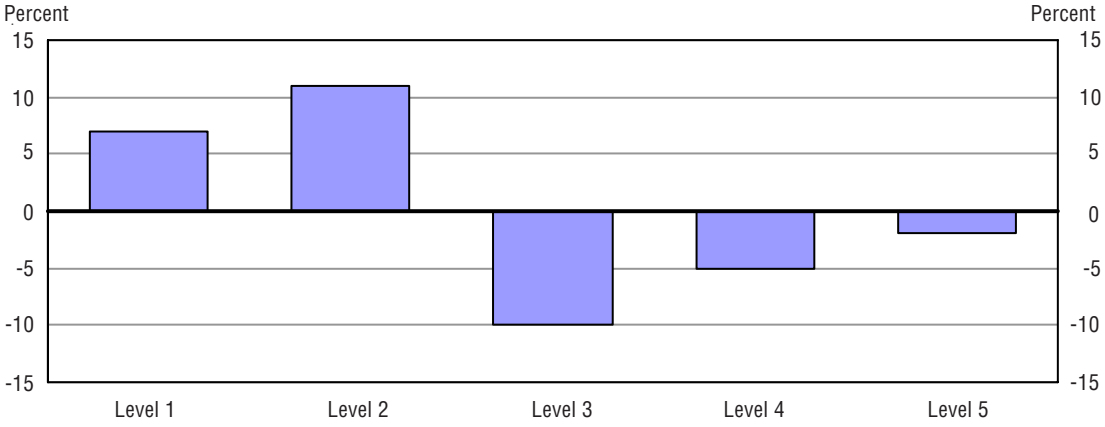
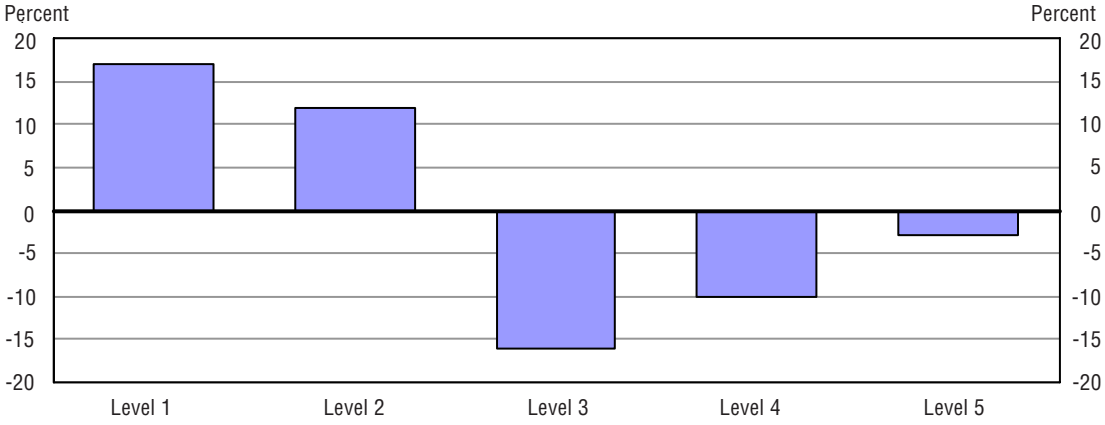


Figure 5.37
Comparative profile of literacy level, Band Member - On-Reserve, Yukon, 2006



The figure reveals that, relative to the overall population, Aboriginals in the Yukon are less skilled than the general population. The group has:

17% more workers with Level 1 skills
12% more workers with Level 2 skills
16% fewer Level 3 workers
10% fewer Level 4 workers and
3% fewer Level 5 workers

Northwest Territories

Figure 5.38

Comparative profile of literacy level, Other Aboriginal - Off-Reserve, Northwest Territories, 2006

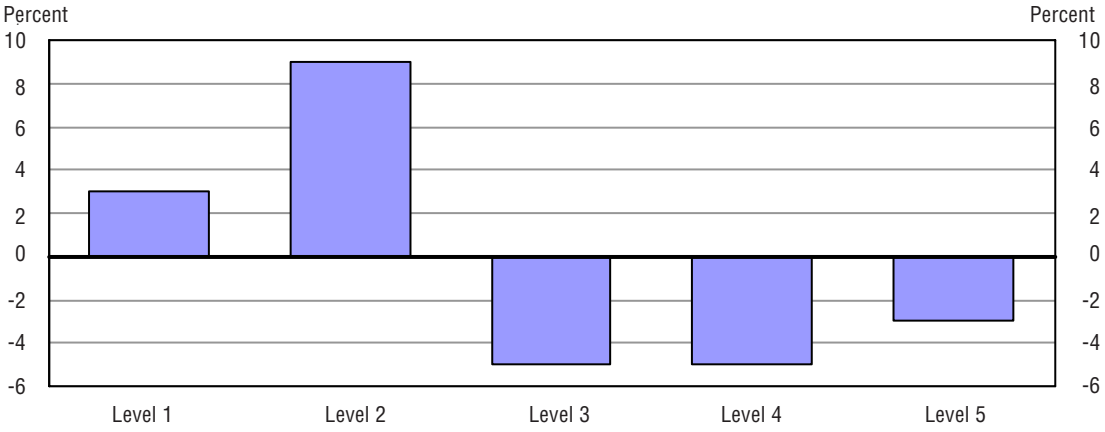


Figure 5.39

Comparative profile of literacy level, Band Member - Off-Reserve, Northwest Territories, 2006

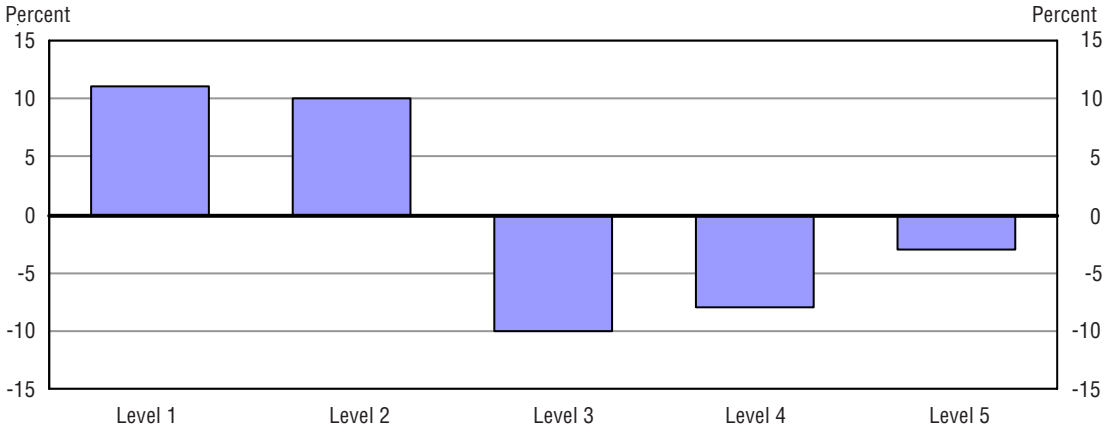
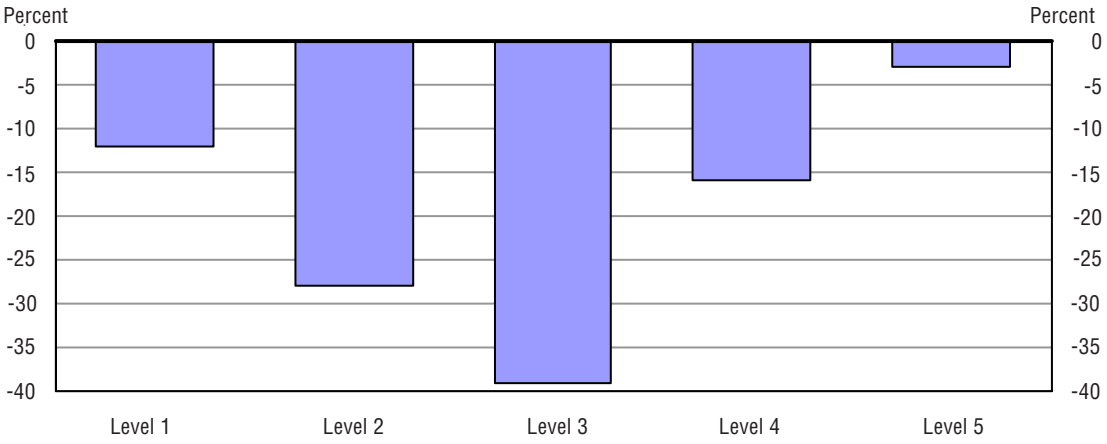


Figure 5.40

Comparative profile of literacy level, Band Member - On-Reserve, Northwest Territories, 2006



The figure reveals that, relative to the overall population, Aboriginals in the NWT are less skilled than the general population. The group has:

3% more workers with Level 1 skills
9% more workers with Level 2 skills
5% fewer Level 3 workers
5% fewer Level 4 workers and
3% fewer Level 5 workers

Nunavut

Figure 5.41

Comparative Profile of Literacy Level, Other Aboriginal - Off-Reserve, Nunavut, 2006

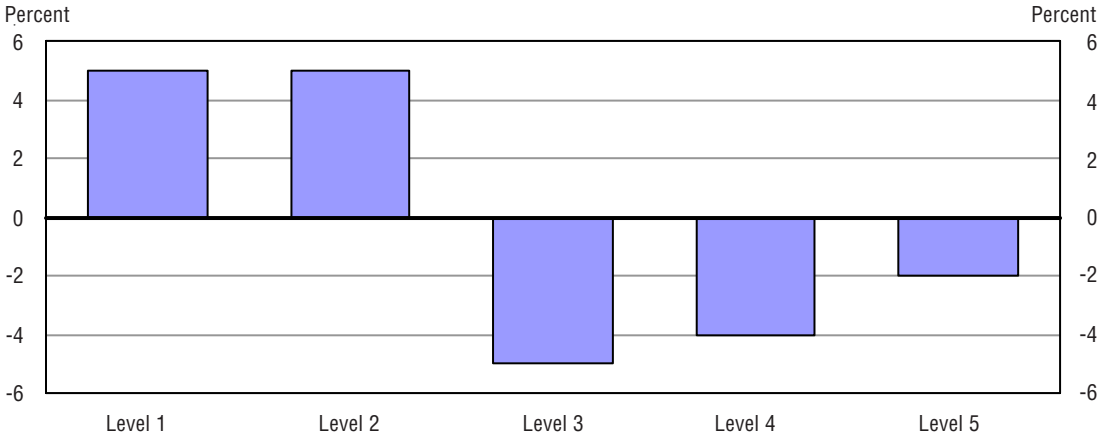


Figure 5.43
Comparative Profile of Literacy Level, Band Member - Off-Reserve, Nunavut, 2006

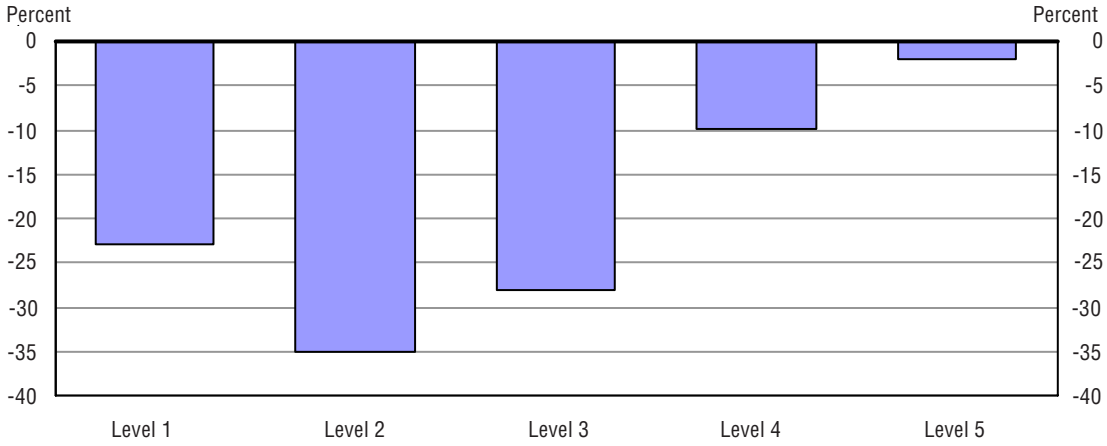
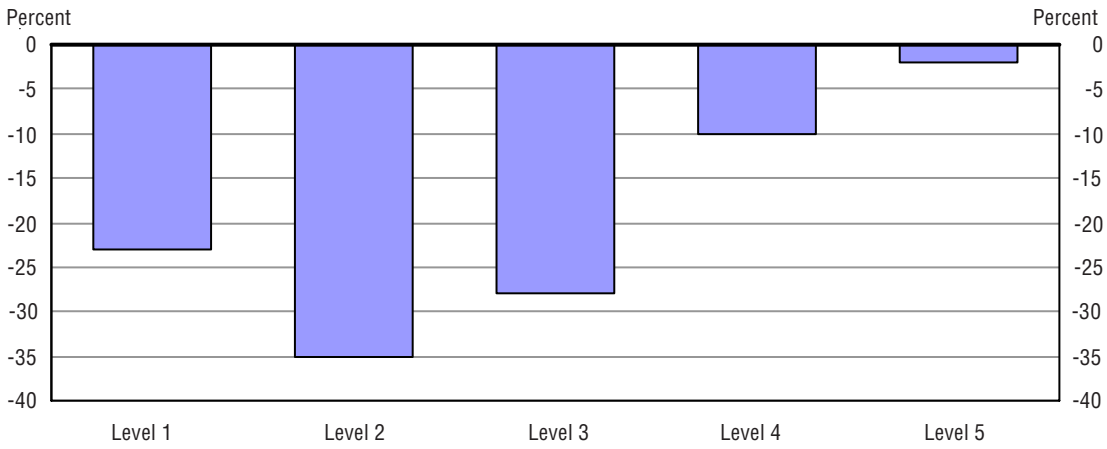


Figure 5.44
Comparative Profile of Literacy Level, Band Member - On-Reserve, Nunavut, 2006



The figure reveals that, relative to the overall population, the group has:

5% more workers with Level 1 skills
5% more workers with Level 2 skills
5% fewer Level 3 workers
4% fewer Level 4 workers and
2% fewer Level 5 workers

The figures reveal that the entire skill distribution of Aboriginal adults is shifted downwards. With few exceptions significantly larger proportions of Aboriginal adults are classified at Level 1 and, although the gap is smaller, larger proportions are classified at Level 2 than in the general population. Conversely, fewer Aboriginal adults are classified at Levels 3, 4 and 5.

As a rule Band members living on reserve are significantly less skilled than Aboriginal adults living off reserve.

Policy implications

Recent research suggests that the literacy intensity of employment is rising in most Canadian labour markets as the economy sheds low skilled jobs and replaces them with jobs that demand higher levels of literacy skill (DataAngel, 2009). The net effect of changes in the occupational distribution of employment is to shift the mean skill level from Level 2 to Level 3. Thus, the fact that much higher proportions of Aboriginal adults have skills at Levels 1 and 2 is bound to place them at a significant disadvantage in Canada's labour markets. Band members living on reserve appear to be at a particular disadvantage. Without improved literacy skill employers will tend to hire more educated and skilled non-Aboriginal adults. The policy implication is clear – large scale literacy upgrading for Aboriginal adults is required to level the labour market playing field.

Section 6

The efficiency of labour markets

This chapter explores the efficiency of the markets that match the occupational demand for literacy skill with the available supply of skill. Rates of literacy skill utilization are presented for the overall population, for the employed population, by the level of literacy demanded by the job and at the individual level. The results presented suggest that Canada's literacy markets are relatively inefficient. Ironically these inefficiencies appear to have less of an impact on Canada's Aboriginal populations because of the low level of literacy skill demand in the labour markets in which they work.

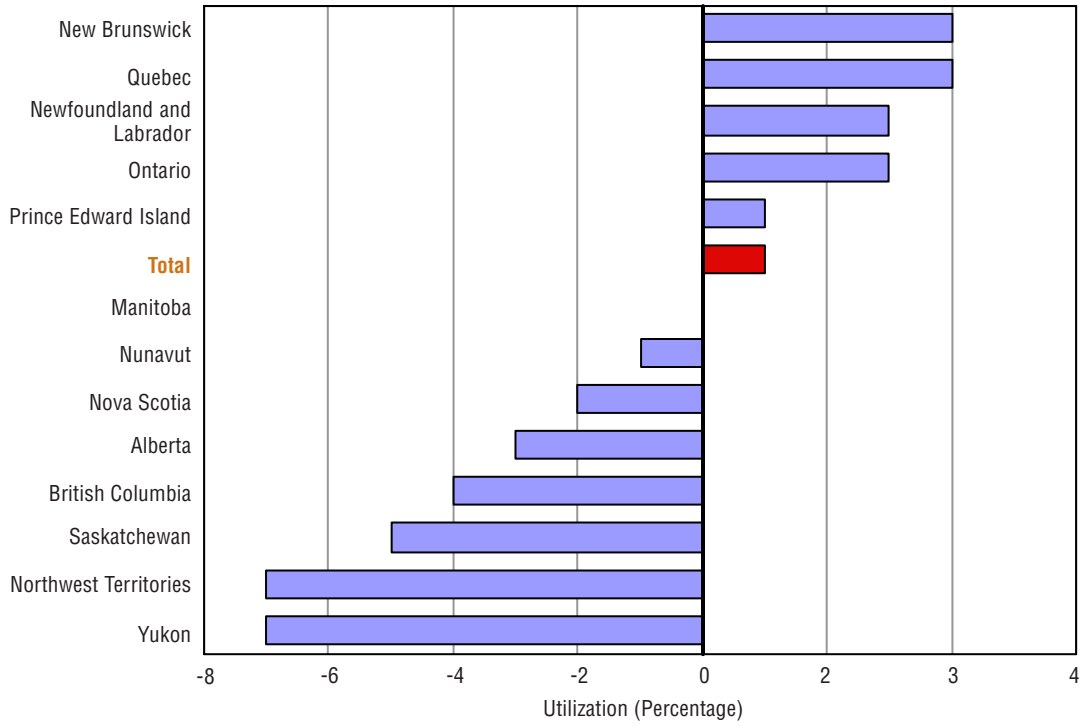
Why literacy skill shortages matter

The underlying theory posits that literacy skills are an economic asset to be exploited. Labour markets that use more of the available pool of literacy skill will generate higher levels of GDP. The theory also predicts that small aggregate skill surpluses provide a cushion against rising skill demand and that aggregate literacy skill shortages reduce economic performance in several ways. Literacy shortages reduce worker productivity in information-intense jobs and reduce the rate at which firms can adapt to technical change –thereby reducing the rate of productivity growth over the long term. The average level of literacy skill and the proportion of workers with low skills have also been shown to have a marked impact on the behavior of firms (Coulombe and Tremblay, 2007). Faced with large numbers of workers with low skills employers compensate by adopting less productive technologies of production and work organization. Thus, finding ways to improve the efficiency of literacy markets would be expected to yield significant economic benefits. Productivity and average wage rates might be expected to rise. Social inequality in labour market outcomes would also be expected to fall.

Literacy utilization rates at the population level

Figure 6.1 presents the aggregate literacy utilization rate for Canada's for the total population. The utilization rates are derived by adding up the average prose literacy score of the employed population and dividing it by the sum of average prose literacy scores for the entire adult population as observed in the 2006 Census of Population.

Figure 6.1
Aggregate literacy utilization rate by jurisdiction, 2006



Source: 2006 Census of Population.

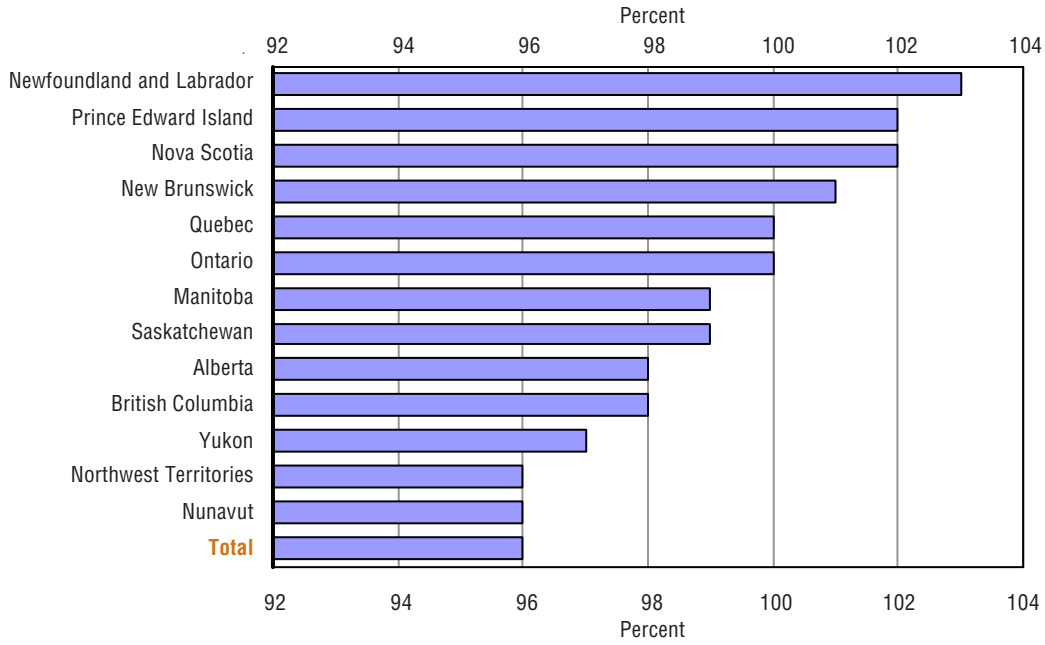
The figure reveals that the Canadian economy currently utilizes only 66% of the total aggregate supply of literacy skill. The aggregate utilization rates vary significantly by jurisdiction from a low of 53 % in Newfoundland to a high of 71% in Alberta.

Policy implications

Higher rates of aggregate GDP could be realized if a means were found to increase utilization rates. Jurisdictions with relatively high rates have less room to increase utilization without risking wage inflation. In contrast jurisdictions with low utilization rates could, by stimulating the aggregate demand for labour and reducing barriers to employment, realize large increases in labour income.

Figures 6.2 and 6.3 plot literacy utilization rates for the employed population. Where rates exceed 100% current skill demand exceeds the aggregate skill possessed by employed workers. The implication for policy in such cases is to increase skill supply through remedial training. Rates of less than 100% imply an aggregate literacy skill supply and a need for measurer skill demand to increase.

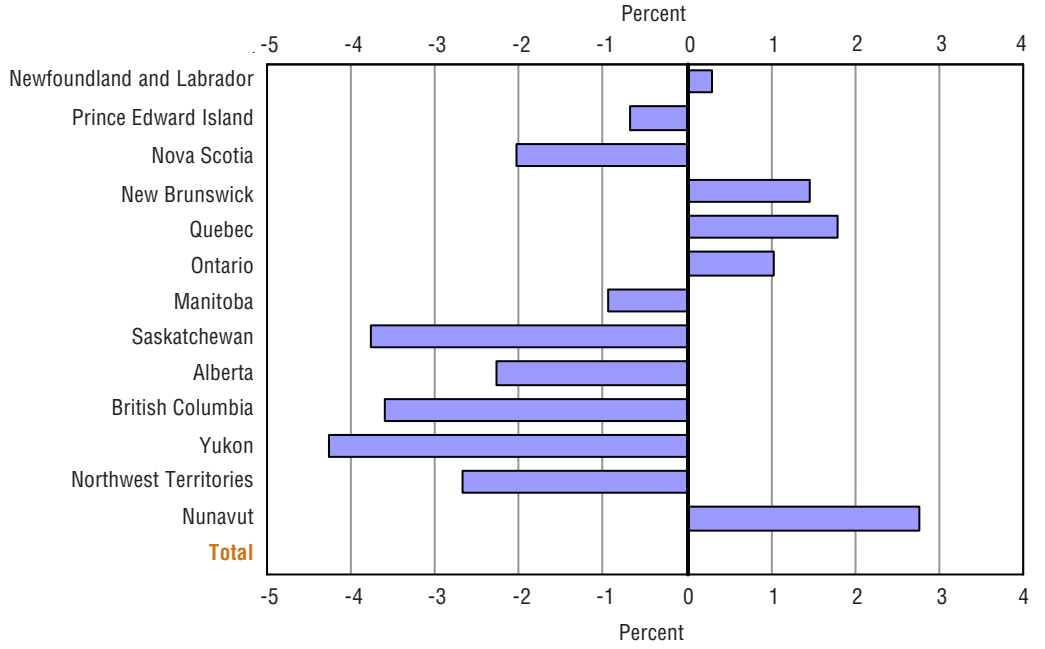
Figure 6.2
Aggregate literacy utilization rate by jurisdiction, employed population, 2006



Source: 2006 Census of Population.

Figure 6.3 presents the same data compared to the national average.

Figure 6.3
Differences in aggregate literacy utilization rates by jurisdiction, employed population, 2006



Source: Census of Population, 2006.

The figures reveal that:

There are significant differences in utilization rates of the employed population among jurisdictions.

Some jurisdictions fail to fully utilize the available supply of literacy skill. For example, employers in the Yukon leave fully 4% of the literacy skill of employed workers unutilized.

In other jurisdictions the current level of literacy skill demand exceeds the skills that currently employed workers possess. For example, jobs in Nunavut demand 3% more literacy skill than currently employed workers are able to supply.

Policy implications

In jurisdictions where the literacy skills of workers are under-utilized labour productivity and aggregate economic output could be increased if the means could be found to increase aggregate skill demand. This might be achieved through the adoption of more skill-intense technologies of production and work organization.

In jurisdictions where current levels of demand for literacy skills exceeds that skills of currently employed workers labour productivity and aggregate economic output could be increased if the means could be found to increase aggregate skill supply. This might be achieved by a number of means including improvements in the quantity and quality of current educational output, increases in levels of adult education and training and literacy instruction, through recruitment of more skilled workers from other jurisdictions or countries.

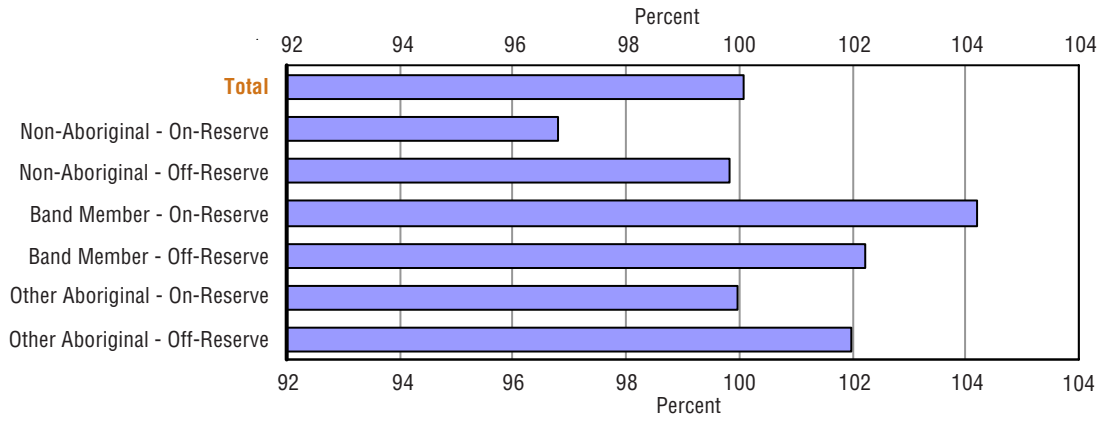
Literacy utilization rates for the employed population for selected groups

The analysis now shifts to explore the degree to which the economy is making full use of the literacy skills possessed by employed workers for selected groups. Low rates of literacy utilization at this level imply that employers are not exploiting the full potential of their workers. Under most circumstances such underutilization of skills is associated with reduced productivity and higher turnover rates.

Figure 6.4 plots the utilization rate of Canada's literacy utilization rate for the employed population. Aggregate utilization rates under 100% indicate a literacy skill surplus whereas rates over 100% indicate a literacy skill shortage i.e. the current distribution of employment by occupation demands more literacy points than employed workers have.

Figure 6.4

Aggregate literacy utilization rates of employed population, selected groups, Canada, 2006



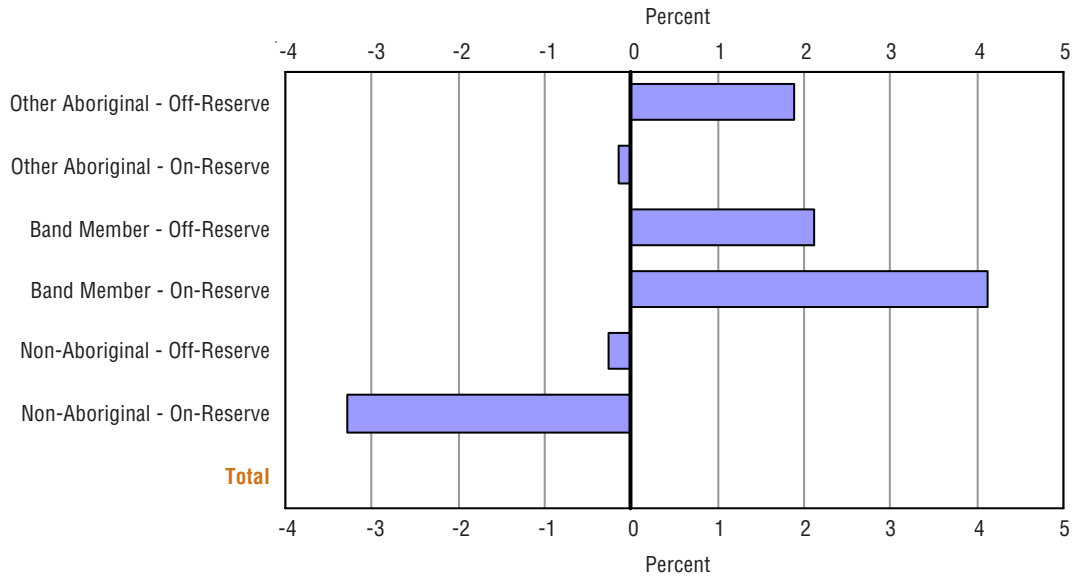
Source: Census of Population, 2006.

At the Canada level the figure reveals that utilization rates vary significantly by group. Overall, the Canadian economy is in slight literacy skill shortage i.e. current employment demands 2% more literacy skill than employed workers possess.

Figure 6.5 shows differences in the aggregate prose literacy utilization rates of the Aboriginal sub-groups compared to the national average.

Figure 6.5

Differences in Aggregate Literacy Utilization from Canadian Total, by Aboriginal Origin, Canada, 2006



Data Source: BVC Abo utilization March 2011.xls

The figure shows that for the three largest Aboriginal sub-groups literacy skill demand exceeds the available supply of skill by a significant margin.

Specifically, the figure reveals that:

> At 104% employed Band members living on reserve face the largest aggregate literacy skill shortage.
>
> Band members living off reserve face the second largest aggregate literacy skill shortage. Literacy skill demand for this group is 102% of available supply.

Non-band members living off reserve also face a 2% aggregate literacy shortage

These aggregate literacy shortages imply a need for investment in skill upgrading.

Policy implications

These findings confirm that literacy supply and demand are not in balance. The presence of significant skill shortages for Band members and non-band members living off reserve implies a loss of economic output and lower income levels. The creation of additional supply would reduce the size of these literacy shortages and serve to increase incomes and reduce the level of income inequality between Aboriginal workers and their non-Aboriginal peers.

6.3 Literacy utilization rates by level of skill demanded for selected groups

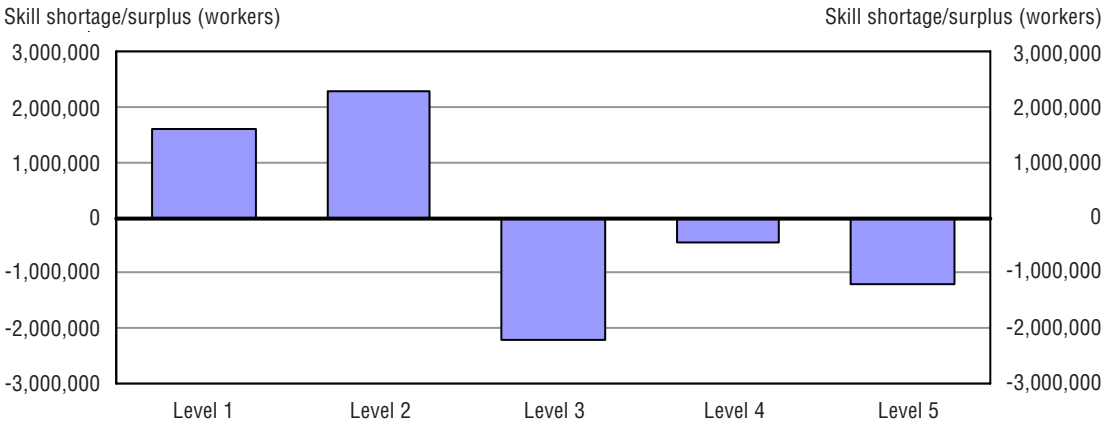
The figures below extend the analysis of literacy utilization rates to the level of the job. The goal is to see if utilization varies by the proficiency level demanded by the job. Low utilization rates in jobs at specific proficiency levels imply economic inefficiency that, if corrected, would result in higher economic output. Figure 6.6 is denominated in literacy points, figure 6.7 in workers.

Band members living on reserve

Figure 6.6 displays national literacy skill shortages and surpluses in numbers of employed workers who are Band members living on reserve.

Figure 6.6

Number of workers in literacy skill surplus and shortage by literacy proficiency level, all occupations, 2006, total, Band Member - On-Reserve



Source: 2006 Census of Population.

At the Canada level the figure reveals:

A surplus of 13,000 employed workers with Level 1 skills

A surplus of 11,000 employed workers with Level 2 skills

A shortage of 15,000 employed workers with Level 3 skills

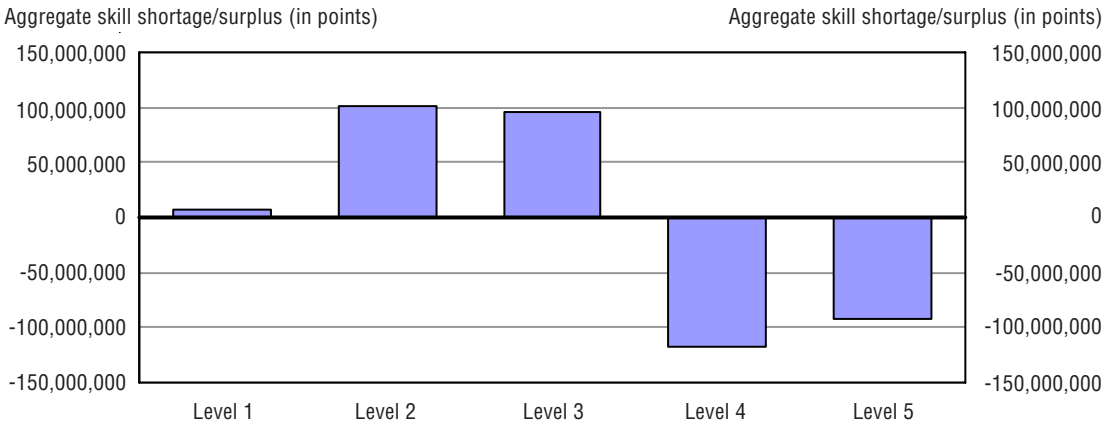
A shortage of 5,000 employed workers with level 4 skills

A shortage of 4,000 employed workers with level 5 skills

Figure 6.7 displays literacy skill shortages and surpluses for the same Band members living on reserve, this time in literacy points.

Figure 6.7

Aggregate literacy skill surplus and shortage, peak demand, all occupations, 2006, total, Band Member - On-Reserve



At the Canada level the figure reveals a different pattern of results, that is, that:

Surpluses of literacy skills in Level 2 jobs

Shortages of literacy skill in Levels 3, 4 and 5 jobs

Figure 6.8

Number of workers in literacy skill surplus and shortage by literacy proficiency level, all occupations, 2006, total, Other Aboriginal - Off-Reserve

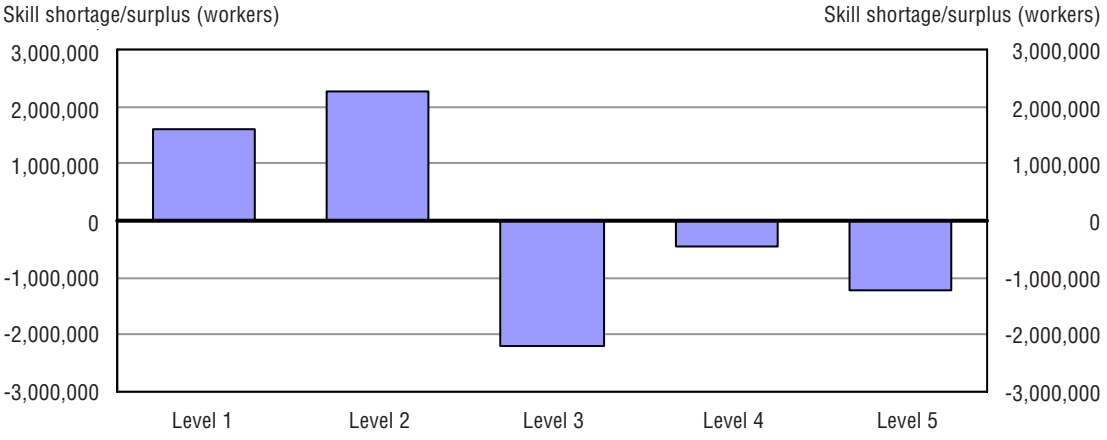
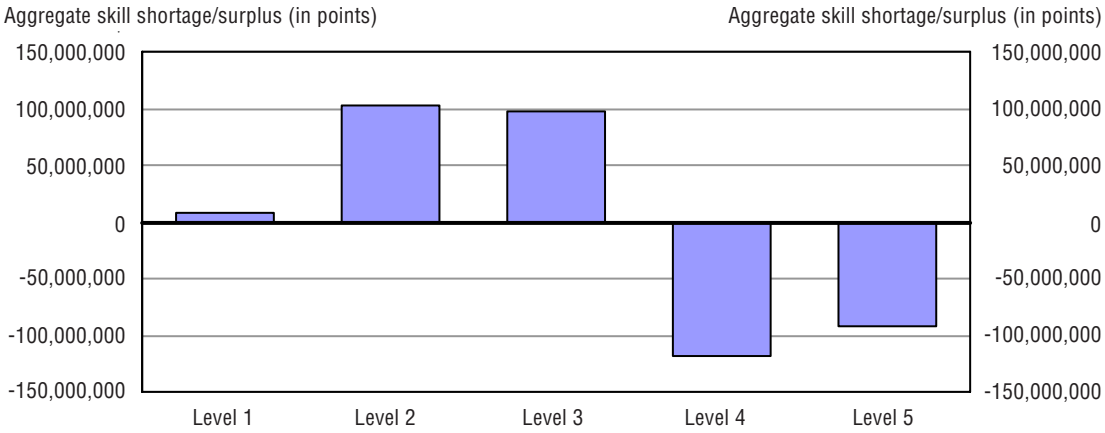


Figure 6.9

Aggregate literacy skill surplus and shortage, peak demand, all occupations, 2006, total, Other Aboriginal - Off-Reserve



Policy Implications

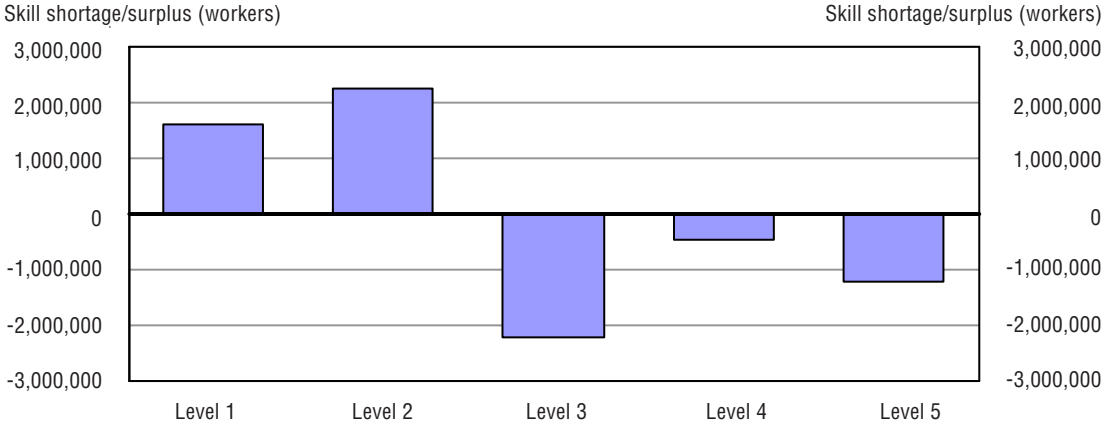
Evidence of more Level 1 and 2 workers than low skilled jobs suggests that aggregate labour demand is below the level needed to ensure full employment. Finding a way to increase employment levels would result in an increase in labour income and economic output. Having fewer workers with Level 3, 4 and 5 skills than there are jobs suggests a need to increase skill levels through instruction. Improved skill levels would increase labour productivity. The surplus of Level 3 workers in Level 3 jobs at the same time as there is a surplus of literacy points in Level 3 jobs suggests that a significant mis-match in which workers with Level 4 and 5 skills are being employed in Level 3 jobs.

Band members living off reserve

Figure 6.10 displays national literacy skill shortages and surpluses in numbers of employed workers who are Band members living off reserve.

Figure 6.10

Number of workers in literacy skill surplus and shortage by literacy proficiency level, all occupations, 2006, total, Band Member - Off-Reserve



Source: 2006 Census of Population.

At the Canada level the figure reveals:

A surplus of 18,000 employed workers with Level 1 skills

A surplus of 21,000 employed workers with Level 2 skills

A shortage of 24,000 employed workers with Level 3 skills

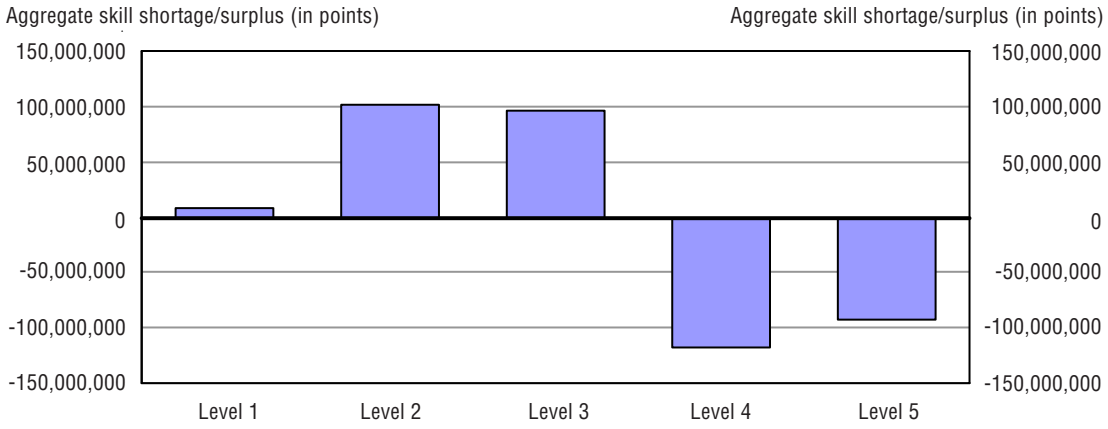
A shortage of 7,000 employed workers with level 4 skills

A shortage of 8,000 employed workers with level 5 skills

Figure 6.11 displays literacy skill shortages and surpluses for the same Aboriginal Band members living off reserve, this time in literacy points.

Figure 6.11

Aggregate literacy skill surplus and shortage, peak demand, all occupations, 2006, total, Band Member - Off-Reserve



Source: 2006 Census of Population.

At the Canada level the figure reveals a different pattern of result, that is that:

Surpluses of literacy skills in Level 2 and 3 jobs

Shortages of literacy skill in Level 4 and 5 jobs

Policy Implications

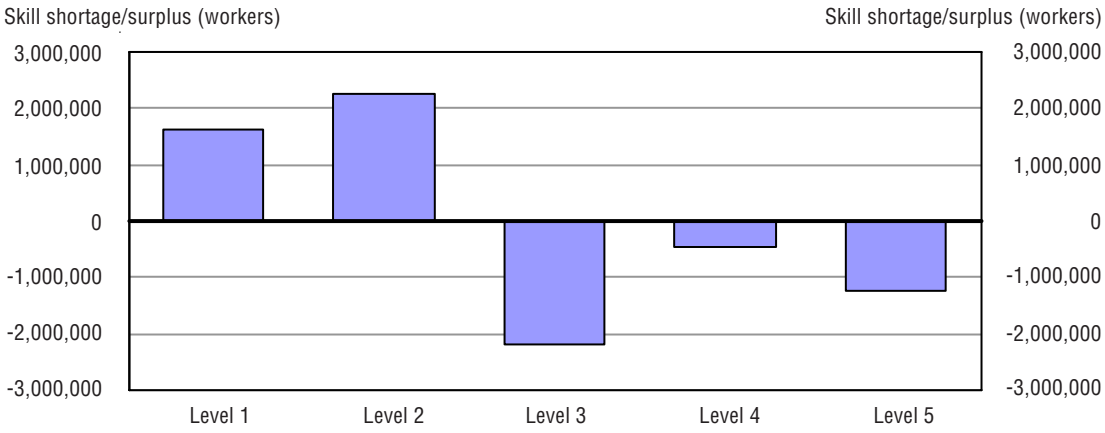
Evidence of more Level 1 and 2 workers than low skilled jobs suggests that aggregate labour demand is below the level needed to ensure full employment. Finding a way to increase employment levels would result in an increase in labour income and economic output. Having fewer workers with Level 3, 4 and 5 skills than there are jobs suggests a need to increase skill levels through instruction. Improved skill levels would increase labour productivity. The surplus of Level 3 workers in Level 3 jobs at the same time as there is a surplus of literacy points in Level 3 jobs suggests that a significant mis-match in which workers with Level 4 and 5 skills are being employed in Level 3 jobs.

Aboriginal non-Band members living on reserve

Figure 6.12 displays national literacy skill shortages and surpluses in numbers of employed workers who are Aboriginal non-Band members living on reserve.

Figure 6.12

Number of workers in literacy skill surplus and shortage by literacy proficiency level, all occupations, 2006, total, Other Aboriginal - On-Reserve



Source: 2006 Census of Population.

At the Canada level the figure reveals:

A surplus of 1.6 million employed workers with Level 1 skills

A surplus of 2.3 million employed workers with Level 2 skills

A shortage of 2.2 million employed workers with Level 3 skills

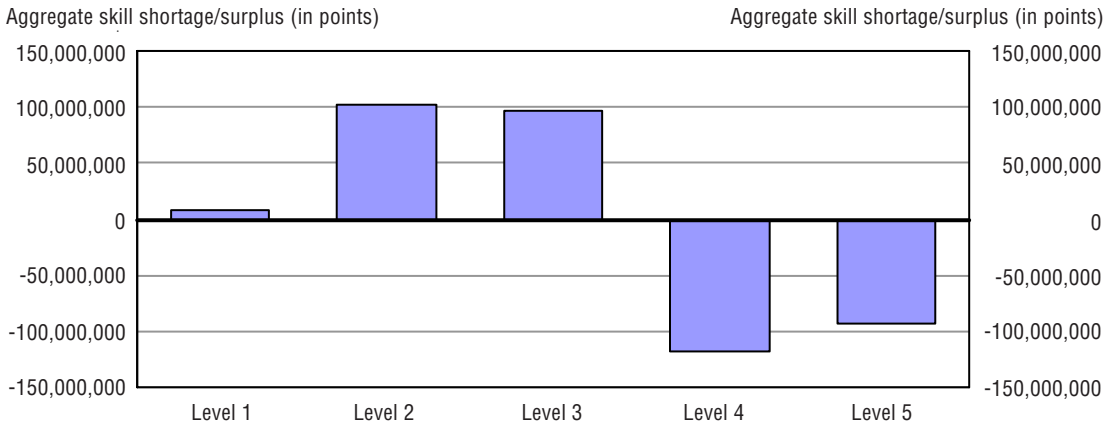
A shortage of 452,000 employed workers with level 4 skills

A shortage of 1.2 million employed workers with level 5 skills

Figure 6.13 displays literacy skill shortages and surpluses for the same Aboriginal non-Band members living on reserve, this time in literacy points.

Figure 6.13

Aggregate literacy skill surplus and shortage, peak demand, all occupations, 2006, total, Other Aboriginal - On-Reserve



Source: 2006 Census of Population.

At the Canada level the figure reveals a different pattern of results, that is, that:

Surpluses of literacy skills in Level 1, 2 and 3 jobs

Shortages of literacy skill in Level 4 and 5 jobs

At the Canada level the figure reveals:

A surplus of 1.6 million employed workers with Level 1 skills

A surplus of 2.3 million employed workers with Level 2 skills

A shortage of 2.2 million employed workers with Level 3 skills

A shortage of 452,000 employed workers with level 4 skills

A shortage of 1.2 million employed workers with level 5 skills.

Section7

Individual skill surpluses and shortages and market segments

This chapter explores literacy skill shortages and surpluses at the individual level. An individual is deemed to be in literacy skill shortage if they have a literacy score that falls below the lower threshold of the reading skill level identified in the Essential Skill Profiles as being needed on an occasional basis. The chapter also presents the results of an analysis that groups workers in literacy skill shortage on the basis of shared learning needs. Shared learning needs are defined by a combination of patterns of strength and weakness in the mechanics of reading and by the skills that underlie the successful application of fluid and automatic reading to workplace problems. The following figure 7.0 shows how adults are classified as being in literacy skill shortage balance or surplus.

Figure 7.0
Defining prose literacy skill shortages

Labour Force employed status	Skill level demanded by occupation	Actual skill level				
		Level 1	Level 2	Level 3	Level 4	Level 5
Labour Force employed status	Level 1	Balance	Surplus	Surplus	Surplus	Surplus
	Level 2	Shortage	Balance	Surplus	Surplus	Surplus
	Level 3	Shortage	Shortage	Balance	Surplus	Surplus
	Level 4	Shortage	Shortage	Shortage	Balance	Surplus
	Level 5	Shortage	Shortage	Shortage	Shortage	Balance
Worked in past 5 years	Level 1	Balance	Surplus	Surplus	Surplus	Surplus
	Level 2	Shortage	Balance	Surplus	Surplus	Surplus
	Level 3	Shortage	Shortage	Balance	Surplus	Surplus
	Level 4	Shortage	Shortage	Shortage	Balance	Surplus
	Level 5	Shortage	Shortage	Shortage	Shortage	Balance
Not in Labour Force	Level 1	Shortage	Surplus	Surplus	Surplus	Surplus
	Level 2	Shortage	Shortage	Surplus	Surplus	Surplus
	Level 3	Shortage	Shortage	Balance	Surplus	Surplus
	Level 4	Shortage	Shortage	Shortage	Balance	Surplus
	Level 5	Shortage	Shortage	Shortage	Shortage	Balance

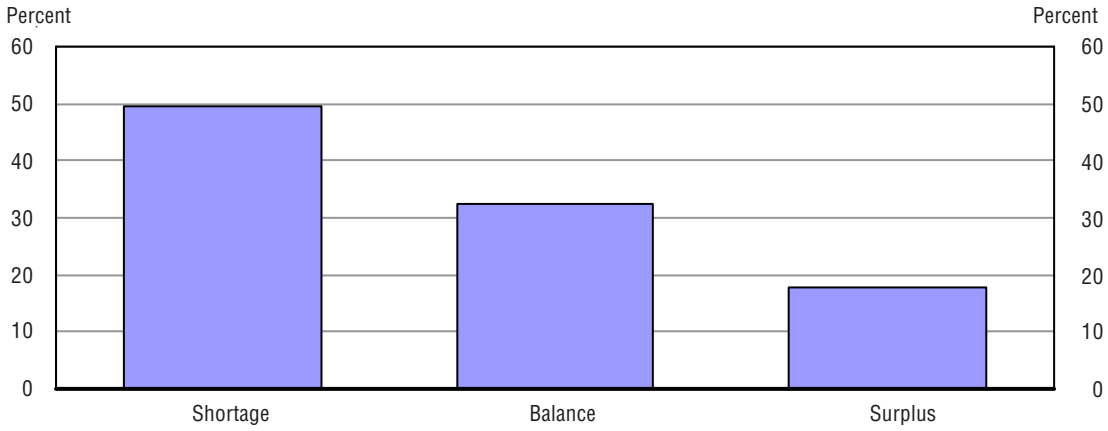
Surpplus
Balance
Shortage

Why literacy skill surpluses and shortages matter

Theory suggests that labour markets are at their most efficient when the literacy skill of individual workers is at or just above the level associated with the reading demands of the job. Small literacy skill surpluses provide a cushion against rising skill demand associated with technical change and organizational change that increases the knowledge and skill intensity of production. Large skill shortages increase the probability of workers experiencing skill loss, a phenomenon that reduces the overall supply of skill, reduces the rate of return on educational investment and incentives to participate in adult education and training and lost output (Willms and Murray, 2007). Literacy skill shortages have a direct negative impact on worker productivity and indirectly reduce productivity through higher rates of illness, accident and absence from work (Coughlan and Murray, 2010).

Figure 7.1 provides a national level summary of skill shortage, balance and surplus. For employed Aboriginal population.

Figure 7.1
Employed Population by Shortage/Surplus, Canada, 2006



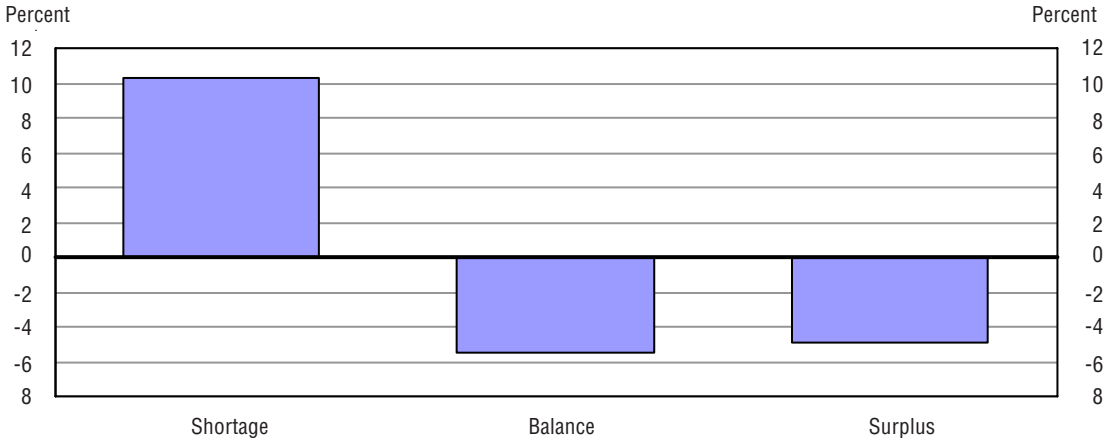
Somewhat surprisingly 50% of employed workers have a lower level of literacy skills than notionally required by their occupation. 18% of workers have a higher level of literacy skill than required by their occupation. Together these results suggest that the processes that match workers with the skill demands of their occupations are not very efficient.

Band members living on reserve

Figure 7.2 compares the proportions of workers in skill shortage, balance and surplus who are Band members living on reserve to the national averages.

Figure 7.2

Relative rates of literacy surplus, shortage and balance, employed Aboriginal band members aged 16 and over living on reserve, Canada, 2006



Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

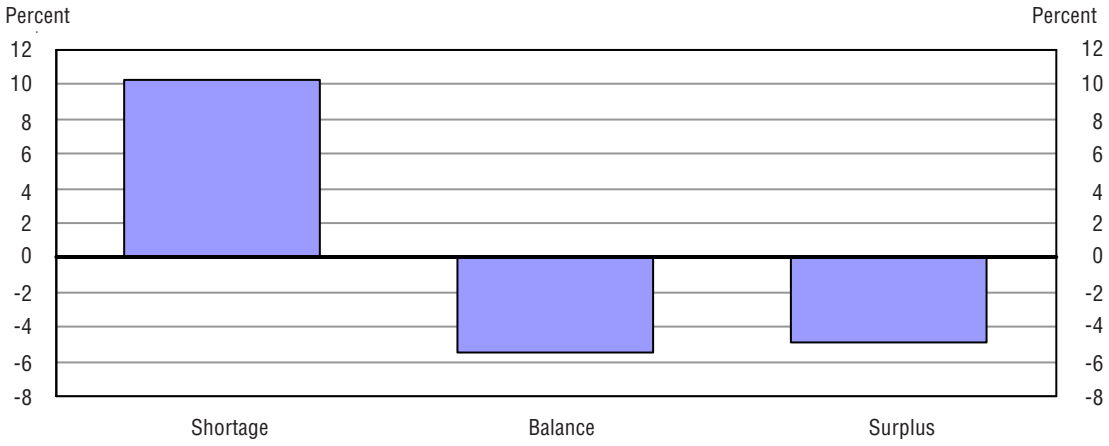
The figure shows that the proportion of Band members living on reserve who are in literacy skill shortage is 10.5% higher than the national average.

Aboriginal off reserve

Figure 7.3 compares the proportions of workers in skill shortage, balance and surplus who are Aboriginal and living off reserve to the national averages.

Figure 7.3

Relative rates of literacy surplus, shortage and balance, employed Aboriginal adults aged 16 and over living off reserve, Canada, 2006



Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

The figure shows that the proportion of Band members living on reserve who are in literacy skill shortage is 10.3% higher than the national average.

Policy implications

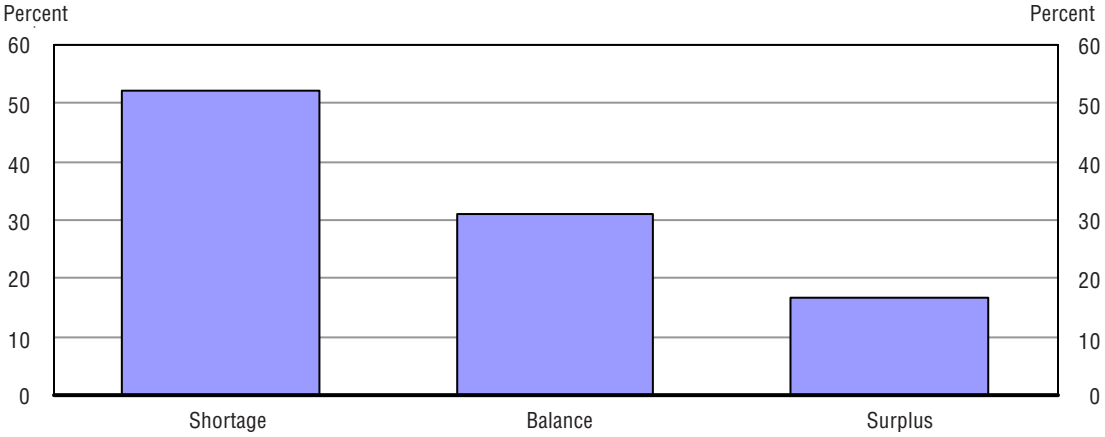
The fact that both Band members living on reserve and Aboriginal workers living off reserve are more likely to be in literacy shortage is likely to place them at a disadvantage in Canada's labour markets.

Band Members living off reserve

Yukon

Figure 7.4

Relative rates of literacy surplus, shortage and balance, employed Aboriginal adults aged 16 and over living off reserve, Yukon, 2006

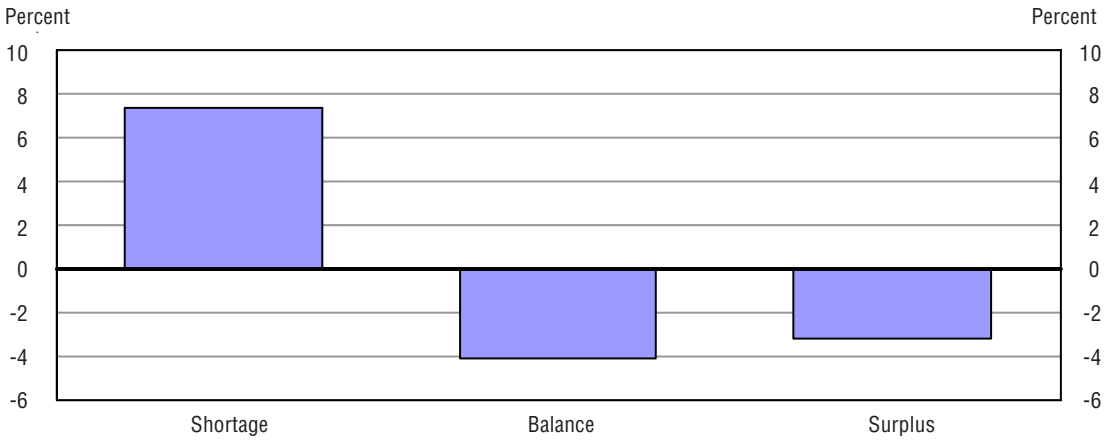


Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

52.2% of employed workers have a lower level of literacy skills than notionally required by their occupation, a slightly higher percentage than observed at the national level. 16.7% of workers have a higher level of literacy skill than required by their occupation. Together these results suggest that the processes that match workers with the skill demands of their occupations are not very efficient.

Figure 7.5

Relative rates of literacy surplus, shortage and balance, employed Aboriginal adults aged 16 and over living off reserve, Yukon, 2006



Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

The figure shows that the proportion of Band members living on reserve who are in literacy skill shortage is 7.4.% higher than the Yukon average. Band members living on reserve are slightly less likely to be in skill balance or surplus.

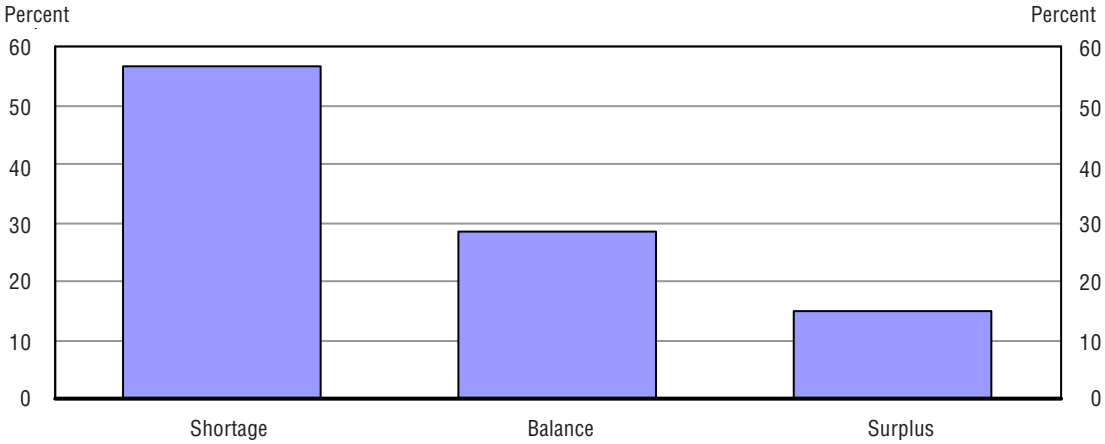
Policy implications

The fact that both Aboriginal workers living off reserve are more likely to be in literacy shortage is likely to place them at a disadvantage in the Yukon labour market.

The North West Territories

Figure 7.6

Relative rates of literacy surplus, shortage and balance, employed Aboriginal adults aged 16 and over living off reserve, North West Territories, 2006

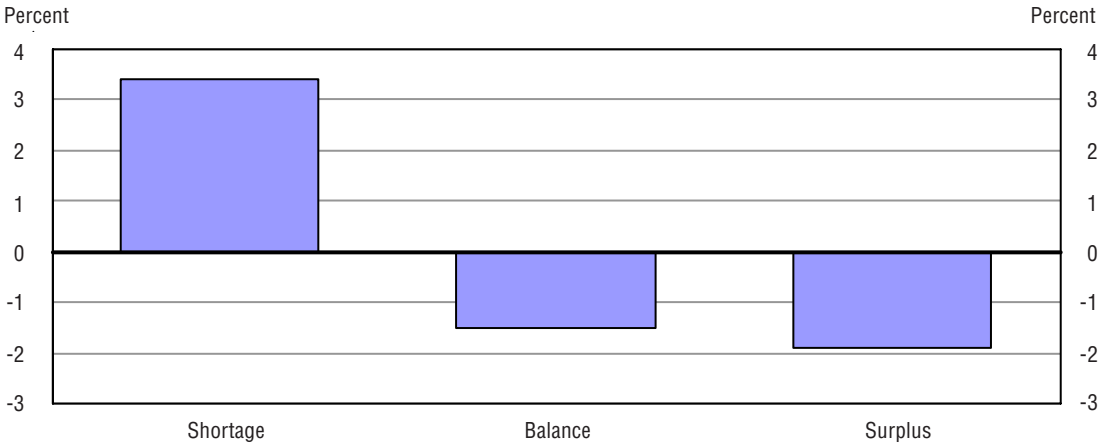


Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

56.5% of employed workers have a lower level of literacy skills than notionally required by their occupation, a slightly higher percentage than observed at the national level. 14.8% of workers have a higher level of literacy skill than required by their occupation. Together these results suggest that the processes that match workers with the skill demands of their occupations are not very efficient.

Figure 7.7

Relative rates of literacy surplus, shortage and balance, employed Aboriginal adults aged 16 and over living off reserve, North West Territories, 2006



Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

The figure shows that the proportion of Band members living off reserve who are in literacy skill shortage is 3.4.% higher than the North West Territories average. Band members living on reserve are slightly less likely to be in skill balance or surplus.

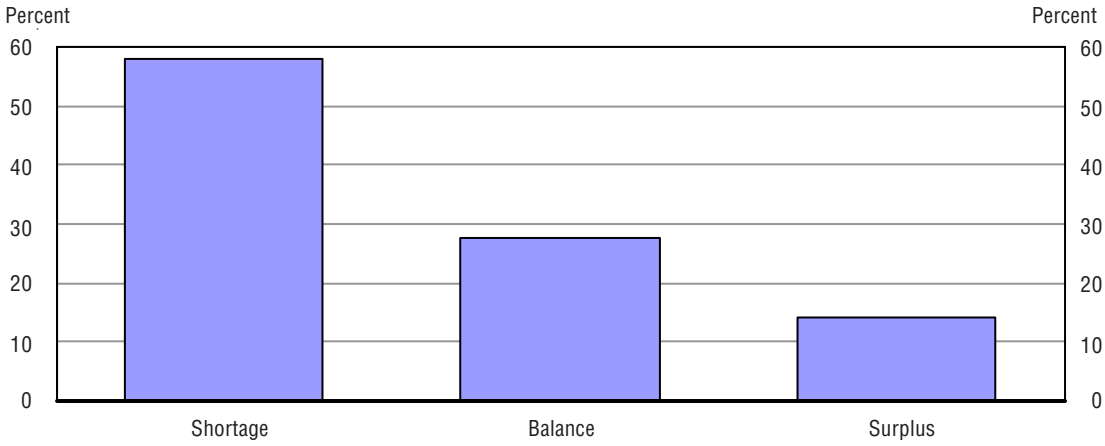
Policy implications

The fact that both Aboriginal workers living off reserve are more likely to be in literacy shortage is likely to place them at a disadvantage in the NWT labour market.

Nunavut

Figure 7.8

Relative rates of literacy surplus, shortage and balance, employed Aboriginal adults aged 16 and over living off reserve, Nunavut, 2006



Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

58.1% of employed workers have a lower level of literacy skills than notionally required by their occupation, a slightly higher percentage than observed at the national level. 14.3% of workers have a higher level of literacy skill than required by their occupation. Together these results suggest that the processes that match workers with the skill demands of their occupations are not very efficient.

Figure 7.9

Relative rates of literacy surplus, shortage and balance, employed Aboriginal adults aged 16 and over living off reserve, Nunavut, 2006

Source: Special tabulations derived from the Census of Population 2006 and IALSS 2003.

The figure shows that the proportion of Band members living on reserve who are in literacy skill shortage is 1.8% higher than the Nunavut average. Aboriginal adults are slightly less likely to be in skill balance or surplus.

Policy implications

The fact that both Aboriginal workers living off reserve are more likely to be in literacy shortage is likely to place them at a disadvantage in the Nunavut labour market.

Section 8

The costs and benefits of eliminating literacy skill shortages through instruction

This chapter presents the results of a cost/benefit analysis related to eliminating literacy skill shortages through instruction. Estimates of the cost of eliminating literacy skill shortages through the provision of "best practice" literacy instruction and of the increases in earnings that might be realized were these investments made. Comparison of costs and potential benefits are used to approximate simple rates of return on investment. These analyses build on earlier research undertaken by the authors at the national and provincial/territorial level for the general population.[1] This information is designed provide readers with a sense of the size of the challenge facing these workers, their employers and their governments.

Segment in the Canadian literacy market

The cost estimates are based upon the "best practice" interventions identified for each literacy market segment in the analyses published in ***Reading the Future: Planning for Canada's Future Literacy Needs*** (CCL, 2008) and a set of unit costs published in ***Addressing Canada's Literacy Challenge: A Market Segmentation Analysis*** (DataAngel, 2009) that have been adjusted to better reflect the unique learning needs and realities of the various groups of Aboriginal learners.

The cost estimates were developed by experts that are actively involved in delivering various sorts of efficient and effective remedial literacy programs to Canada's Aboriginal adult populations.

Separate costing were done for those who are currently employed those who have worked at some point in the 5 years preceding the 2006 Census and those out of the labour force. Adults identified as being in literacy skill shortage are divided into one of eight literacy market segments based on tier demographic character is tics, patterns of strength and weakness in the mechanics of reading and, for the two most skilled segments, the nature of their shortage literacy market segments and their characteristics.

1. See for example **Addressing Canada's Literacy Challenge: A Cost-Benefit Analysis** (DataAngel, 2009) and **Understanding Canada's Literacy Markets: A Segmentation Analysis** (DataAngel, 2009)

Group	Brief	Print Skills (ISRS)	Comprehension Skills (ISRS)	Oral Language Score (ISRS)	Average Prose Literacy Score (ISRS)
A1	Canadian-born, English mother tongue (potential reading disability)	Very Limited	Limited	58.6	High-Level 1 (201)
A2	Majority immigrants, non-English (and non-French) mother tongue	Very Limited	Limited	41.8	Low-Level 1 (165)
B1	Majority born in Canada, English mother tongue (potential reading disability)	Limited	Limited	47.9	Mid-Level 1 (193)
B2	Majority immigrants, non-English (and non-French) mother tongue	Limited	Limited	48.9	High-Level 1 (204)
C	Majority born in Canada, majority with English mother tongue	Limited	Adequate	64.3	Mid-Level 2 (201)
D	Majority born in Canada, majority with English mother tongue	Adequate	Adequate	74.6	High-Level 2 (165)
E	Have Level 3, need Levels 4 or 5	Adequate	Adequate	-	Level 3 (193)
F	Have Level 4, need Level 5	Adequate	Adequate	-	Level 4 (193)

For the employed and those that worked at same point in the past 5 years literacy skill shortage is defined by having a skill level lower than demanded by their occupation. For those not in the Labour Force literacy skill shortage is defined by being at prose literacy levels 1 or 2. For the proposes of this analysis workers with level 1 and 2 literacy skills who are in occupations that demand these skill levels are judged to be in literacy balance. The costing tables included in the statistical annex include an estimate of what it would cost to raise these workers to level 3. In all cases the costs reflect the type of learner and the number of points each individual is away from the desired proficiency level.

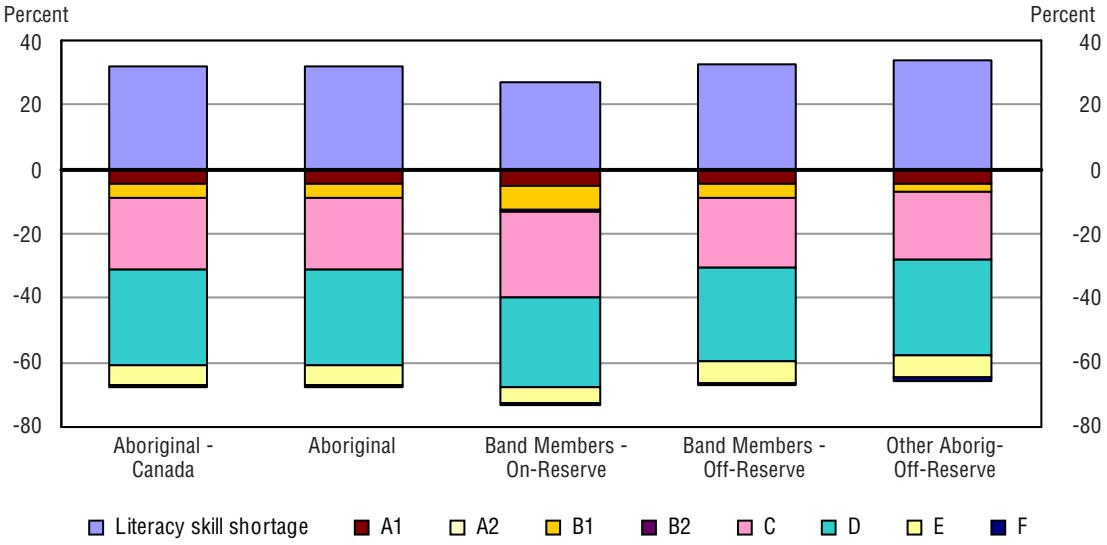
While every effort has been made to base these estimates in reality, the estimates should be taken as indicative of the required magnitude of investment, not as definitive. As noted above the cost estimates are meant to reflect the average costs of bringing each group of learners to the level demanded by their occupation. For adults that have not worked in the past 5 years prose literacy Level 3 has been assumed in estimating aggregate costs. For groups with average skills at prose literacy Level 1, this involves estimating the cost of first raising the learner's skills to prose literacy Level 2 and then estimating the cost of raising learners the same learners to level 3.

All cost estimates are based upon average costs that are thought to be reasonable approximations for the group in question. While the actual costs of delivering programs to each group are likely to vary considerably for specific groups of learners the experts judge that the amounts allocated are sufficient on, on average, to achieve the desired result.

The following series of charts compares the distribution of Aboriginal sub-populations by literacy market segment to the provincial/territorial and national averages.

Figure 8.1

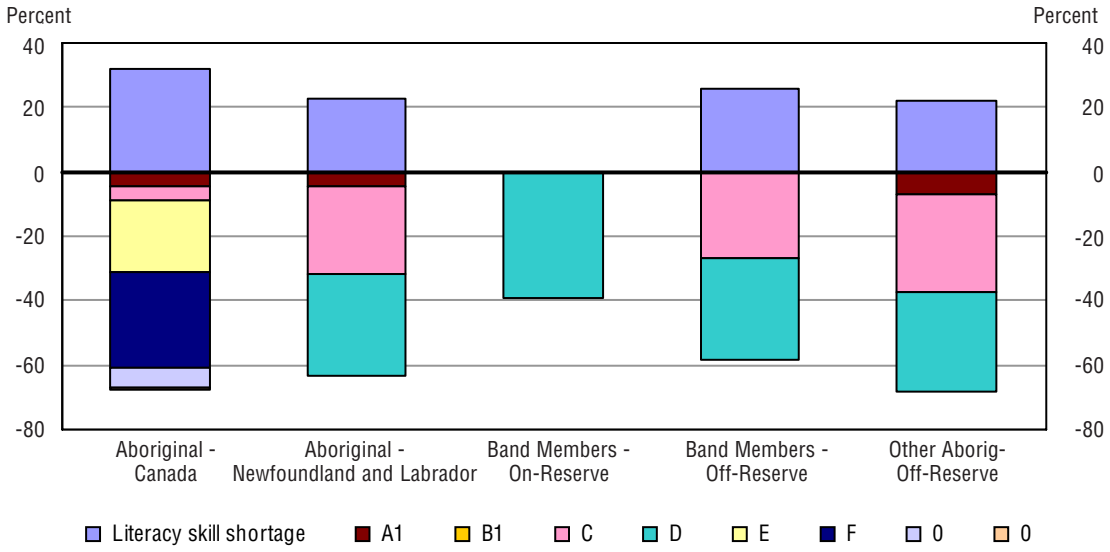
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada, 2006



The chart reveals that, at the Canada level, only Band Members living on reserve appear to face higher risks of being in literacy skill shortage.

Figure 8.2

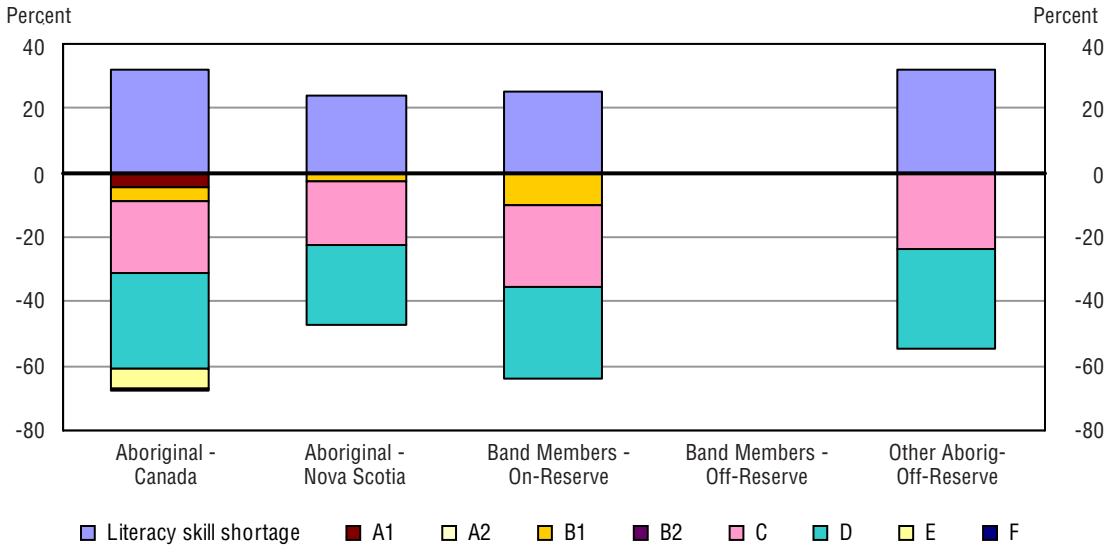
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Newfoundland and Labrador, 2006



The chart reveals that Aboriginal adults in appear to be less skilled than their peers in other provinces. Moreover, only Band Members living on reserve appear to face higher risks of being in literacy skill shortage in Newfoundland and Labrador. All of these adults are classified into literacy market segment D, a segment with quite limited learning needs.

Figure 8.3

Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Nova Scotia, 2006



The chart reveals that Aboriginal adults in Nova Scotia appear to be more skilled than their peers in other provinces. Only Band Members living on reserve appear to face higher risks of being in literacy skill shortage in Nova Scotia.

Figure 8.4

Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and New Brunswick, 2006

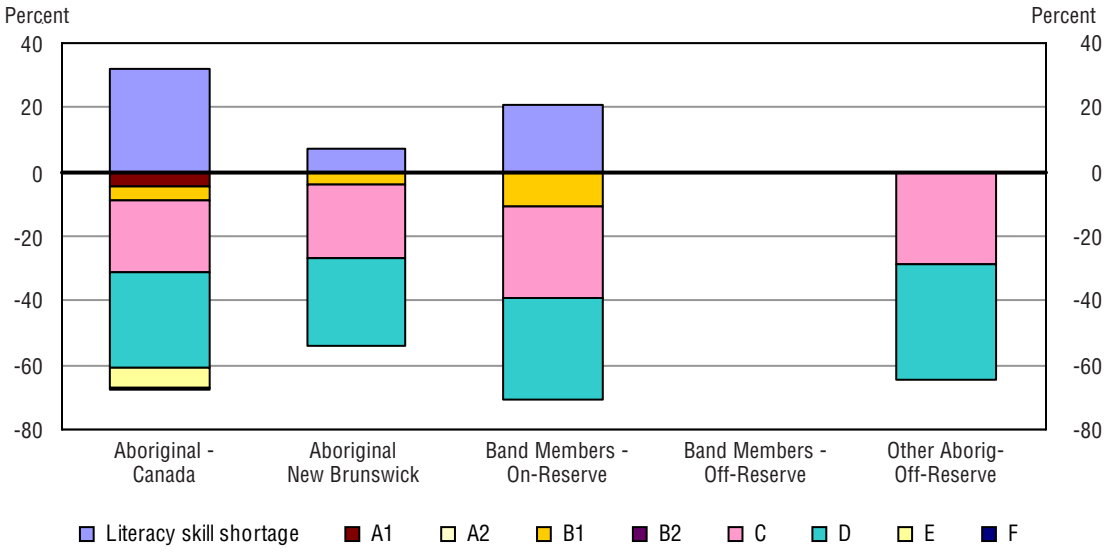
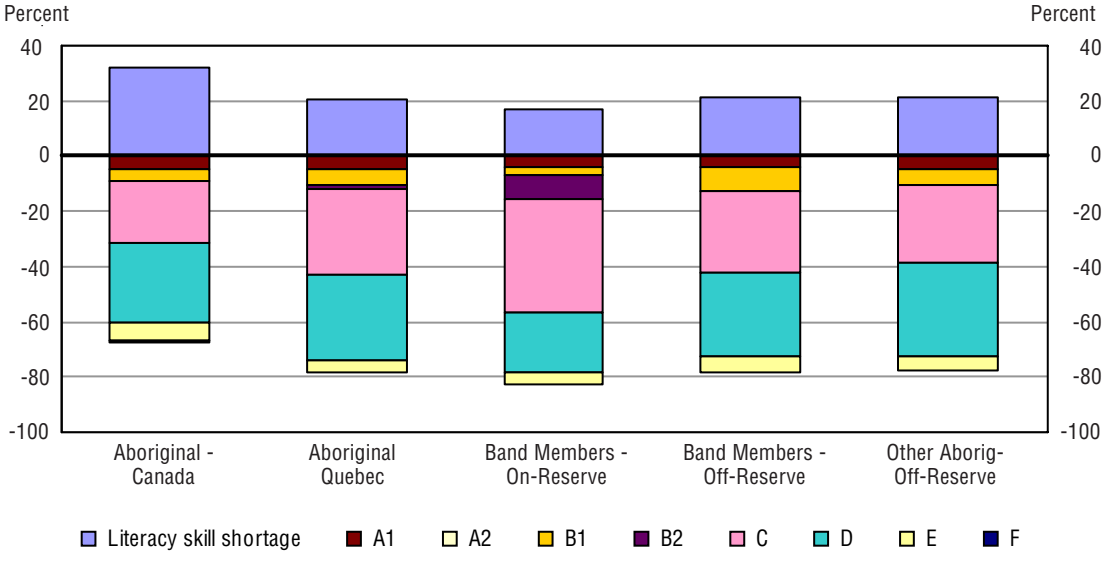


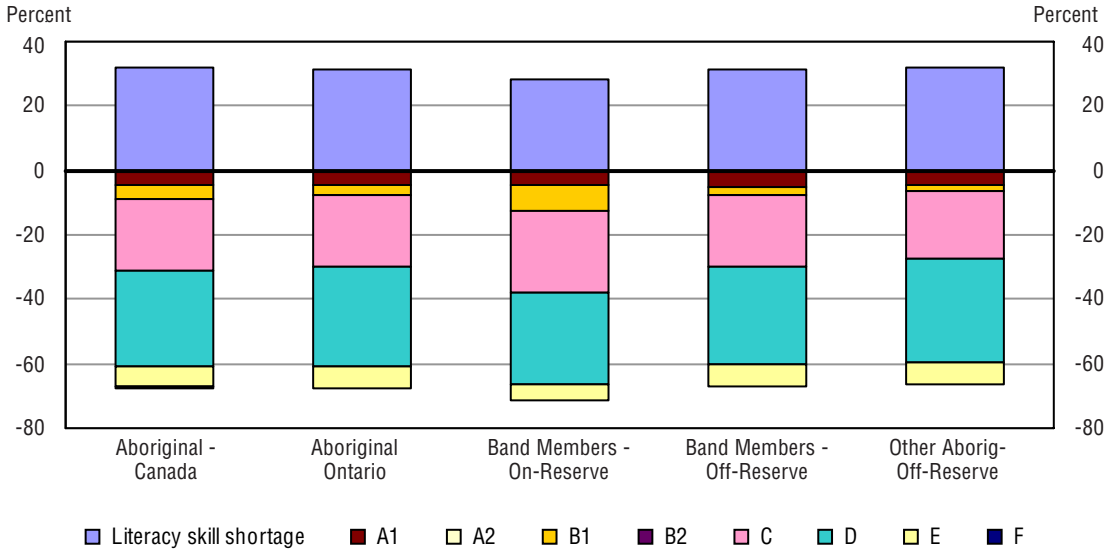
Figure 8.5

Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Quebec, 2006



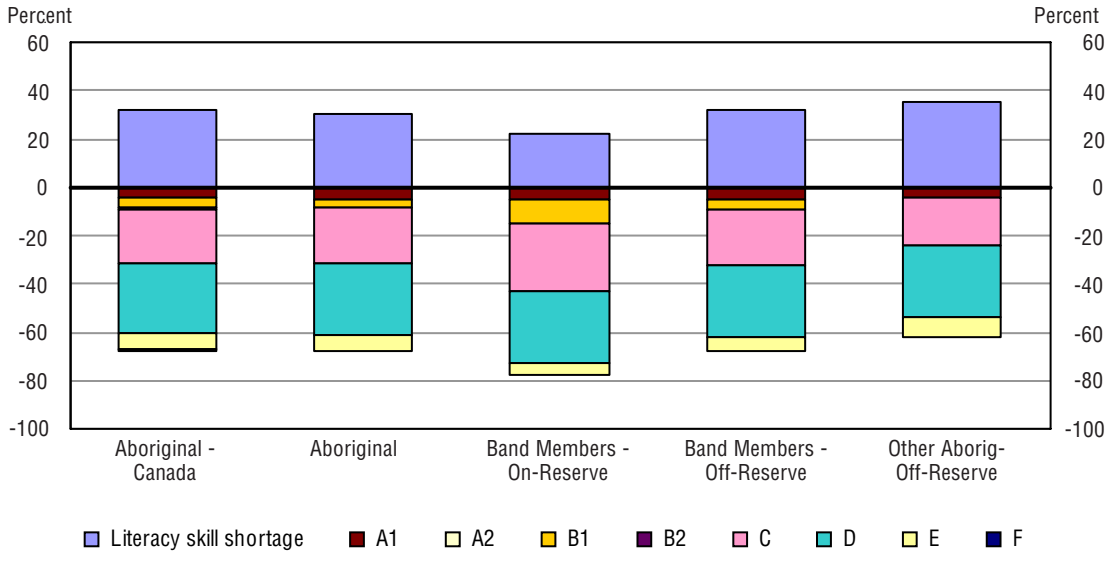
Aboriginal adults in Quebec are slightly more likely to be in literacy skill shortage than the national average. Band members living on reserve in Quebec are slightly more likely than their provincial Aboriginal peers to be in shortage but their relative disadvantage is smaller than in many jurisdictions.

Figure 8.6 Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Ontario, 2006



Aboriginal adults in Ontario are slightly close to the national average in terms of being in literacy skill shortage. Band members on reserve in Ontario are slightly more likely than their provincial Aboriginal peers to be in shortage but their relative disadvantage is smaller than in many jurisdictions.

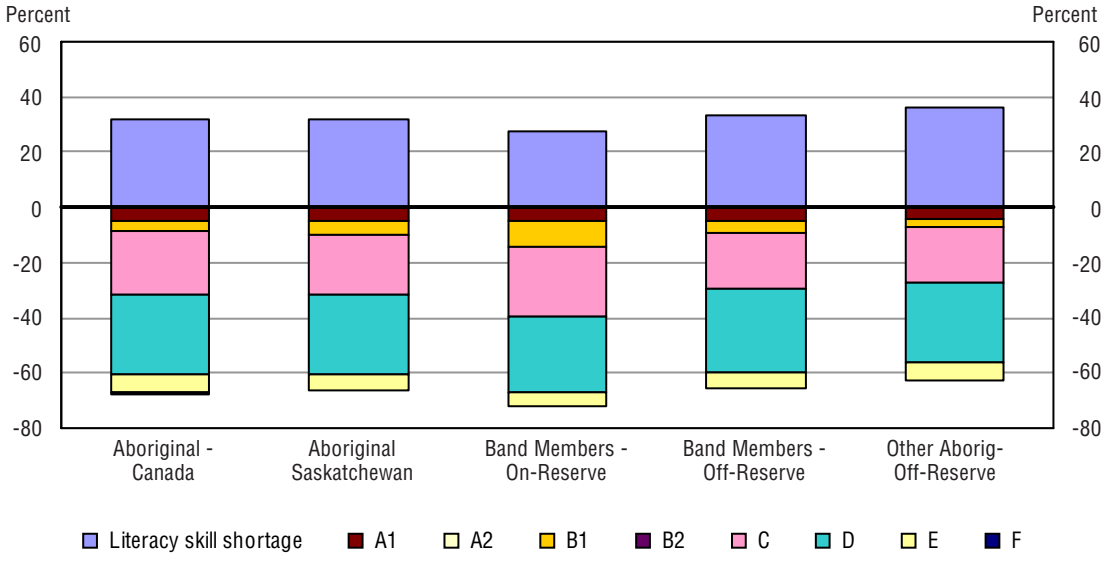
Figure 8.7
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Manitoba, 2006



Aboriginal adults in Manitoba are close to the national average in terms of being in literacy skill shortage. Band members on reserve in Manitoba are slightly more likely than their provincial Aboriginal peers to be in shortage. Other Aboriginals living off reserve, largely Metis adults, are somewhat less likely to be in literacy skill shortage.

Figure 8.8

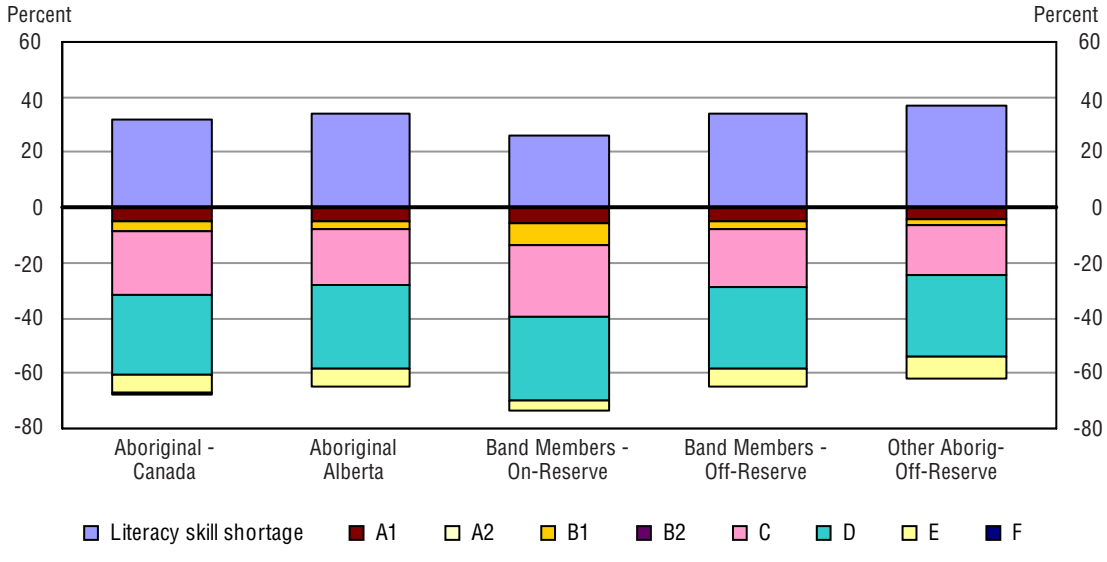
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Saskatchewan, 2006



Aboriginal adults in Saskatchewan are close to the national average in terms of being in literacy skill shortage. Band members on reserve in Saskatchewan are slightly more likely than their provincial Aboriginal peers to be in shortage. Other Aboriginals living off reserve, largely Metis adults, are somewhat less likely to be in literacy skill shortage.

Figure 8.9

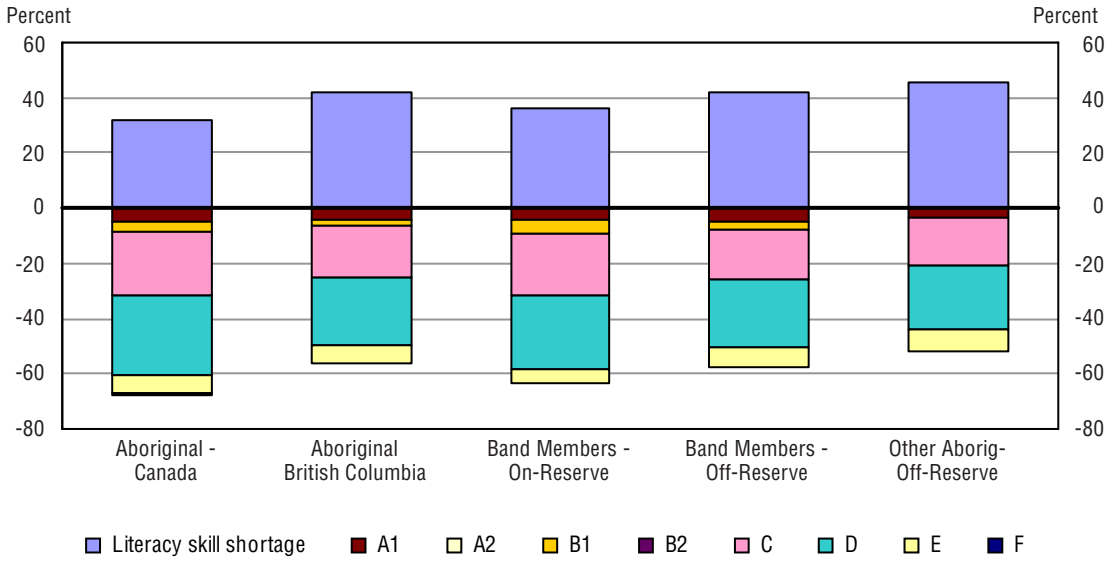
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Alberta, 2006



Aboriginal adults in Alberta are close to the national average in terms of being in literacy skill shortage. Band members on reserve in Alberta are slightly more likely than their provincial Aboriginal peers to be in shortage. Other Aboriginals living off reserve, largely Metis adults, are somewhat less likely to be in literacy skill shortage.

Figure 8.10

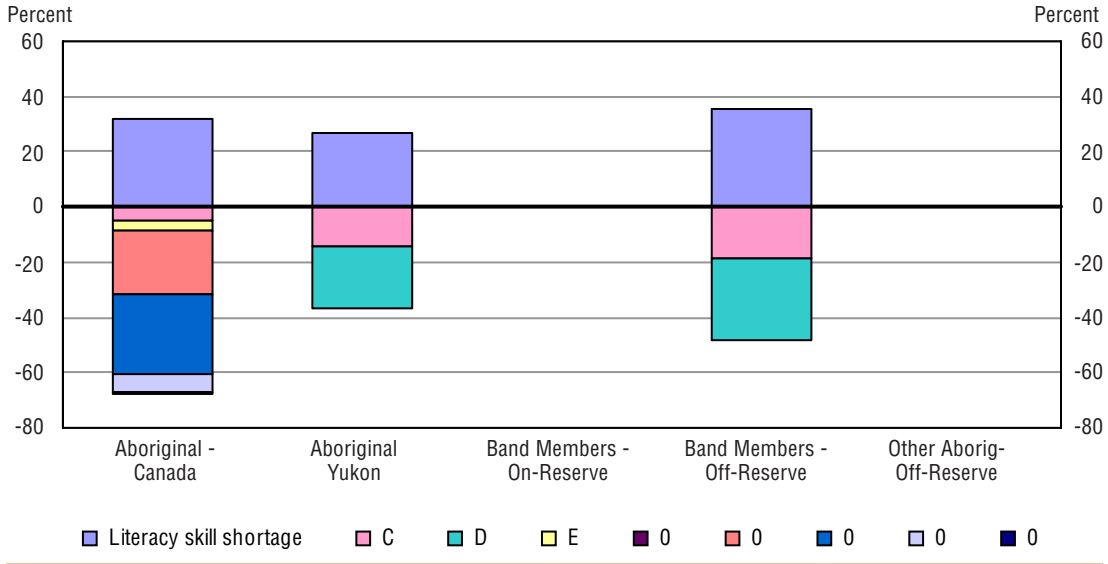
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and British Columbia, 2006



Aboriginal adults in British Columbia are less likely to be in literacy skill shortage. Band members on reserve in British Columbia are slightly more likely than their provincial Aboriginal peers to be in shortage. Other Aboriginals living off reserve, largely Metis adults, are somewhat less likely to be in literacy skill shortage.

Figure 8.11

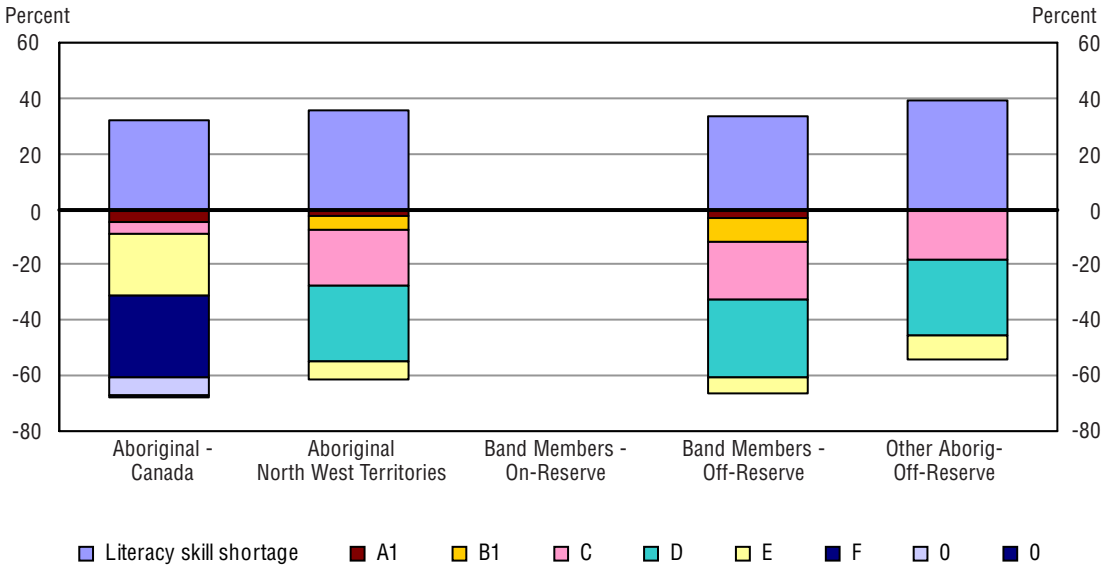
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Yukon, 2006



Aboriginal adults in the Yukon are significantly less likely than their Aboriginal peers in other jurisdictions to be in literacy skill shortages.

Figure 8.12

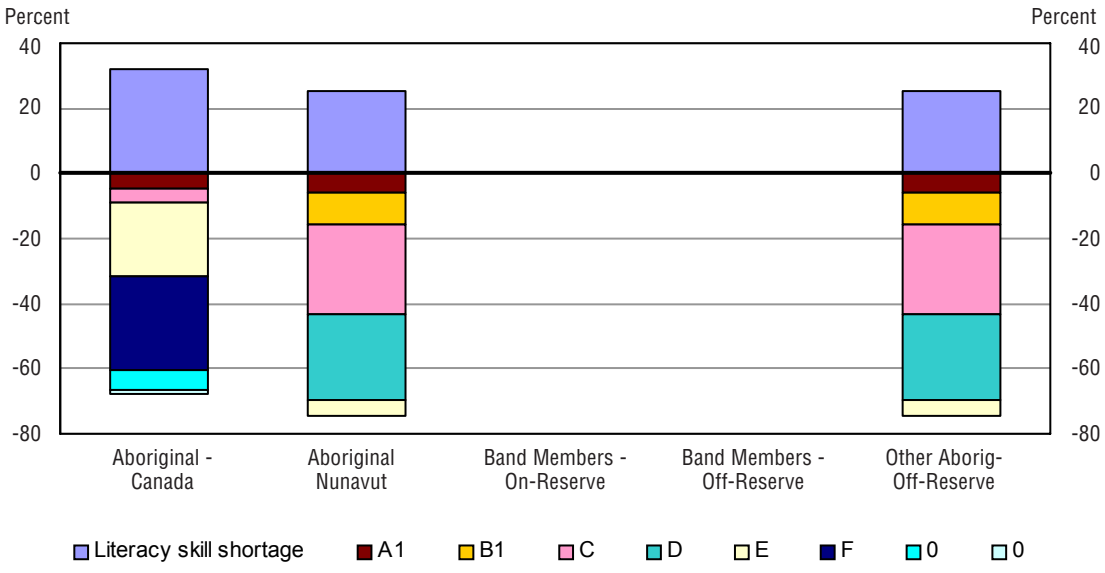
Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and North West Territories, 2006



Aboriginal adults in the North West Territories are slightly less likely to be in literacy skill shortage than their Aboriginal peers in other provinces. Band members living off reserve in the North West Territories face particularly high risks of being in literacy skill shortage.

Figure 8.13

Distribution of the Aboriginal population by literacy market segment, by Aboriginal and reserve status, Canada and Nunavut, 2006



Aboriginal adults in Nunavut face particularly high risks of being in literacy skill shortage compared to their Aboriginal peers in other provinces. The learning needs of Aboriginal workers in the Territory are, however, quite modest – most are classified in literacy segments C and D.

Collectively, the charts reveal a remarkably stable pattern across jurisdictions and Aboriginal sub-groups.

As revealed in the previous chapter Aboriginal adults are significantly more likely to be in literacy skill shortage than their non-Aboriginal peers. In addition, Band members living on-reserve appear to be much more likely to be in literacy skill shortage than their Aboriginal peers in their jurisdiction. One positive finding – the majority of Aboriginal adults fall into literacy market segments C, D, E and F, groups with relatively minor skill upgrading needs.

Table 8.1

Distribution of the Aboriginal population by literacy market segment, Canada by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal -	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**797,300**	**175,900**	**232,200**	**385,650**
Literacy skill shortage	255,600	255,600	47,300	76,000	131,150
A1	37,250	37,250	8,700	11,150	17,400
A2	-	-	-	-	-
B1	32,400	32,400	13,350	9,200	9,850
B2	1,100	1,100	1,100	-	-
C	179,900	179,900	46,800	50,800	81,500
D	232,350	232,350	49,550	67,400	114,400
E	49,800	49,800	7,950	14,950	26,900
F	7,700	7,700	1,100	2,350	4,250

- Not available.

Table 8.2

Distribution of the Aboriginal population by literacy market segment, Canada and Newfoundland and Labrador by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Newfoundland and Labrador	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**17,550**	**900**	**6,350**	**10,300**
Literacy skill shortage	255,600	3,950	-	1,650	2,300
A1	37,250	750	-	-	750
B1	-	-	-	-	-
C	32,400	4,800	-	1,700	3,100
D	1,100	5,550	350	2,000	3,200
E	179,900	-	-	-	-
F	232,350	-	-	-	-
0	49,800	-	-	-	-
0	7,700	-	-	-	-

- Not available.

Table 8.3

Distribution of the Aboriginal Population by Literacy Market Segment: Canada and Nova Scotia by Aboriginal and Reserve Status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Nova Scotia	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**17,350**	**4,950**	**3,250**	**9,150**
Literacy skill shortage	255,600	4,200	1,250	-	2,950
A1	37,250	-	-	-	-
A2	-	-	-	-	-
B1	32,400	500	500	-	-
B2	1,100	-	-	-	-
C	179,900	3,400	1,250	-	2,150
D	232,350	4,250	1,400	-	2,850
E	49,800	-	-	-	-
F	7,700	-	-	-	-

- Not available.

Table 8.4

Distribution of the Aboriginal population by literacy market segment, Canada and New Brunswick by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - New Brunswick	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**12,750**	**4,600**	**2,550**	**5,600**
Literacy skill shortage	255,600	950	950	-	-
A1	37,250	-	-	-	-
A2	-	-	-	-	-
B1	32,400	500	500	-	-
B2	1,100	-	-	-	-
C	179,900	2,900	1,300	-	1,600
D	232,350	3,450	1,450	-	2,000
E	49,800	-	-	-	-
F	7700	-	-	-	-

- Not available.

Table 8.5

Distribution of the Aboriginal population by literacy market segment, Canada and Quebec by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Quebec	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**78,750**	**13,100**	**25,050**	**40,600**
Literacy skill shortage	255,600	16,100	2,200	5,300	8,600
A1	37,250	3,650	550	1,050	2,050
A2	-	-	-	-	-
B1	32,400	4,750	400	2,100	2,250
B2	1,100	1,050	1,050	-	-
C	179,900	24,300	5,450	7,450	11,400
D	232,350	24,300	2,850	7,600	13,850
E	49,800	3,800	500	1,350	1,950
F	7,700	-	-	-	-

- Not available.

Table 8.6

Distribution of the Aboriginal population by literacy market segment, Canada and Ontario by Aboriginal and Reserve Status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Ontario	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**173,150**	**30,650**	**55,400**	**86,650**
Literacy skill shortage	255,600	54,000	8,600	17,450	27,950
A1	37,250	8,100	1,450	2,800	3,850
A2	-	-	-	-	-
B1	32,400	5,500	2,450	1,500	1,550
B2	1,100	-	-	-	-
C	179,900	38,300	7,700	12,250	18,350
D	232,350	53,400	8,700	16,850	27,850
E	49,800	11,500	1,550	3,850	6,100
F	7,700	-	-	-	-

- Not available.

Table 8.7

Distribution of the Aboriginal population by literacy market segment, Canada and Manitoba by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Manitoba	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**113,050**	**33,650**	**26,550**	**52,400**
Literacy skill shortage	255,600	34,200	7,400	8,400	18,400
A1	37,250	5,550	1,850	1,350	2,350
A2	-	-	-	-	-
B1	32,400	4,400	3,200	1,200	-
B2	1,100	-	-	-	-
C	179,900	25,700	9,400	5,950	10,350
D	232,350	33,600	10,150	8,000	15,450
E	49,800	7,350	1,500	1,550	4,300
F	7,700	-	-	-	-

- Not available.

Table 8.8

Distribution of the Aboriginal population by literacy market segment, Canada and Saskatchewan by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Saskatchewan	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**87,700**	**27,950**	**25,000**	**34,250**
Literacy skill shortage	255,600	28,200	7,600	8,300	12,300
A1	37,250	4,150	1,450	1,200	1,500
A2	-	-	-	-	-
B1	32,400	4,550	2,550	1,100	900
B2	1,100	-	-	-	-
C	179,900	19,250	7,050	5,150	7,050
D	232,350	25,000	7,750	7,500	9,750
E	49,800	5,000	1,250	1,400	2,350
F	7,700	-	-	-	-

- Not available.

Table 8.9

Distribution of the Aboriginal population by literacy market segment, Canada and Alberta by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Alberta	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**125,550**	**24,400**	**32,200**	**68,100**
Literacy skill shortage	255,600	42,550	6,300	11,050	25,200
A1	37,250	5,800	1,300	1,550	2,950
A2	-	-	-	-	-
B1	32,400	4,250	2,000	1,050	1,200
B2	1,100	-	-	-	-
C	179,900	25,550	6,350	6,700	12,500
D	232,350	37,350	7,400	9,400	20,300
E	49,800	8,250	950	2,150	5,150
F	7,700	-	-	-	-

- Not available.

Table 8.10

Distribution of the Aboriginal population by literacy market segment, Canada and British Columbia by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - British Columbia	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**136,050**	**35,000**	**42,850**	**57,150**
Literacy skill shortage	255,600	56,850	12,600	17,850	25,950
A1	37,250	5,850	1,600	2,150	2,100
A2	-	-	-	-	-
B1	32,400	2,900	1,750	1,150	-
B2	1,100	-	-	-	-
C	179,900	25,400	7,850	7,800	9,750
D	232,350	33,100	9,200	10,550	13,350
E	49,800	9,050	1,750	2,900	4,400
F	7,700	-	-	-	-

- Not available.

Table 8.11

Distribution of the Aboriginal population by literacy market segment, Canada and Yukon by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Yukon	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**5,350**	**300**	**4,050**	**1,000**
Literacy skill shortage	255,600	1,450	-	1,450	-
C	37,250	750	-	750	-
D	-	1,200	-	1,200	-
E	32,400	-	-	-	-
0	1,100	-	-	-	-
0	179,900	-	-	-	-
0	232,350	-	-	-	-
0	49,800	-	-	-	-
0	7,700	-	-	-	-

- Not available.

Table 8.12

Distribution of the Aboriginal population by literacy market segment, Canada and Northwest Territories by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Northwest Territories	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**13,700**	**-**	**8,550**	**5,150**
Literacy skill shortage	255,600	4,850	-	2,850	2,000
A1	37,250	300	-	300	-
B1	-	700	-	700	-
C	32,400	2,750	-	1,800	950
D	1,100	3,800	-	2,400	1,400
E	179,900	900	-	450	450
F	232,350	-	-	-	-
0	49,800	-	-	-	-
0	7,700	-	-	-	-

- Not available.

Table 8.13

Distribution of the Aboriginal population by literacy market segment, Canada and Nunavut by Aboriginal and reserve status, 2006

Aboriginal	Aboriginal Canada	Aboriginal - Nunavut	Band Member - On-Reserve	Band Member - Off-Reserve	Other Aboriginal - Off-Reserve
Total	**797,300**	**14,750**	**-**	**-**	**14,750**
Literacy skill shortage	255,600	3,750	-	-	3,750
A1	37,250	900	-	-	900
B1	-	1,400	-	-	1,400
C	32,400	4,050	-	-	4,050
D	1,100	3,900	-	-	3,900
E	179,900	750	-	-	750
F	232,350	-	-	-	-
0	49,800	-	-	-	-
0	7,700	-	-	-	-

- Not available.

8.1 How costs were estimated

The cost estimates for each group are derived in two stages.

Direct instructional costs

First, the direct costs of instruction were estimated by multiplying the estimated average number of hours needed to raise learners to the next level by the estimate of the number of learners in the respective group. The initial model assumed a standard rate of pay for instructors of $35 per hour, the prevailing rate for the Foundations Program delivered by Douglas College. The current analysis utilizes a much more detailed table of hourly wage rates that reflect the differences in wage structures in urban and rural areas of each jurisdiction.

Readers should not take this as an endorsement of a college-based solution to Canada's literacy problems. The fact that this rate is considerably higher than many literacy instructors are currently paid means that the cost estimates presented in the report are on the high side, with the result that the estimated rates of return to literacy investments are conservative. At a minimum the rates used are high enough to attract and retain instructors of the requisite quality.

Indirect instructional costs

Second, the indirect costs of supporting instruction are estimated. Separate estimates are derived for:

- Recruitment costs
- Diagnostic costs
- Retention costs
- Certification costs
- Facilities costs
- Participant supplies
- Other infrastructure costs

Recruitment costs are those costs associated with securing participation in programs. Recruitment costs include marketing, outreach and basic program intake operations.

Diagnostic costs are those costs incurred in undertaking formative assessment to establish learning goals, learner needs and to establish baseline skill levels.

Retention costs represent those costs that are incurred to provide sufficient learner support to ensure retention to completion. These include funding to support personal contact throughout the program and for incidental expenses such as daycare, transportation, etc.

Certification costs are costs incurred at program exit to establish, through comparison to initial skill level, learning gain.

Facilities costs include things such as classroom rentals.

Participant supplies include instructional resources such as paper, pens, workbooks, etc.

Other infrastructure costs include institutional overheads.

As for the direct costs of instruction indirect costs are estimated as averages that are judged to be sufficient overall. Clearly, the average costs mask considerable variation in what it would cost to offer programs in specific communities.

Direct and indirect costs are then converted to a per point basis. Aggregate cost estimates were then derived for each segment by multiplying the average number of points to the desired proficiency level by the per point unit costs for each segment.

Caveats related to the cost analysis

As outlined below the cost estimates presented in this report exclude several elements of cost that one would ideally want to include but were beyond the remit of the current project to estimate.

In the initial analyses upon which the current work builds no effort was made to estimate the cost of training the instructors that would be needed to deliver the programs. It was assumed that these costs could be absorbed in the current post-secondary education budgets. The current analysis also excludes these costs – an exclusion that limits the utility of the estimates and causes rates of return to be systematically over-estimated.

Similarly, no estimates have been provided for the cost of developing and administering a system of instructor certification, nor for providing the general system supports such as the development of more efficient and effective curricula and delivery systems. Implicitly this assumes that current federal and provincial budgets are judged to be sufficient for these purposes – again an exclusion that limits the utility of the estimates and causes rates of return to be systematically over-estimated.

It should also be noted that these costs also exclude the cost of any related language training. The ISRS study allows one to classify respondents into one of six groups based upon their assessed oral language proficiency. Average oral language proficiency scores for English segments C and D, and for French segments C, D and B1, fell in the highest two levels. Average scores for the other segments were considerably lower, suggesting a need for language training. The IALSS data confirm that a large proportion of Aboriginal adults have a mother tongue other than one of Canada's official languages. The ISRS sample sizes and coverage were not sufficient, however, provide results for Canada's Aboriginal populations. The failure to include language training costs limits the utility of the estimates and causes rates of return to be systematically over-estimated.

It would be important in future analyses to include these costs.

Figures 8.1 and 8.4 plot the estimated costs of providing sufficient remedial instruction to raise literacy skill levels enough to eliminate literacy skill shortages in Aboriginal populations.

Figure 8.1

Estimated cost of providing Aboriginal adults with competitive literacy skills, Canada, 2006

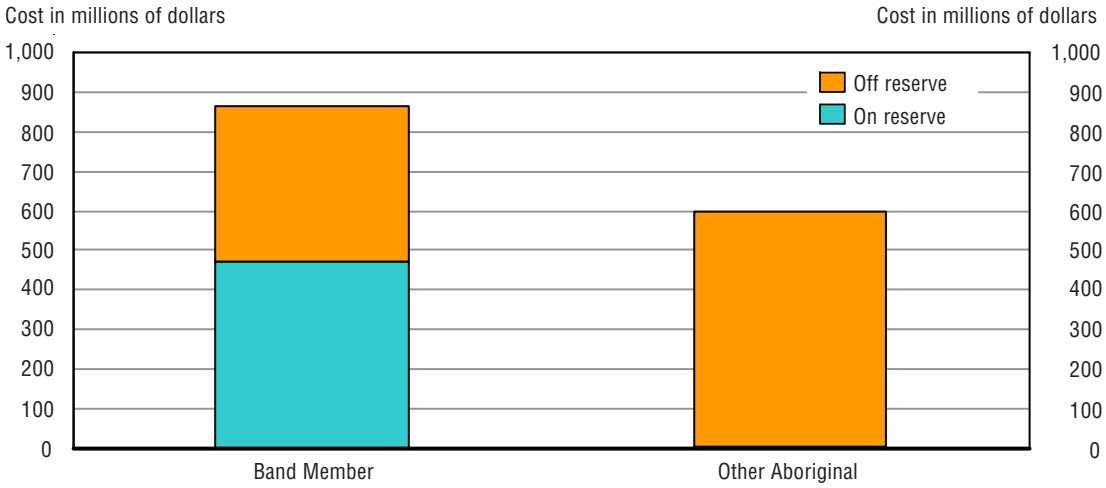
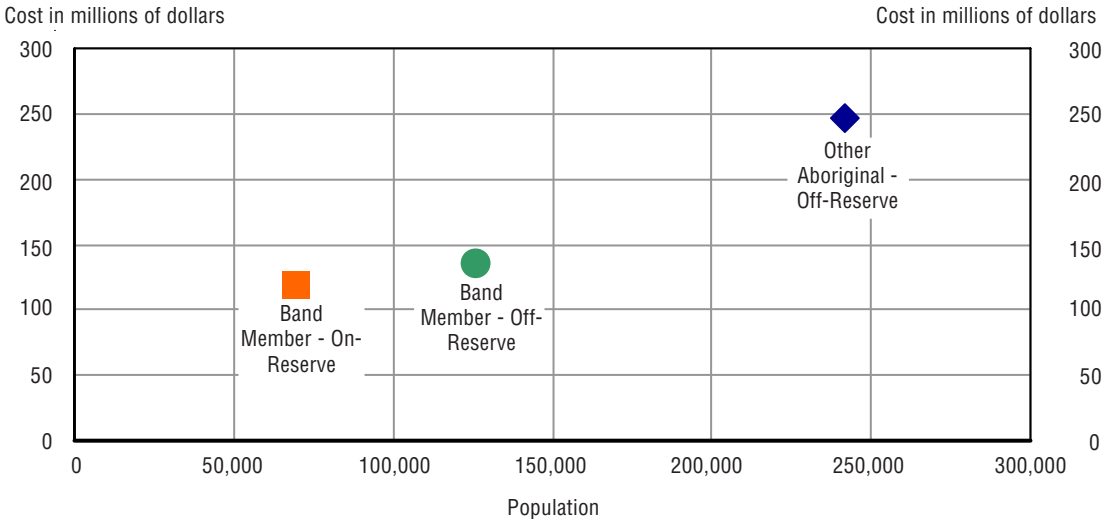


Figure 8.2

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Canada, 2006



The figures reveal several important facts, including the total cost of eliminating literacy skill shortage in Canada's Aboriginal populations is estimated to be $...The total cost of eliminating literacy skill shortages varies significantly by Aboriginal sub- population by for the largest investment would be required for other Aboriginals livening off reserves, largely Canada's Inuit and Métis population.

The following series of figures provides cost estimates for each for the employed, recently employed and not in the labour force Aboriginal populations.

Figure 8.3

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Canada, 2006

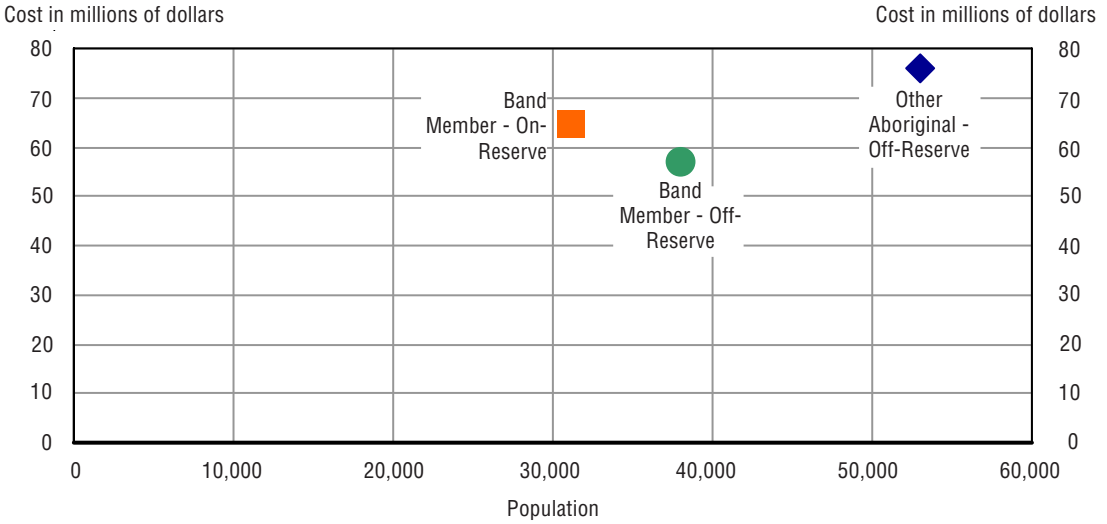
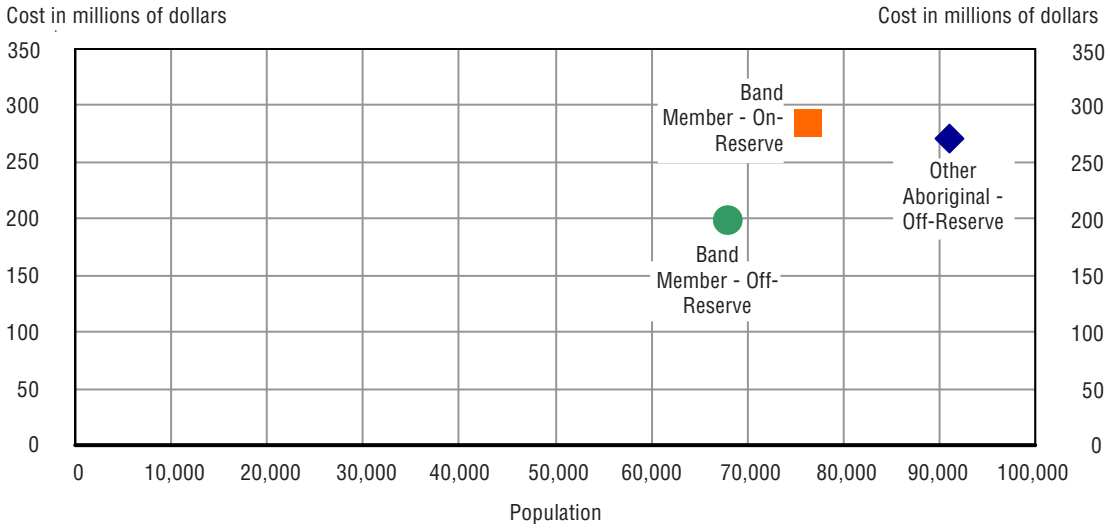


Figure 8.4

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Canada, 2006



Newfoundland

Figure 8.5

Estimated cost of providing Aboriginal adults with competitive literacy skills, Newfoundland and Labrador, 2006

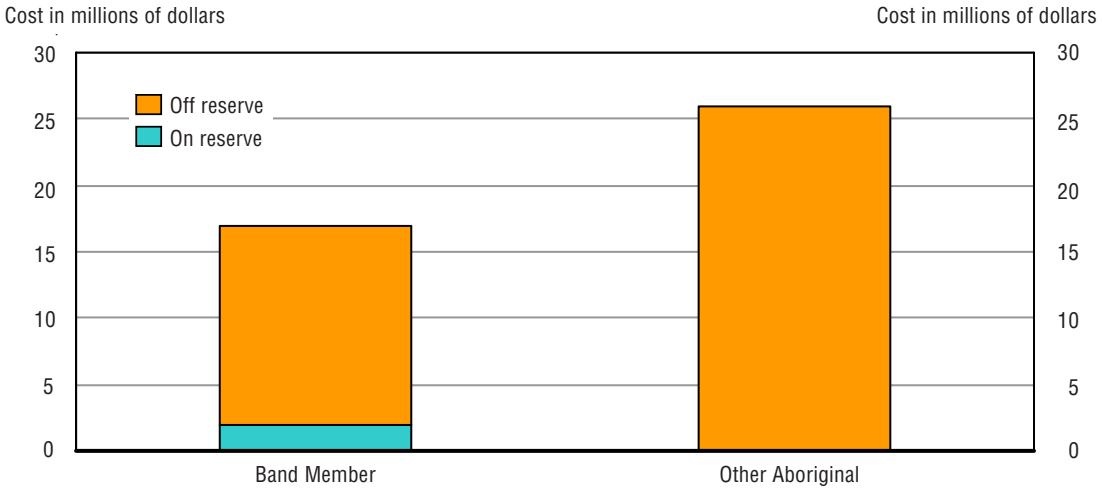


Figure 8.6

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Newfoundland and Labrador, 2006

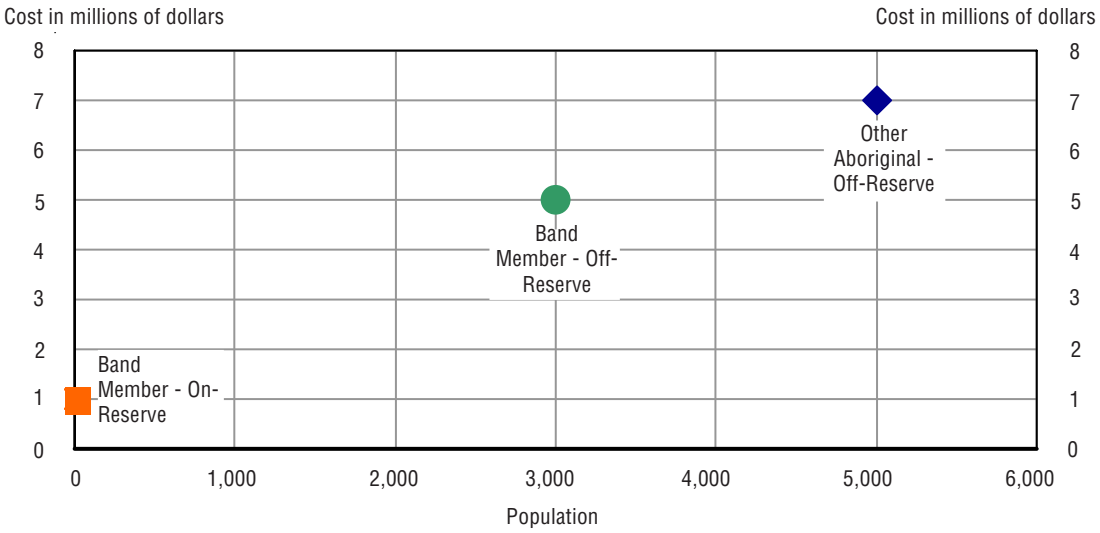


Figure 8.7

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Newfoundland and Labrador, 2006

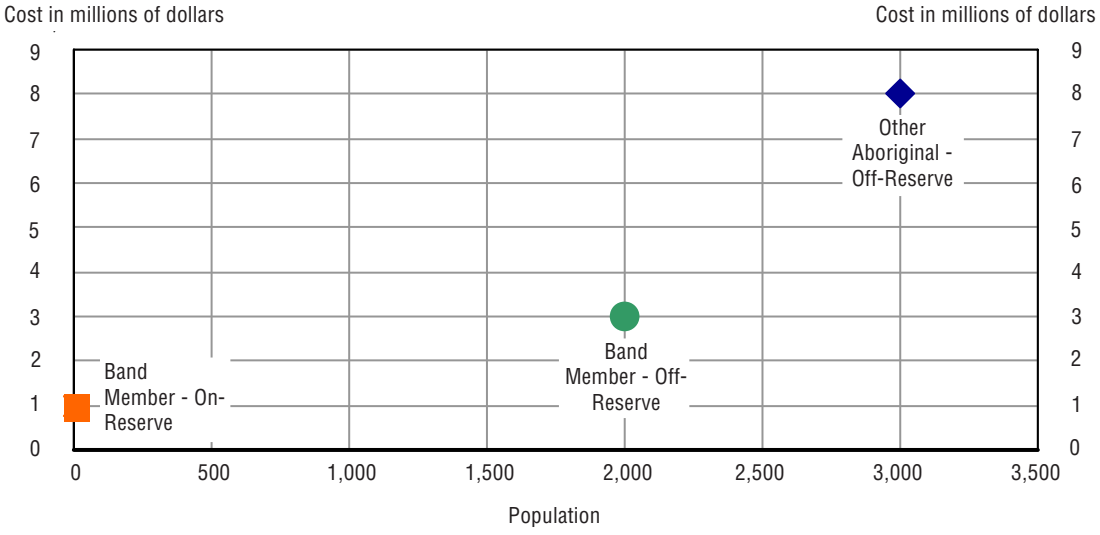
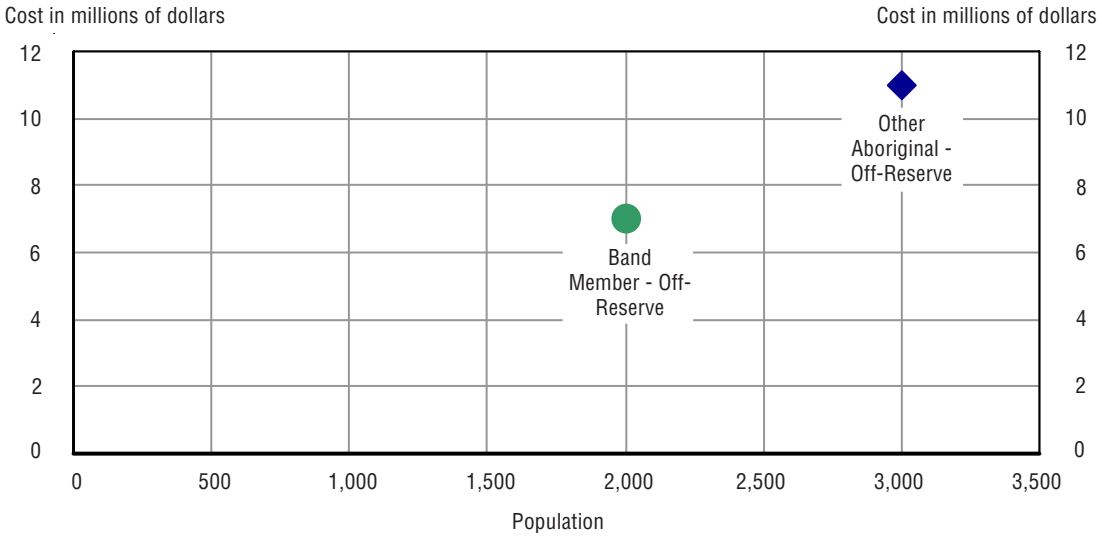


Figure 8.8

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Newfoundland and Labrador, 2006



Nova Scotia

Figure 8.9

Estimated cost of providing Aboriginal adults with competitive literacy skills, Nova Scotia, 2006

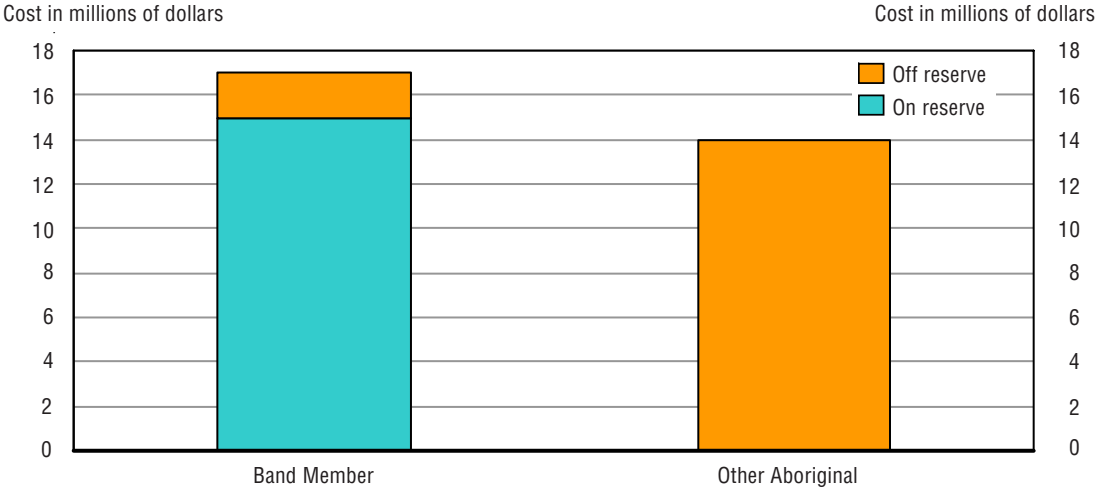


Figure 8.10

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Nova Scotia, 2006

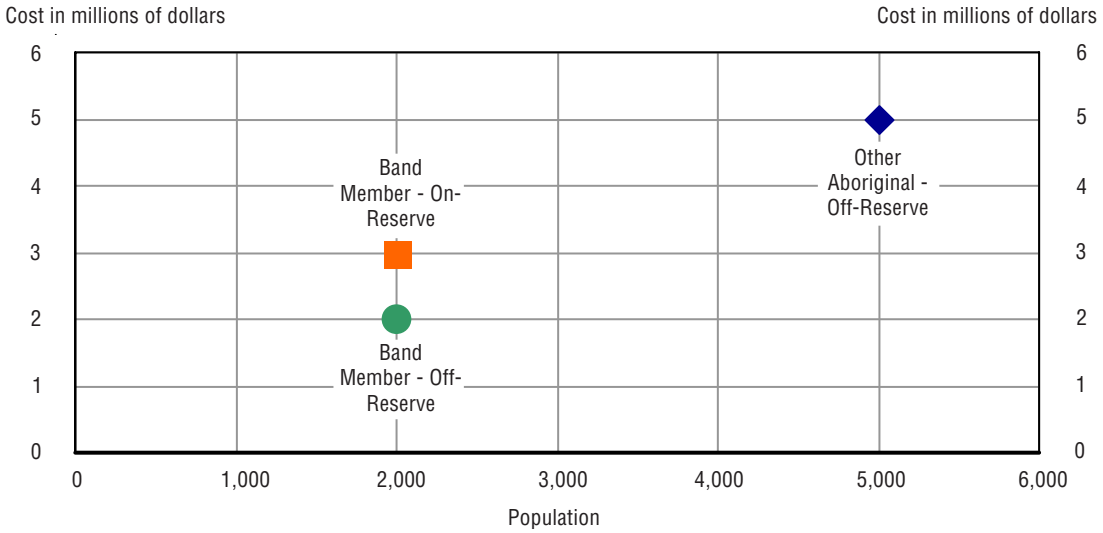


Figure 8.11

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Nova Scotia, 2006

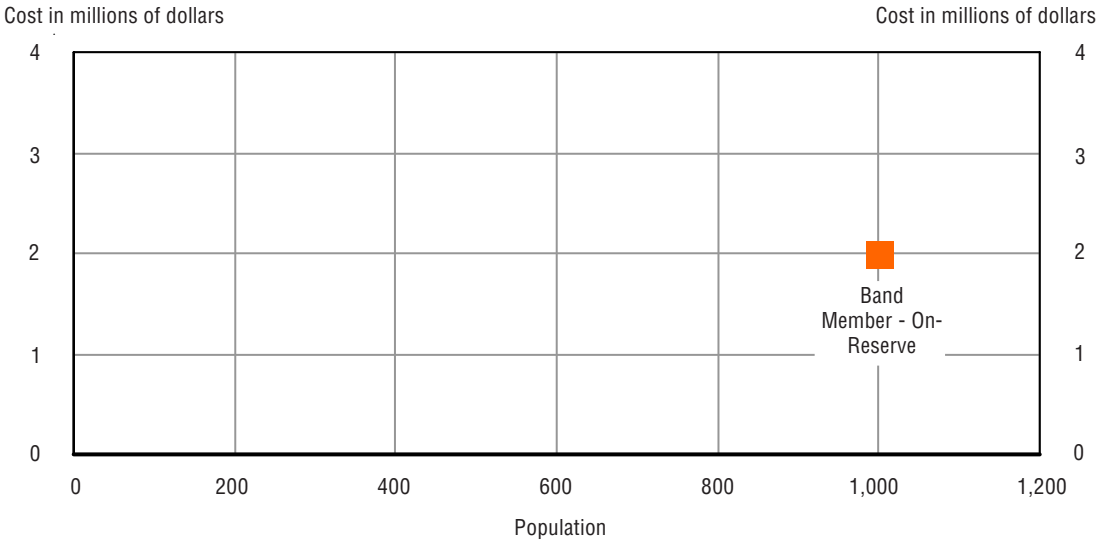
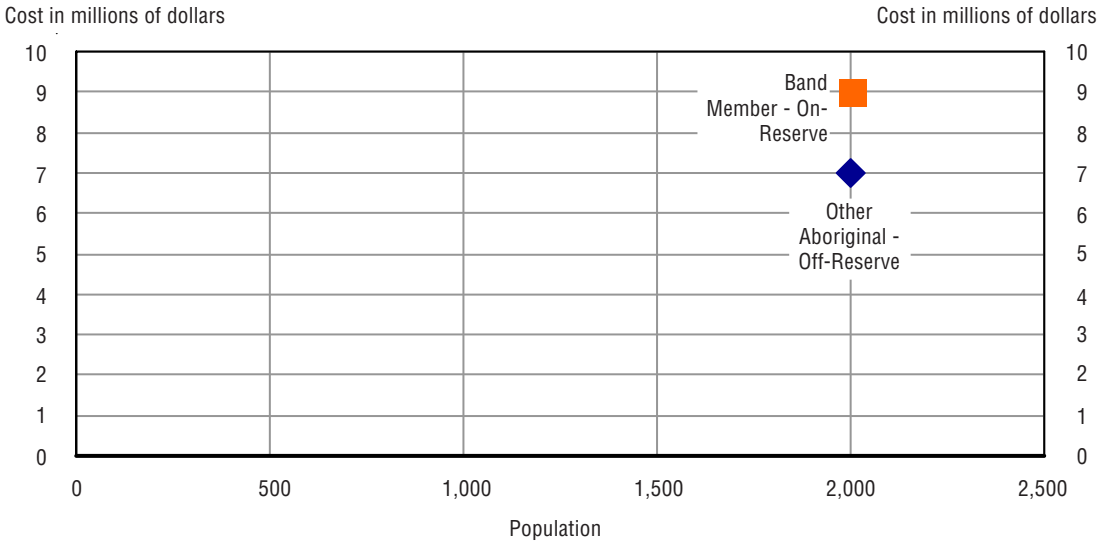


Figure 8.12

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Nova Scotia, 2006



New Brunswick

Figure 8.13

Estimated cost of providing Aboriginal adults with competitive literacy skills, New Brunswick, 2006

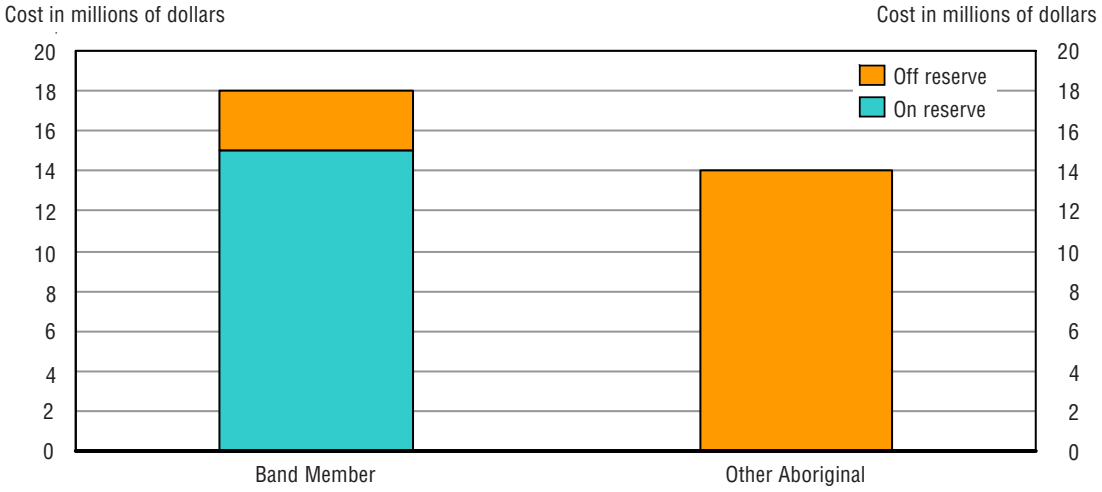


Figure 8.14

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, New Brunswick, 2006

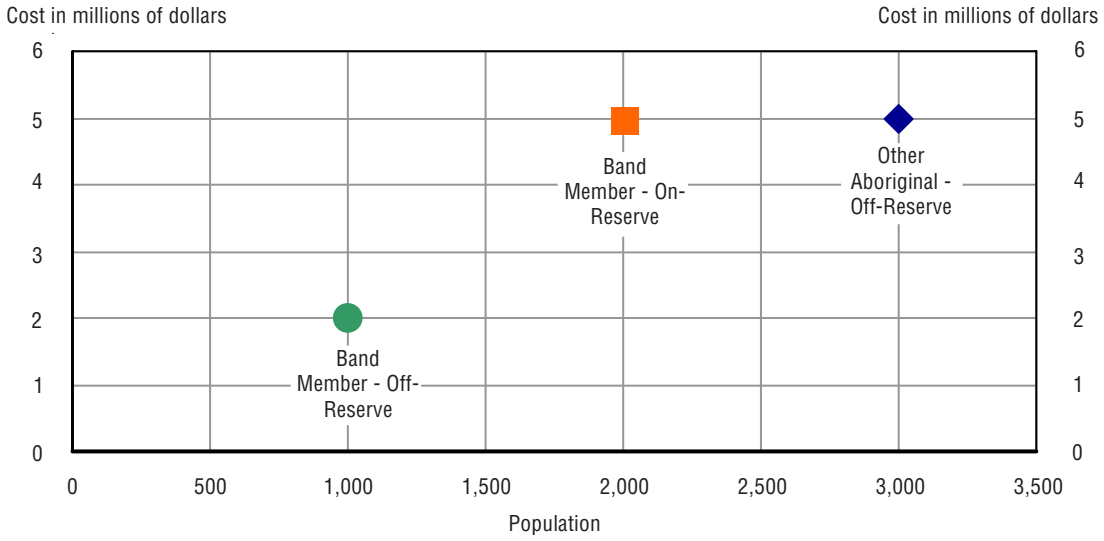


Figure 8.15

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, New Brunswick, 2006

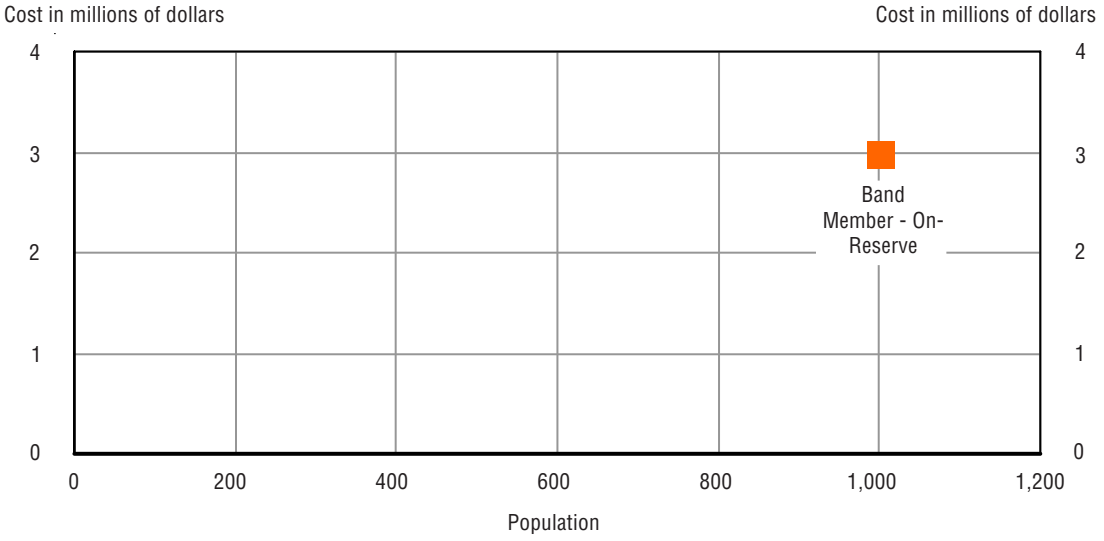
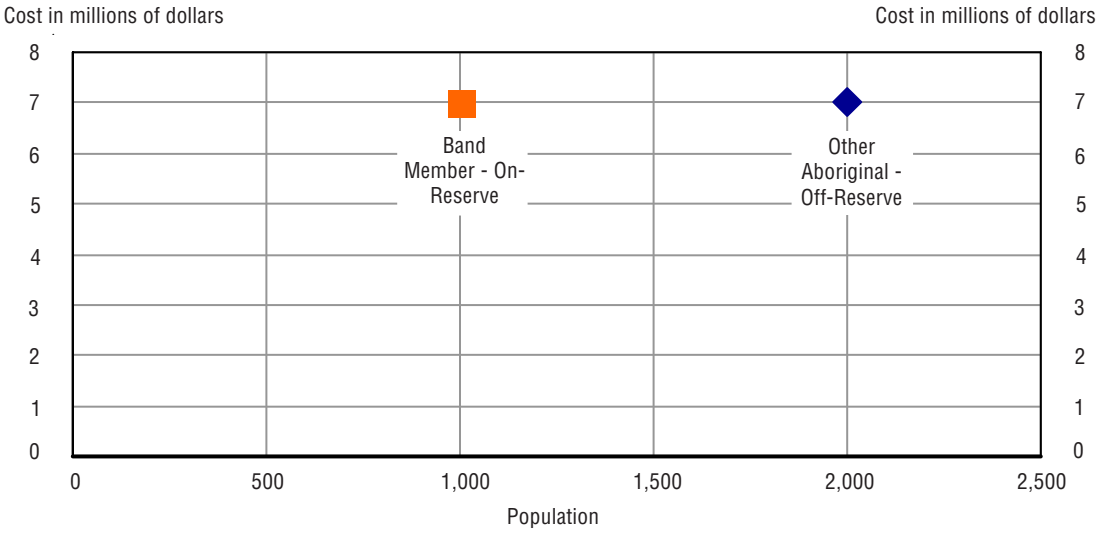


Figure 8.16

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, New Brunswick, 2006



Quebec

Figure 8.17

Estimated cost of providing Aboriginal adults with competitive literacy skills, Quebec, 2006

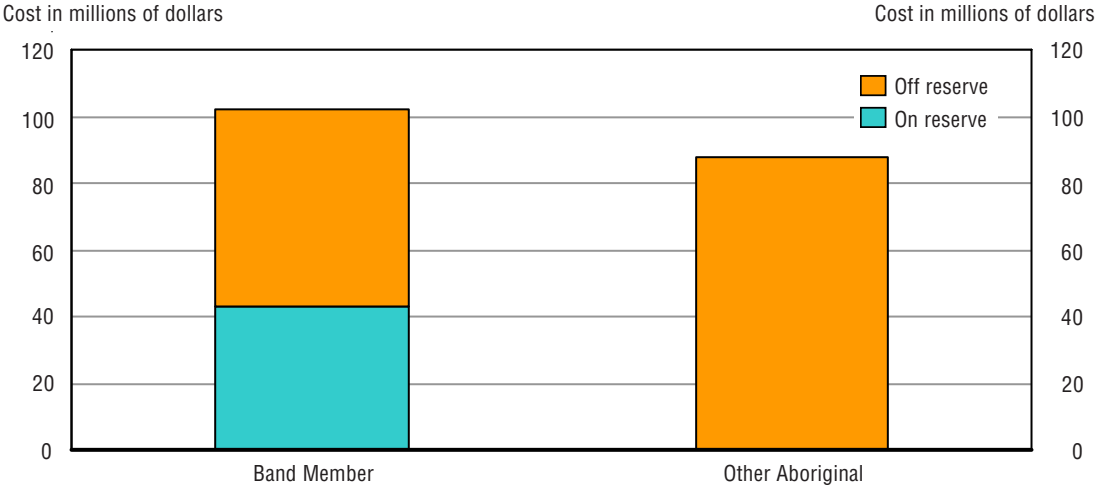


Figure 8.18

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Quebec, 2006

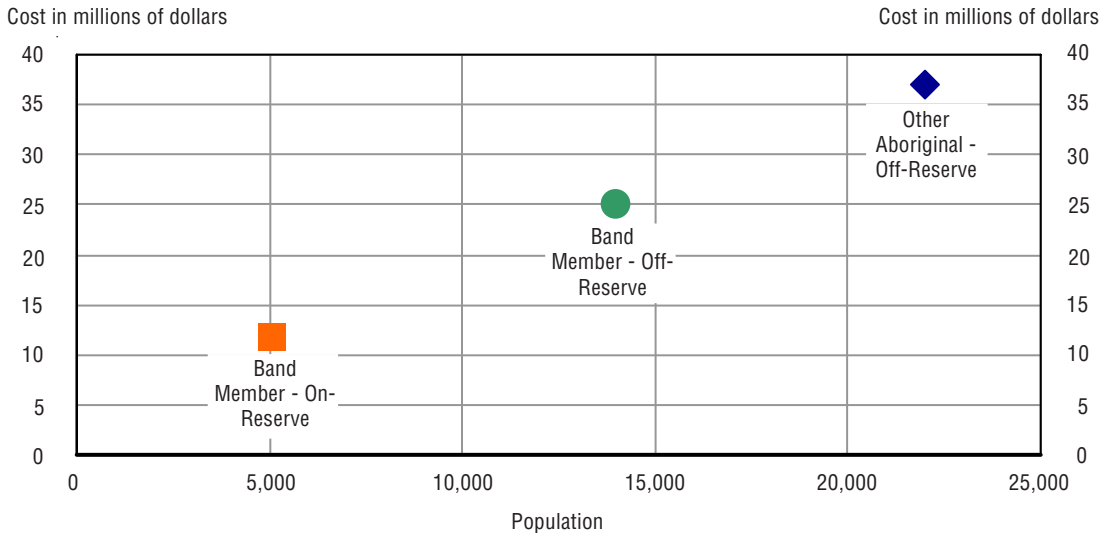


Figure 8.19

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Quebec, 2006

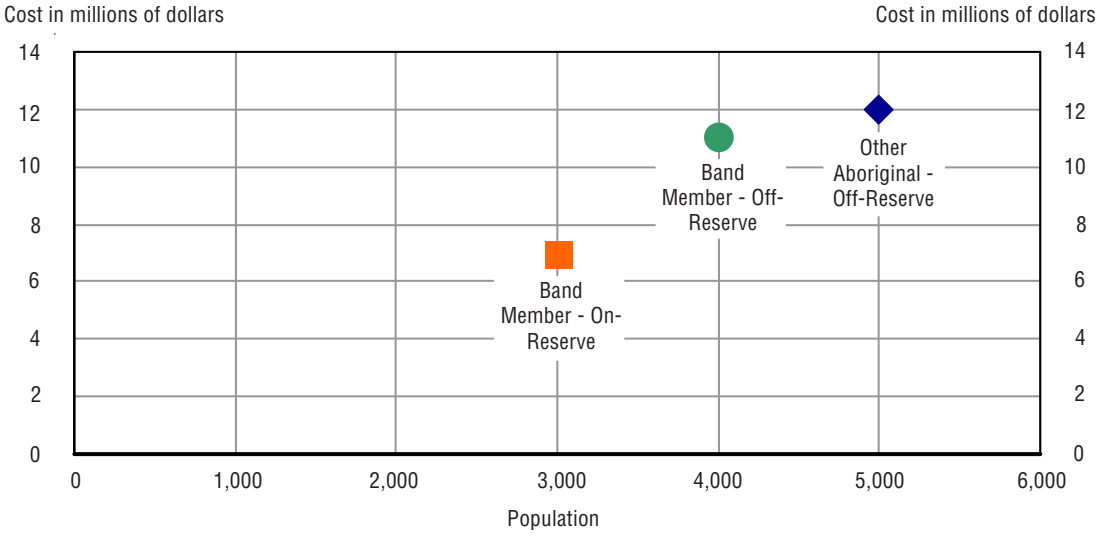
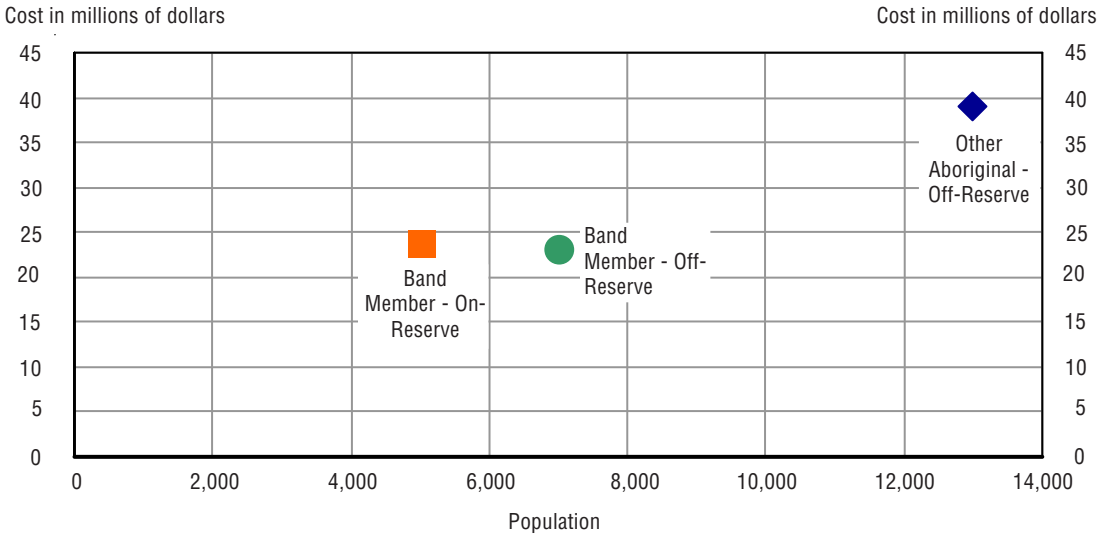


Figure 8.20

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Quebec, 2006



Ontario

Figure 8.21

Estimated cost of providing Aboriginal adults with competitive literacy skills, Ontario, 2006

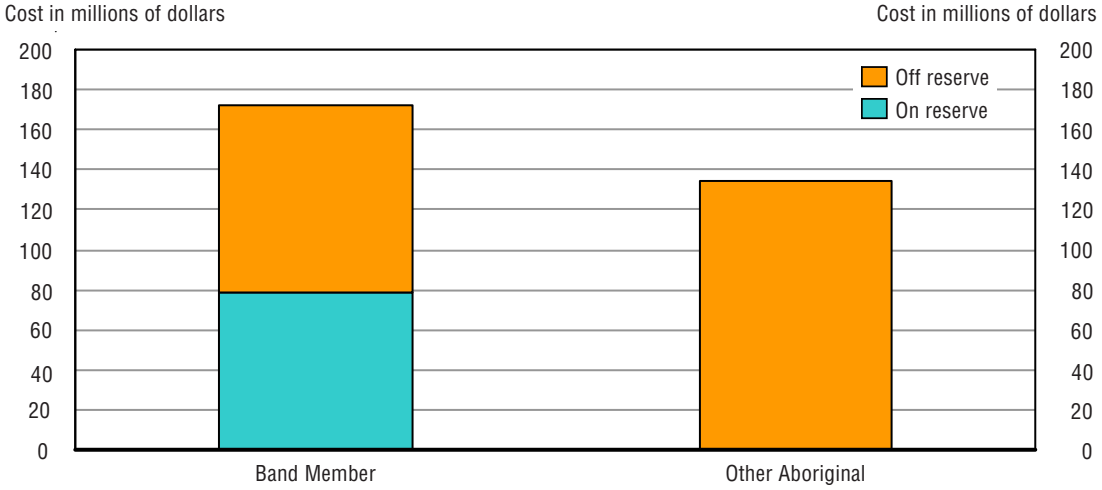


Figure 8.22

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Ontario, 2006

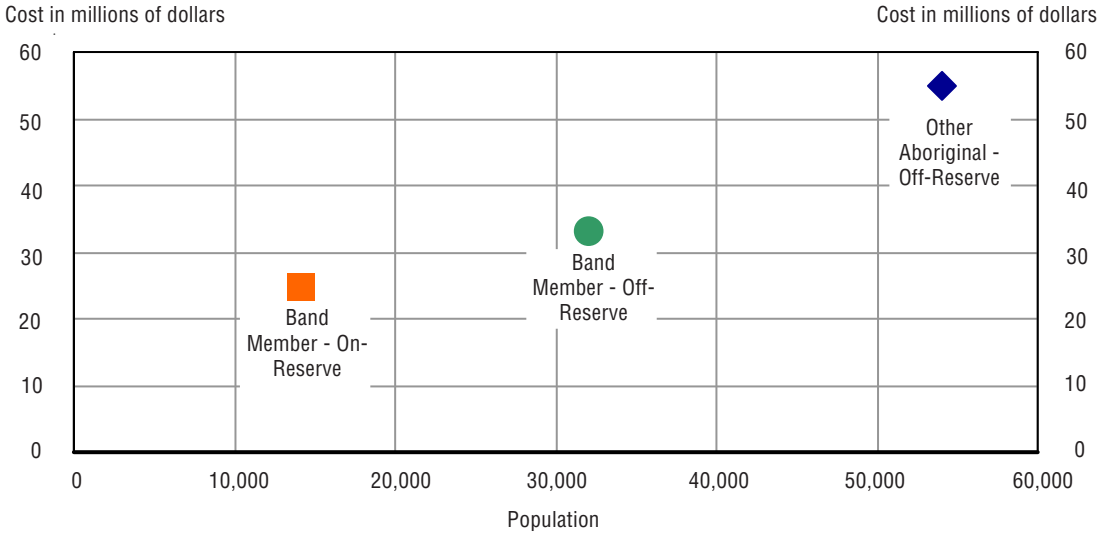


Figure 8.23

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Ontario, 2006

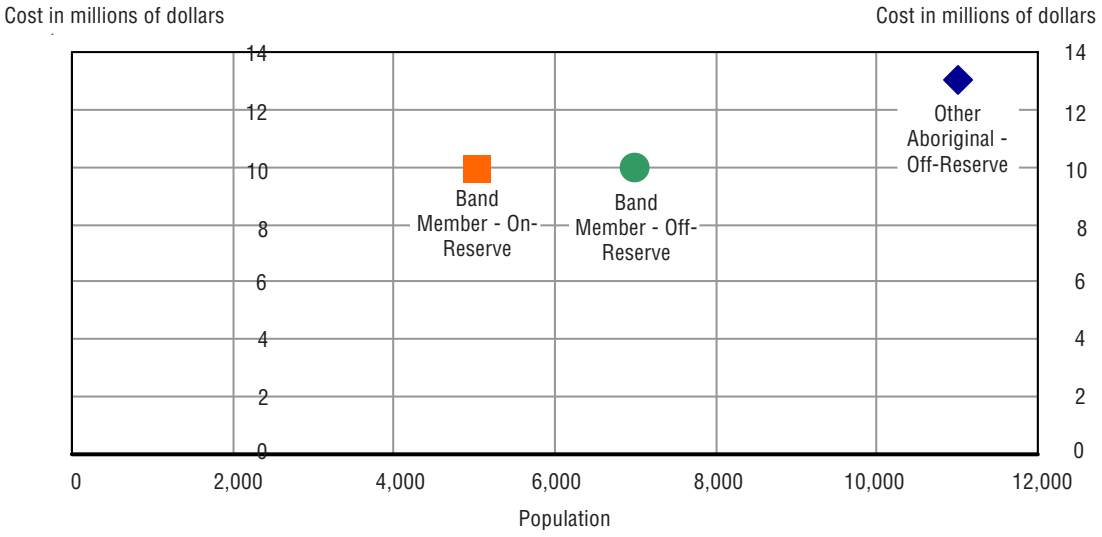
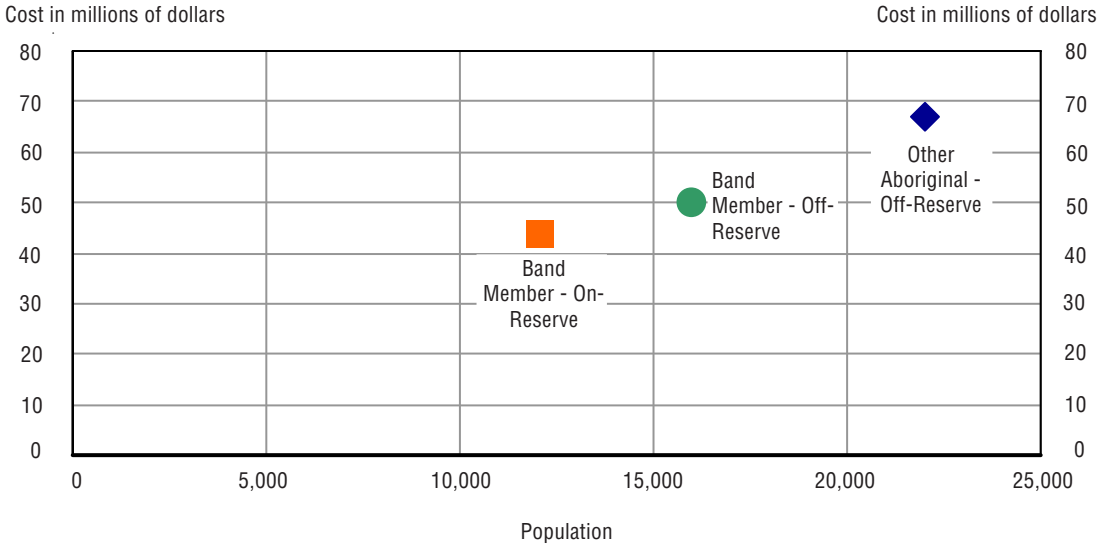


Figure 8.24
Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Ontario, 2006



Manitoba

Figure 8.25
Estimated cost of providing Aboriginal adults with competitive literacy skills, Manitoba, 2006

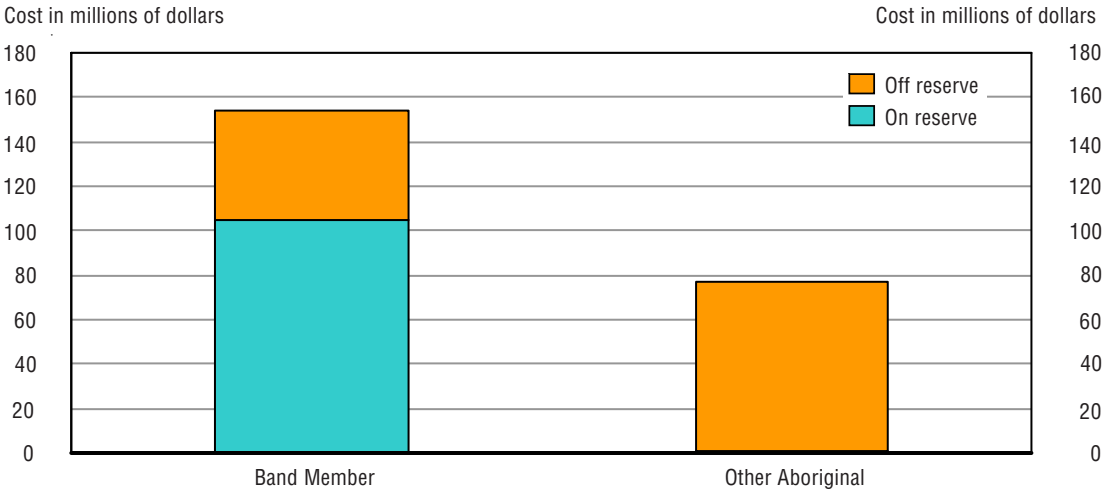


Figure 8.26

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Manitoba, 2006

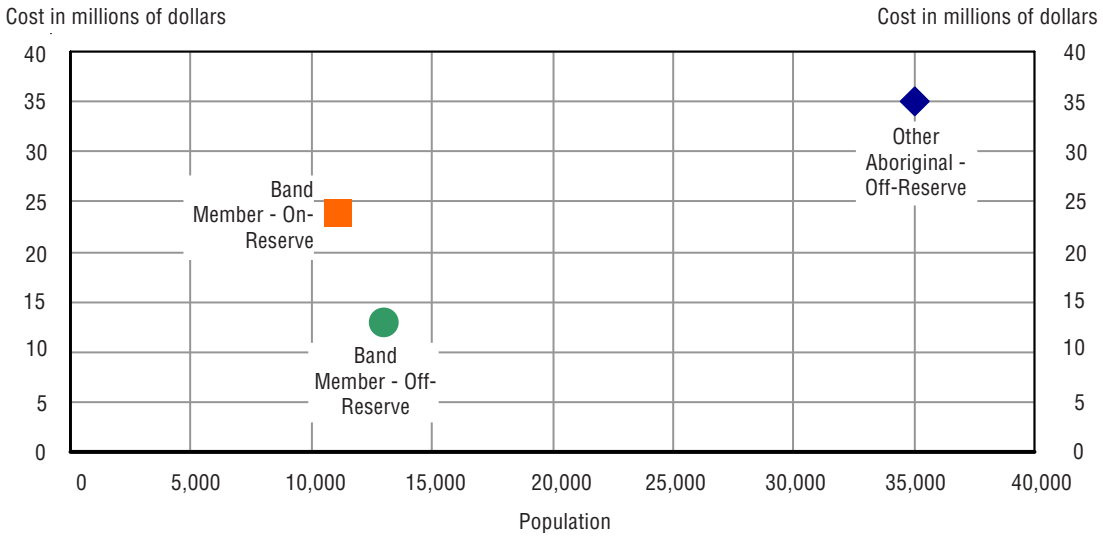


Figure 8.27

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Manitoba, 2006

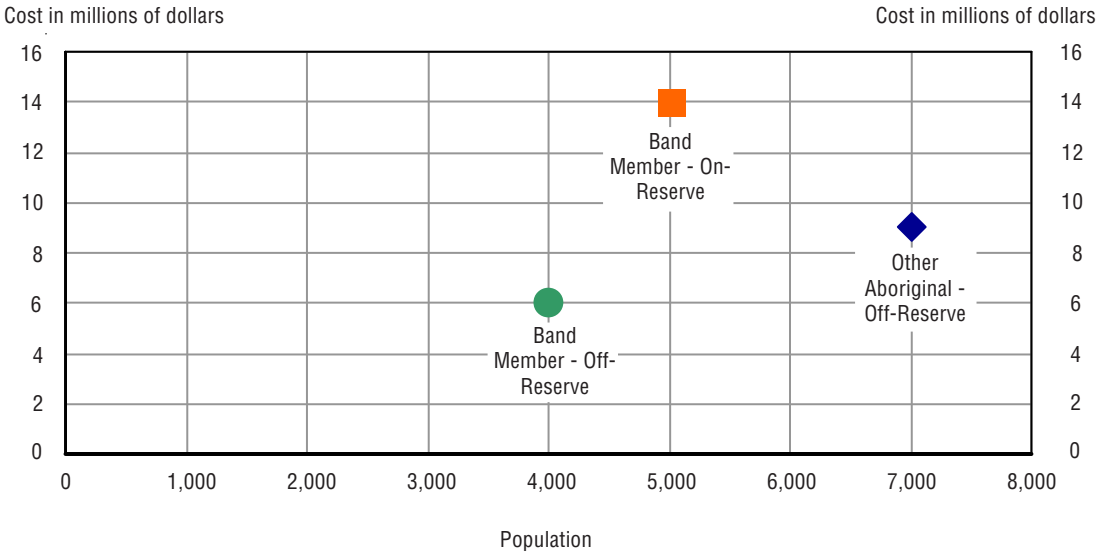
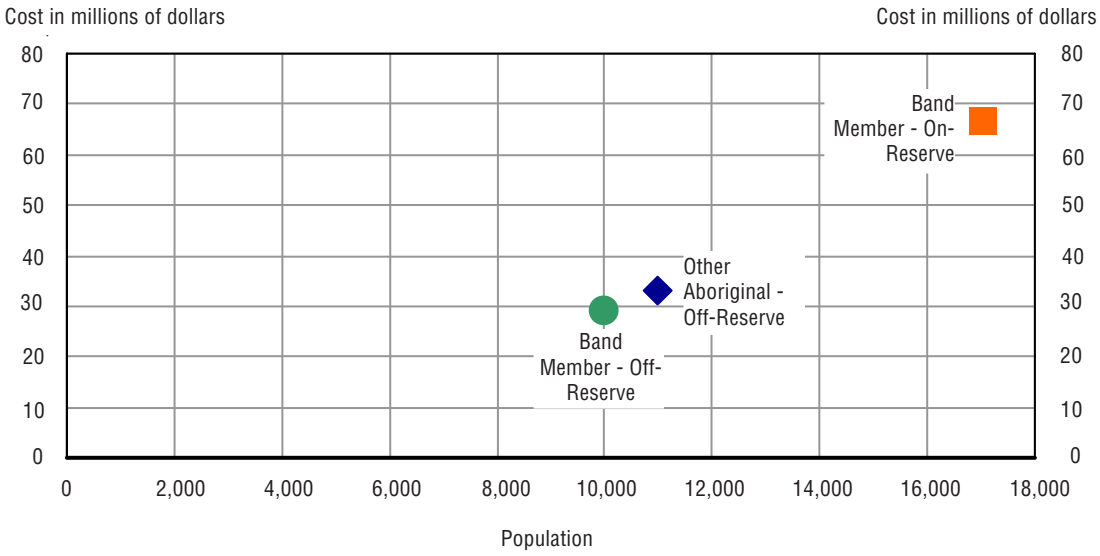


Figure 8.28

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Manitoba, 2006



Saskatchewan

Figure 8.29

Estimated cost of providing Aboriginal adults with competitive literacy skills, Saskatchewan, 2006

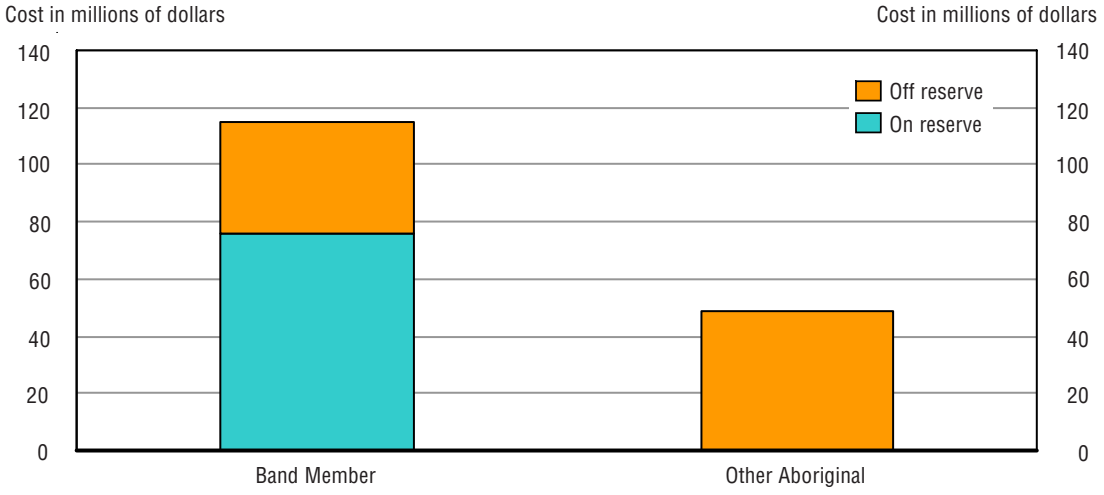


Figure 8.30

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Saskatchewan, 2006

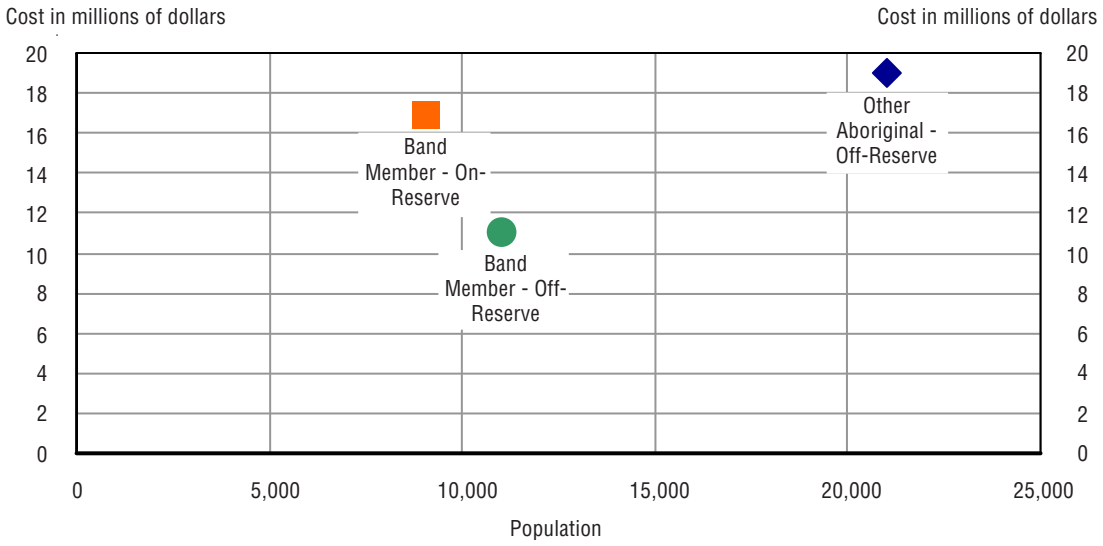


Figure 8.31

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Saskatchewan, 2006

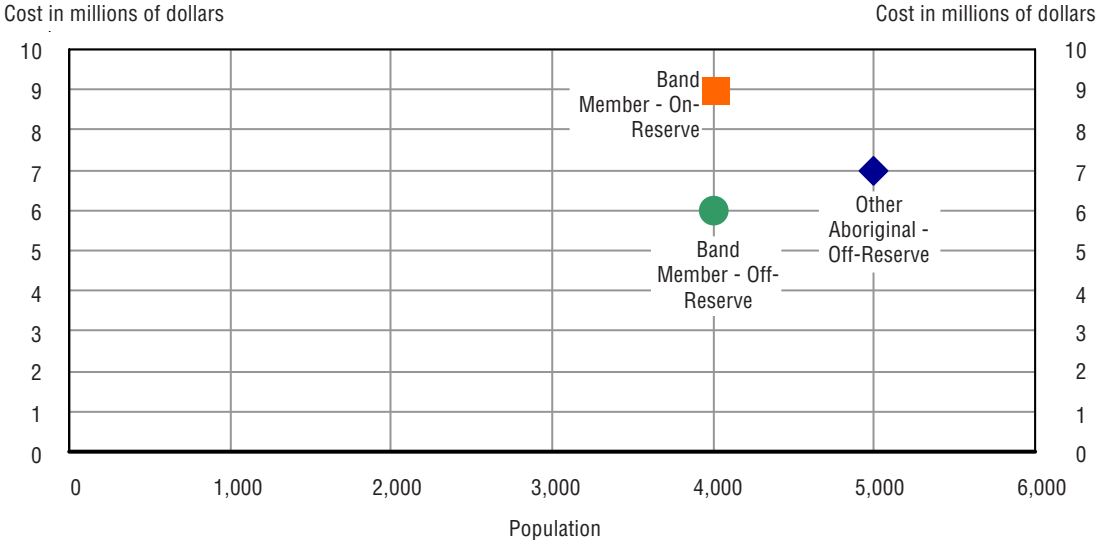
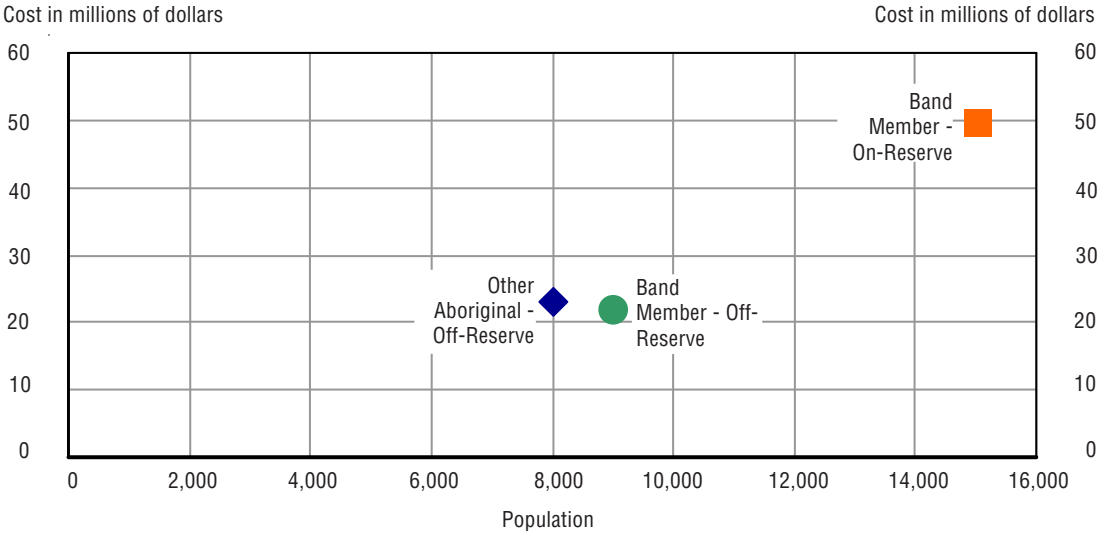


Figure 8.32
Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Saskatchewan, 2006



Alberta

Figure 8.33
Estimated cost of providing Aboriginal adults with competitive literacy skills, Alberta, 2006

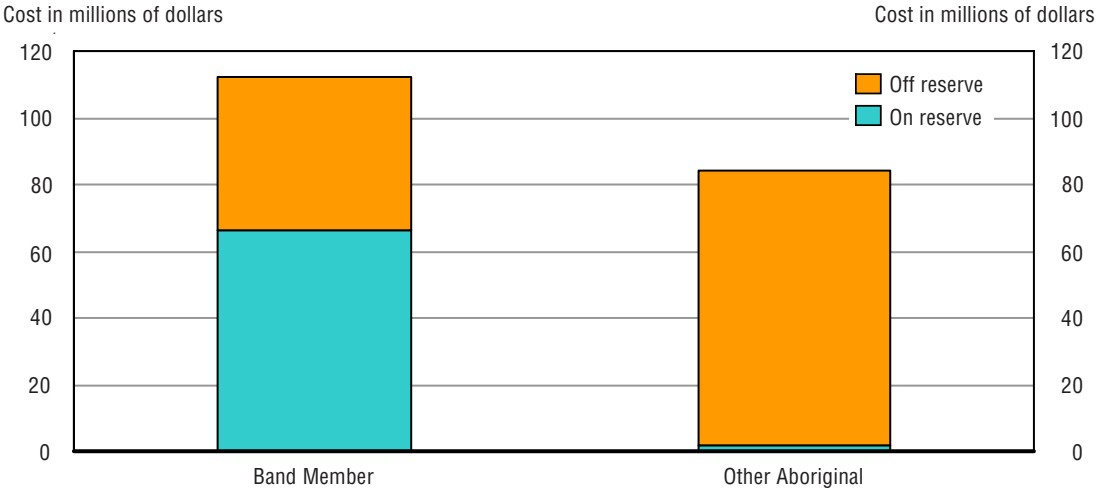


Figure 8.34

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Alberta, 2006

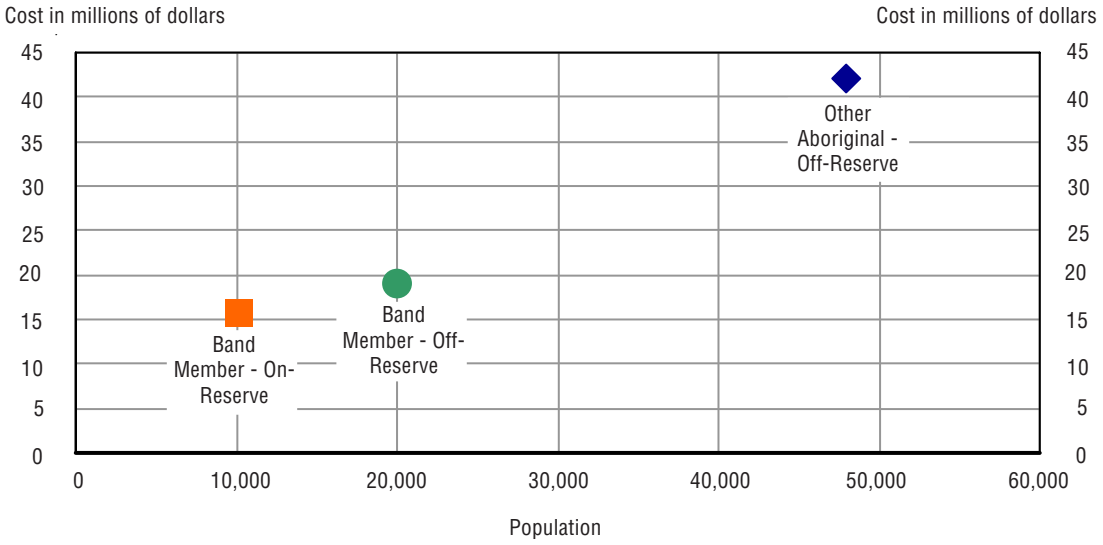


Figure 8.35

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Alberta, 2006

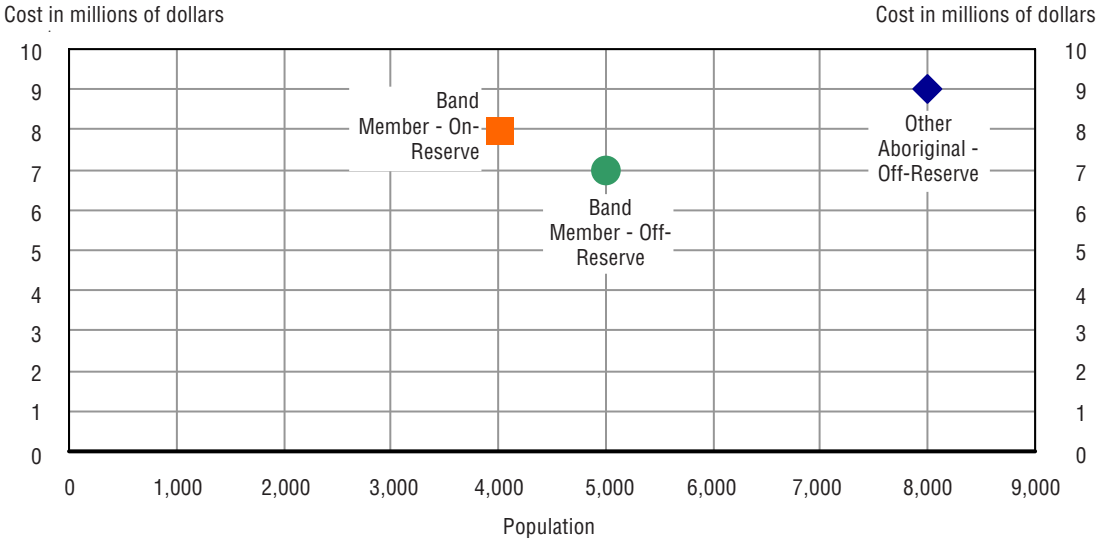
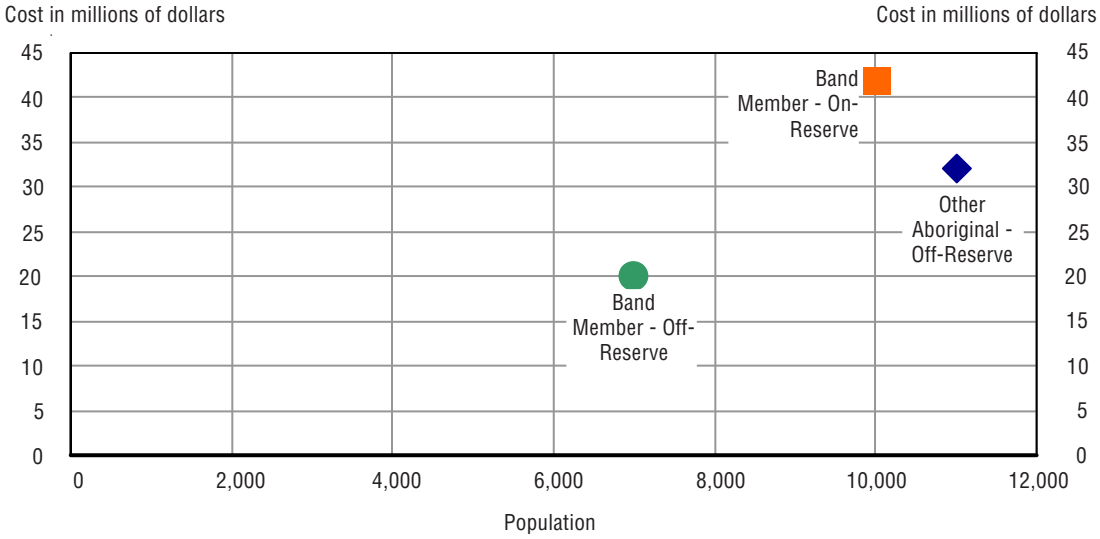


Figure 8.36

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Alberta, 2006



British Columbia

Figure 8.37

Estimated cost of providing Aboriginal adults with competitive literacy skills, British Columbia, 2006

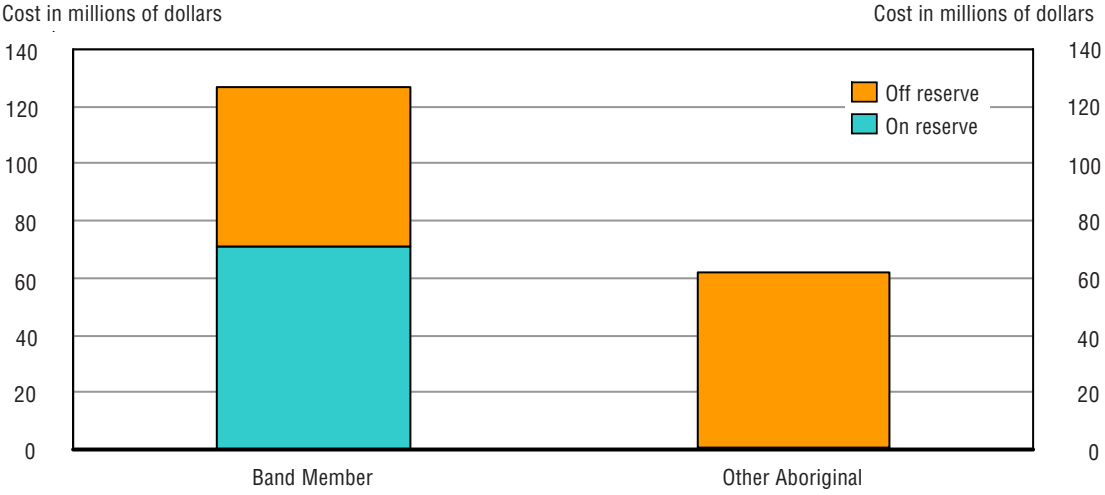


Figure 8.38

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, British Columbia, 2006

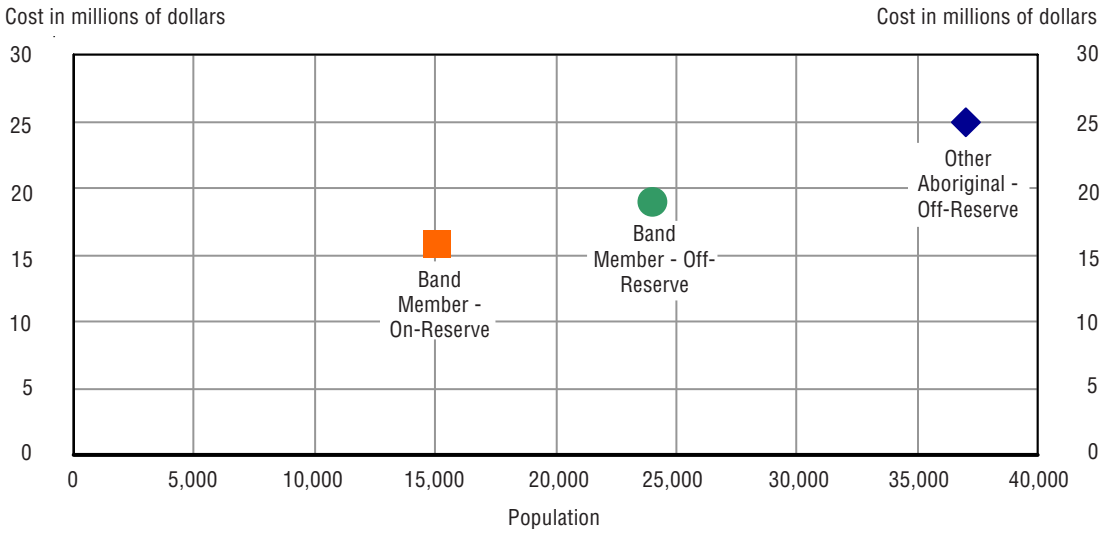


Figure 8.39

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, British Columbia, 2006

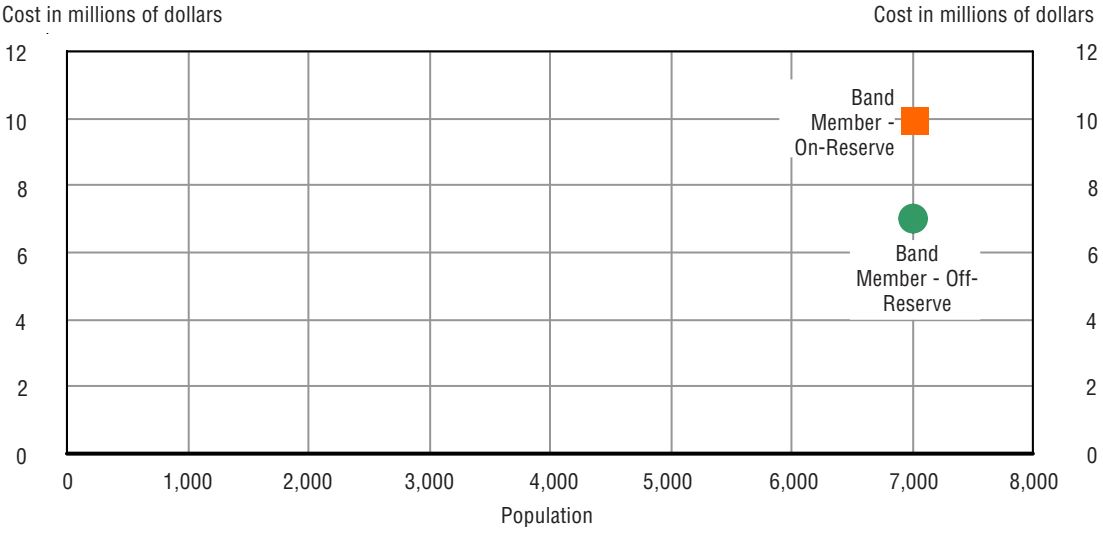
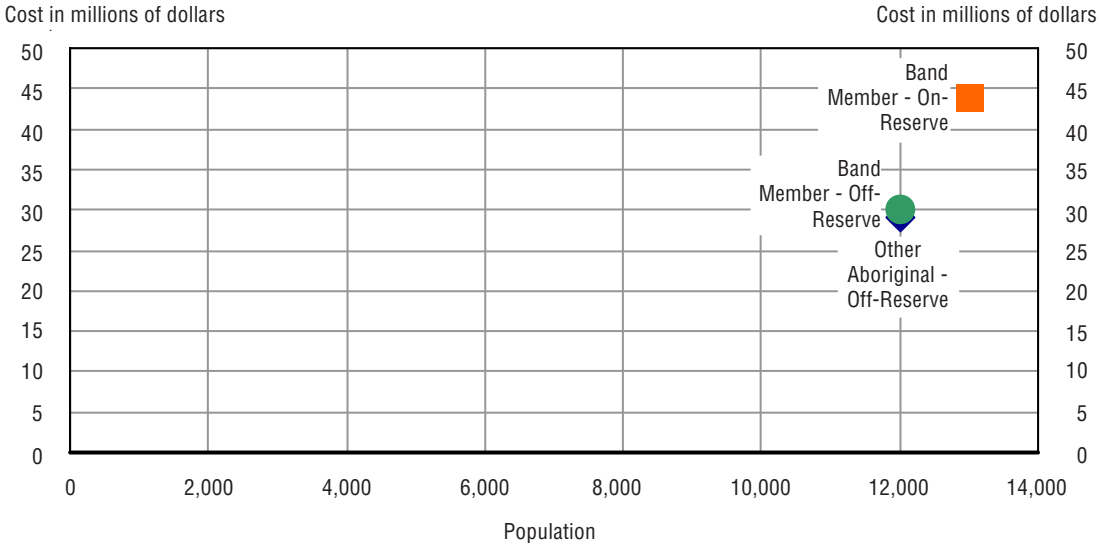


Figure 8.40

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, British Columbia, 2006



Yukon

Figure 8.41

Estimated cost of providing Aboriginal adults with competitive literacy skills, Yukon, 2006

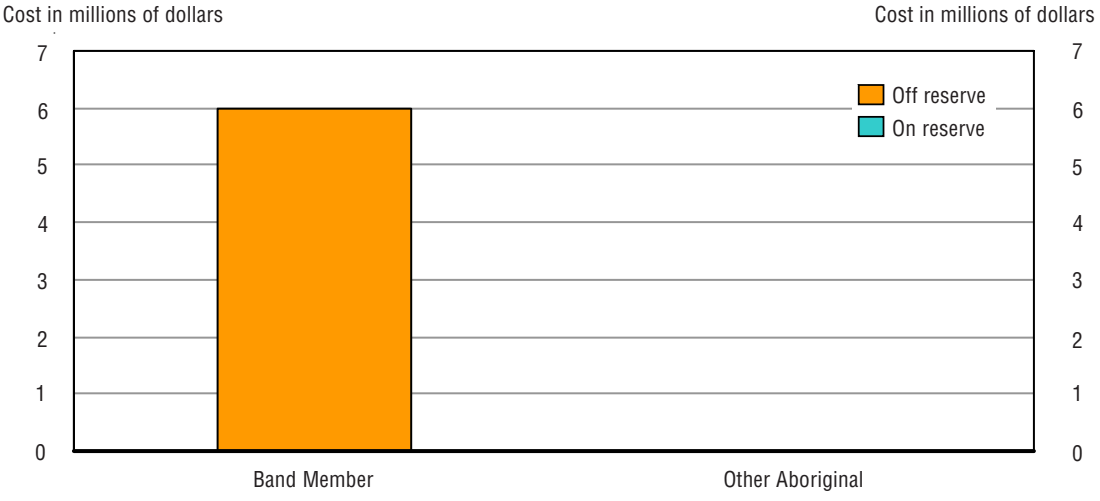


Figure 8.42

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Yukon, 2006

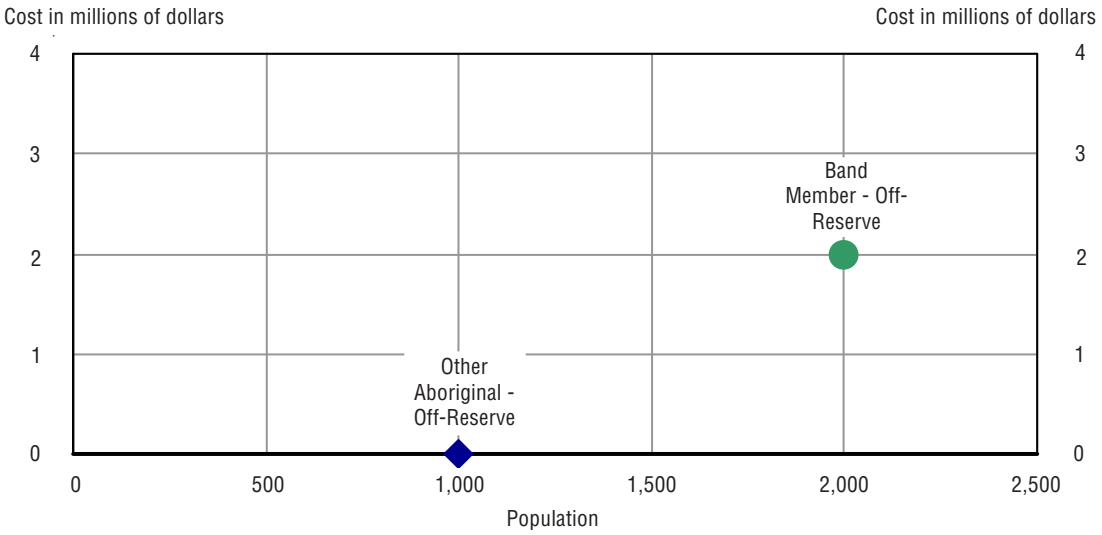


Figure 8.43

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Yukon, 2006

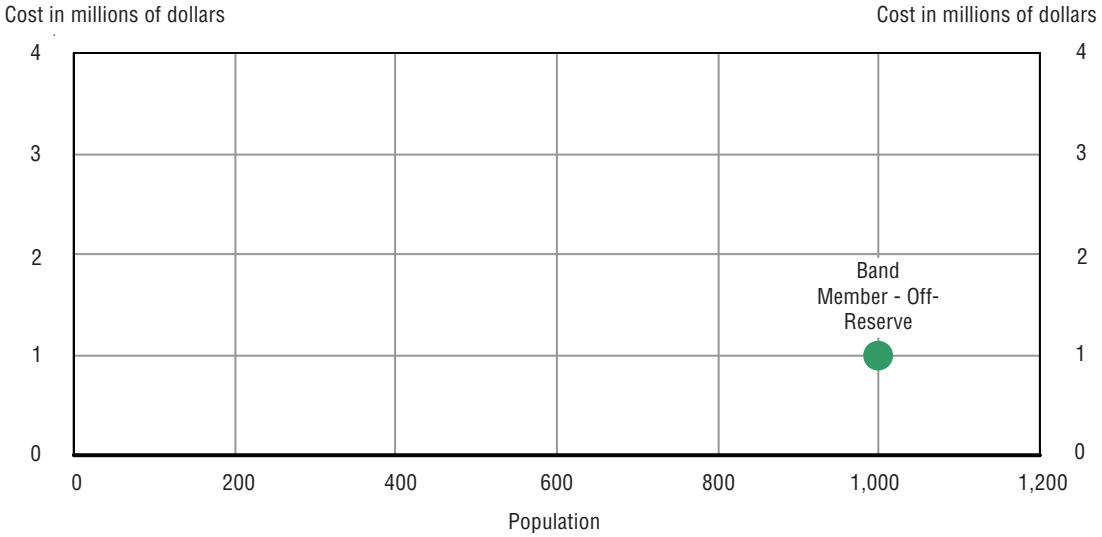
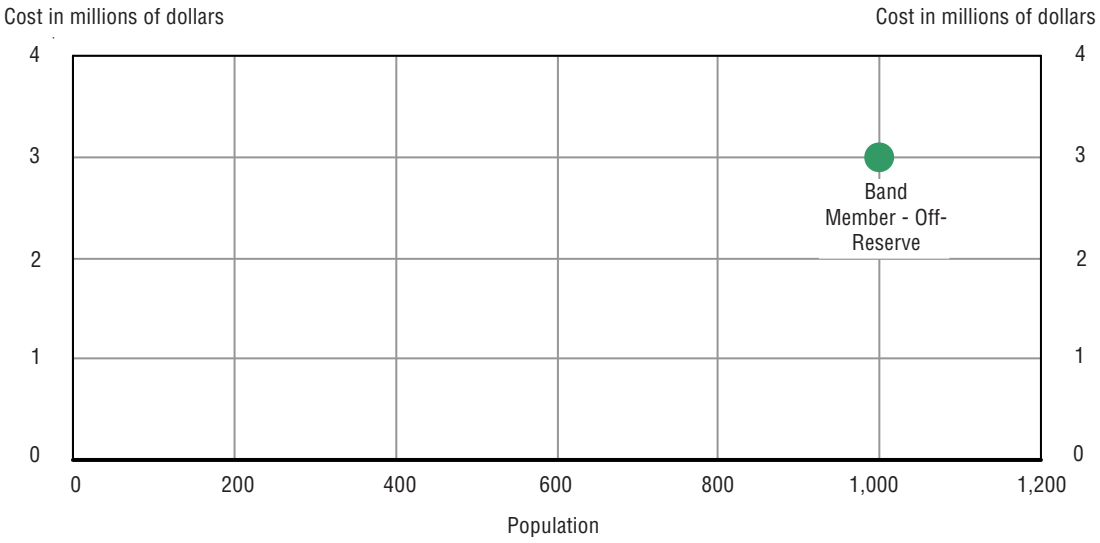


Figure 8.44

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Yukon, 2006



North West Territories

Figure 8.45

Estimated cost of providing Aboriginal adults with competitive literacy skills, North West Territories, 2006

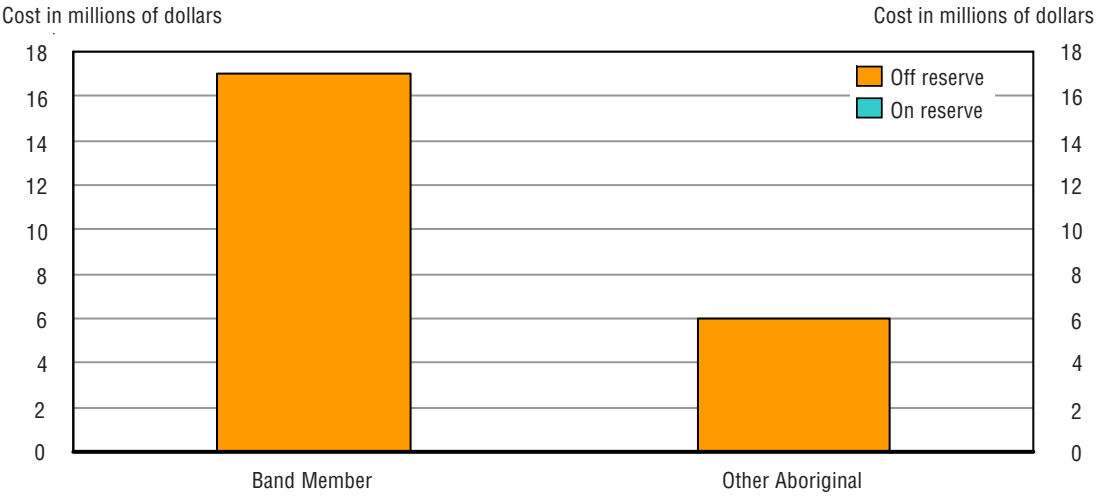


Figure 8.46

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, North West Territories, 2006

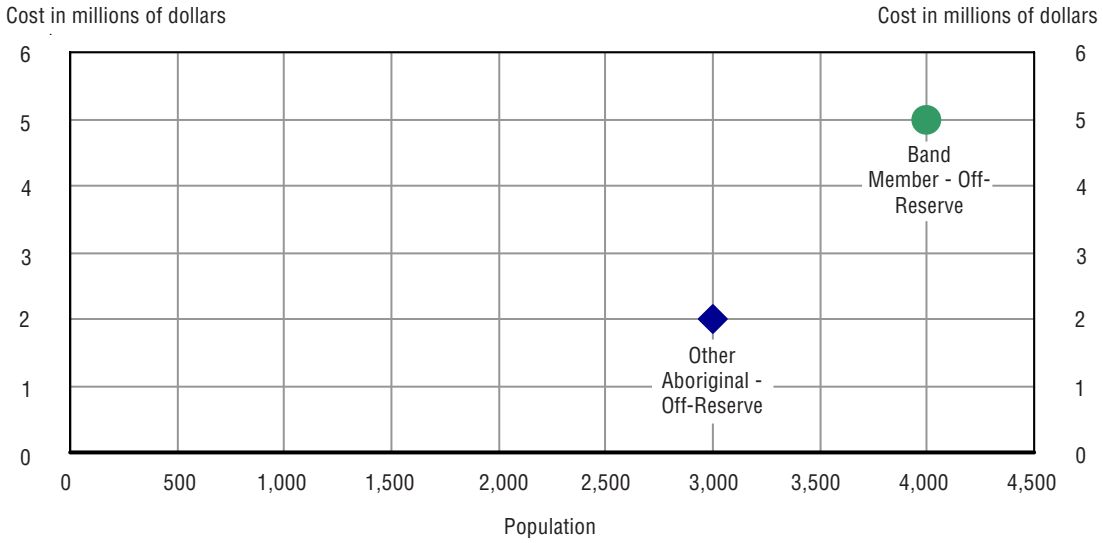


Figure 8.47

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, North West Territories, 2006

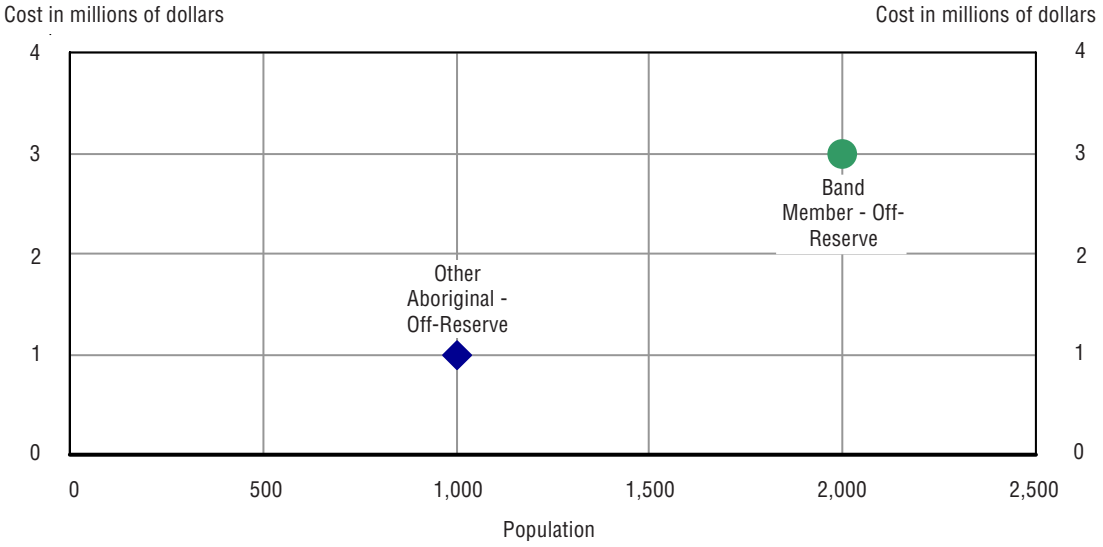
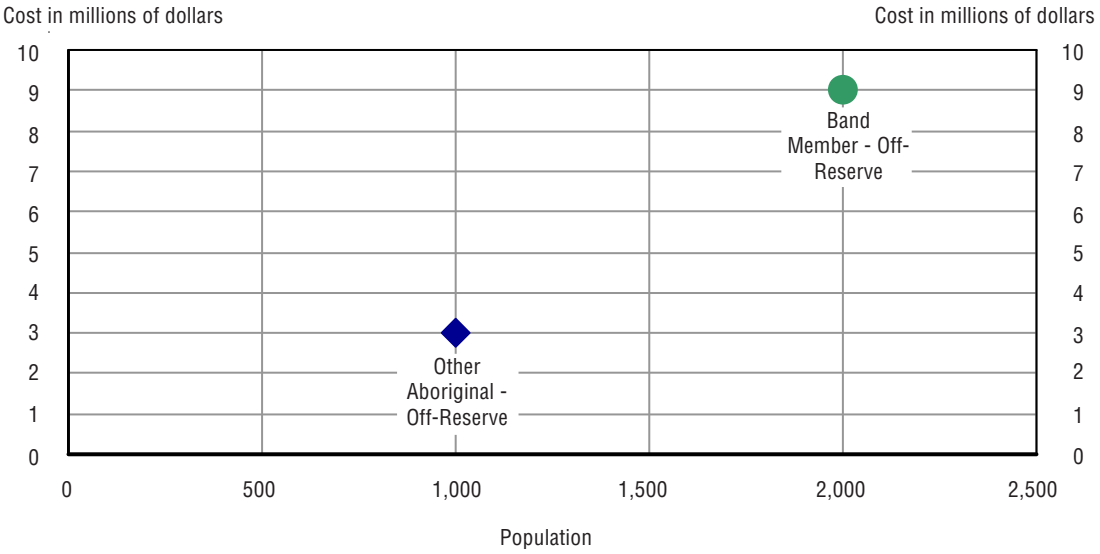


Figure 8.48

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, North West Territories, 2006



Nunavut

Figure 8.49

Estimated cost of providing Aboriginal adults with competitive literacy skills, Nunavut, 2006

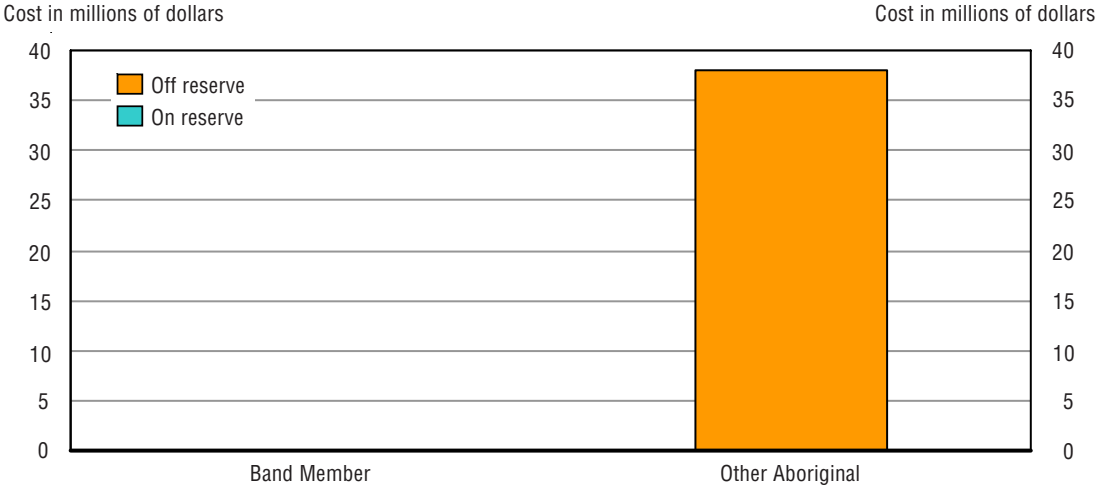


Figure 8.50

Estimated cost of eliminating literacy skill shortages in the employed Aboriginal population, Nunavut, 2006

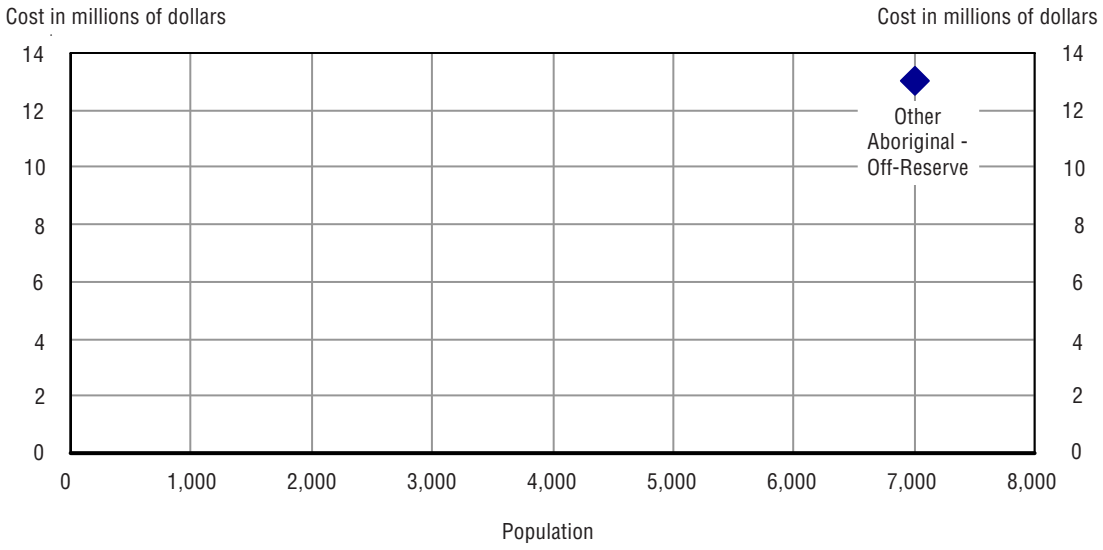


Figure 8.51

Estimated cost of eliminating literacy skill shortages in the recently employed Aboriginal population, Nunavut, 2006

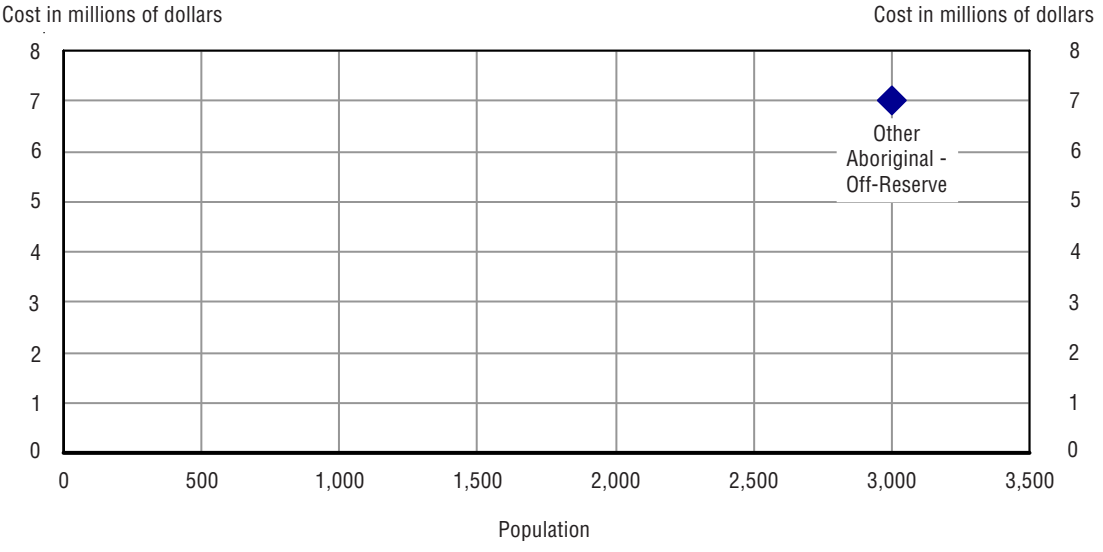
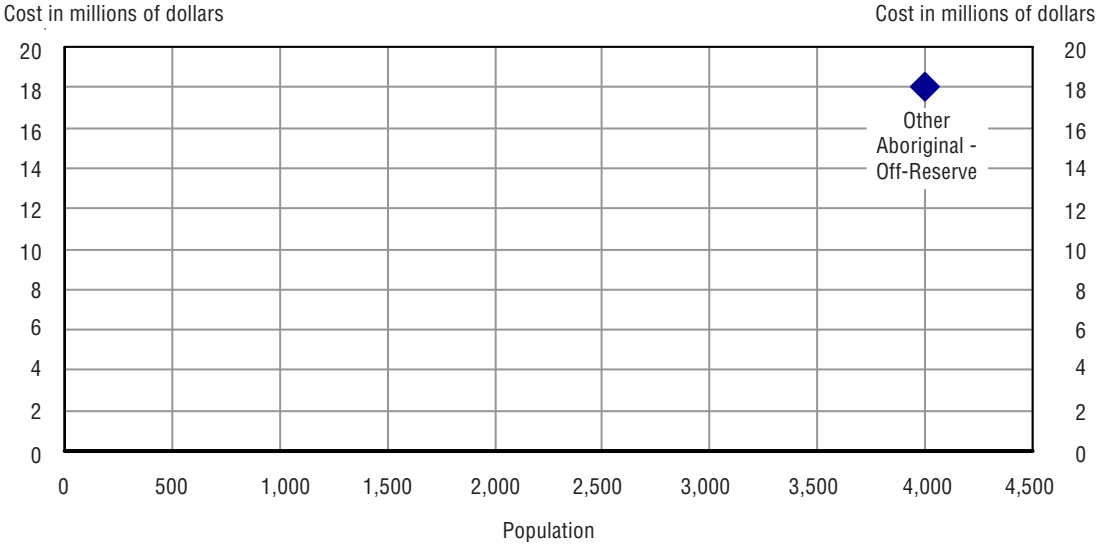


Figure 8.52

Estimated cost of eliminating literacy skill shortages in the Aboriginal population not in the labour force, Nunavut, 2006



As expected the figures reveals two important facts, including:

- The costs of eliminating literacy skill shortages in Aboriginal populations is high in every jurisdiction.
- The size of the investment required varies with the number of adults in shortage the nature of their learning needs.

Calculating benefits and rates of return

The benefits of raising Aboriginal skill levels through remedial training would depend entirely on how these new skills were used by employers and employees. It is possible to define "worst" and "best" case scenarios in this regard.

The worst case scenario

It is relatively simple to calculate a worst case scenario. Here employers would simply ignore the new skills that had been acquired. Employees would do exactly the same work that they did before the training took place. Here the benefits and rates of return would, obviously, be negative. The entire investment would be lost, as would the time that workers spent on training as opposed to working.

It is more difficult to calculate the benefits associated with a best possible case, i.e., one where the economy would be able to fully use all the new skills that had been created and to make an assessment of the most likely response of employers. It would be somewhere in between these best and worst case extremes, but it is not self-evident whether it would be nearer the best or worst end of the spectrum.

The best case scenario

This section of the paper addresses the first of these tasks – finding a way of calculating the best case scenario where employers would maximise their economic objectives by making fullest use of the available supply of skills.

A best case scenario is calculated using a technique that makes use of the new data on skills that has been discussed in this paper. The technique is quite simple. Regression analysis is used to estimate the additional earnings that have been associated with a one point increase in prose skills (after controlling for the effects of age, gender, immigrant status, aboriginal status and mother tongue). Earnings increases, in turn, are used as a proxy for the full economic benefits that would result from the investment in training. The regressions found that for every one point increase in actual literacy scores, average earnings increased by about $155 in the real world. Remarkably, this earnings yield is stable over the entire wage and skill distribution, something that suggests that increases in reading comprehension have a direct impact on the productivity of workers. We use this figure to calculate earnings increases brought about by the new literacy training in each industry and occupation.

In other words, because the goal is the limited one of calculating a first approximation of returns on investment in a best case scenario for a mature end-state program, we simply assume that:

- The costs are the $xxxx billion in remedial training that is needed to eliminate all prose skill shortages.
- The new skills are acquired instantaneously.
- The market will absorb all of the newly acquired skills and that productivity increases will result in consequence.
- Higher productivity in turn leads to a more efficient and effective production of goods and services that lie at the heart of Canada's prosperity and economic competitiveness.
- The higher productivity will become translated into higher wage rates for individual workers and the increase in earnings can therefore act as a good proxy for the broader economic benefits of the investment in training that result from productivity increases.

As shown in the following table the investment would yield.

… a staggering best case pay-off

When we run these calculations we find that, in the best case scenario, the investment of $xxxx billion leads to a staggering increase in additional earnings of $xxxx billion a year. That implies an overall return on investment of over 350%. In other words, while the worst case scenario is dismal, the best case scenario is almost unbelievably high. That leaves a lot of middle ground!

Again caution is obviously required. These are best case outcomes only, and made with many simplifying assumptions. It is an open question if employers could make use of newly created skill or, if they did, if they would pass on the associated productivity benefits to their employees. Recent research suggests that wage returns per point may not be as stable as assumed in these analyses. More specifically workers in Level 1 and 2 jobs may not realize and wage return for their additional skills. If confirmed, this lack of return would reduce incentives for these workers to undertake training. Nevertheless, under the assumptions made payoffs are still surprising large. Even if the real world results were only half, or even a quarter, as good, one would still be talking about significant returns on investment.

Section 9

Summary and policy implications

This report has explored the role that literacy plays in Canada's labour markets with a specific focus on how literacy influences the success of the nation's Aboriginal populations. The report compared the demand for literacy skill implied by the distribution of employment by occupation observed in the 2006 Census of Population to the available supply of literacy skill to identify skill shortages and surpluses for each of Canada's Aboriginal populations. Estimates were presented of what it would cost to eliminate literacy skill shortages through instruction and of what such investments could potentially yield in terms of higher labour incomes. Key results were presented at the provincial/territorial level for key groups of Aboriginal adults aged 16 and over, including:

Band members living on Reserve

Band members living off Reserve

Non-band members living on Reserve

Non-band members living off Reserve

Where appropriate results were compared to the total population.

The analysis reveals several important facts, including:

The Canadian economy appears to be relatively inefficient in the sense that it does not make full use of the available supply of literacy skill. The economy uses only 63% of the aggregate supply available in the Aboriginal population. Finding ways to increase the aggregate demand for labour would yield significant increases in Aboriginal earnings and output.

Current employment demands 104% of the literacy skill possessed by employed workers. This represents a huge untapped economic potential and argues for policies to increase the level of literacy skill demand in firms, particularly in jobs that currently demand Level 2 literacy skill. Finding ways to increase the knowledge intensity of employment might, under some circumstances, yield significant increases in Aboriginal earnings and output.

The economic potential of the economy is also constrained by the fact that an average of 53% of Aboriginal workers have literacy skill levels below those needed to do their jobs well.

Eliminating literacy skill shortages in Canada's Aboriginal populations would be expensive - an estimated $xxxx million would be needed.

Such an investment would, however, generate an estimated $xxxx billion per year in additional earnings an implied one-year return on investment of over 350% were the economy able to put all of the newly created skill to use.

These benefits would flow from improved productivity associated with less worker error and material wastage, the adoption of more efficient work organization and production methods and lower rates of worker illness and accident. The simple magnitude of these potential returns justify public investment in literacy despite the fact that most workers have incomes that are sufficiently high to self-finance the required literacy upgrading. The real case for public literacy investment rests, however, on the dire economic consequences associated with trying to compete in fiercely competitive global markets with large numbers of low skilled workers.Individuals and their employers might chose to invest but almost certainly not rapidly enough to avoid a lots of short term economic pain. Faced with large numbers of low-skilled workers Canadain firms will chose to outsource production, will try to reduce labour costs or will simply be unable to compete. So realizing Canada's full economic potential will depend critically on rapid and massive public investment in adult literacy.

The case for investing in Canada's Aboriginal populations follows the same logic, reinforced by the fact that Aboriginal workers will represent an increasingly important share of new workers.

How could analysis be improved?

Because the data are so new, and because they point to some perhaps unexpected conclusions, people will naturally, and properly, be cautious about the use of the new knowledge. They will need to understand its limitations as well as its strengths before they act on it.

There are six areas at least where additional developmental work could have important payoffs and, in particular, could increase comfort levels in using the new knowledge in policy applications.

1. **What's happening within occupations?** Likely the biggest weakness in the data is that it measures changing skill levels at the level of occupations as a whole, and does not look at the changing skill requirements that are taking place within occupations. No obvious sources of within-occupation data are currently available. However, it should be possible to at least develop a stronger understanding of how to best manage the risks created by this gap in our knowledge.

   The paper suggests that the best approach is to assume that there is likely to be at least as much skill change within occupations as there is across occupations. That seems, intuitively, to be reasonable and prudent advice. However it is not supported by any in-depth analysis. With some further developmental work it may possible to add some empirical evidence to support or modify that intuition.
2. **How reliable are data at finer levels of detail?** Analysts will almost certainly worry about the accuracy of the finely-detailed data on prose skills by province – as well as data by sub-provincial regions. Nothing like it has ever been seen before. Questions about its quality are inevitable and appropriate. Will analysts in sectoral councils or unions be able to see themselves in the data? How does it compare with other sources of data? While the concern is real, the question may not always be well-framed:
   - Traditional survey research places great emphasis on sampling error and there is a tendency to rely on measures such as standard error. However, there is relatively little sampling error in conjunction with the 20% sample used in the census. It will not create a big problem in terms of ultimate policy uses.
   - There is also error associated with the imputation to the Census files of the skills information derived from other sources. The extent of that error can also be measured. Given the policy uses in question, the data appear sound.

- A potentially larger concern lies in the non-sampling error associated with the original census data by industry and occupation. A household interview may not be the best possible source of information that can result in fine level coding of the industry where the respondent works, or even on information needed for detailed occupational coding.

  Working with Statistics Canada, it would likely be possible to develop a user-friendly way of helping people engaged in policy-related analysis to better understand the quality issues that are associated with disaggregated occupational and industrial data.

3. **To what extent are prose skills a good proxy for all essential skills?** Most policy applications will not be about prose skills in isolation, but on shortages and surpluses of all essential skills. For example, work-place remedial training would not likely not be limited to prose skills alone in those workplaces where the problems related to say, oral language and numeracy skills as well as prose skills.

   As noted in the text, prose skills are clearly the best starting point; they are the essential learning-to-learn skills and are closely correlated with success on other skill fronts, certainly including document skills. However analysis has shown that there is not a complete correlation with number skills, and little work has yet been done in examining the new data on problem-solving skills. In addition, for at least two of the segments – Segments 2 and 4 – weak official language skills would appear to be a cofactor.

   Further development work could certainly be carried out using the new data on numeracy and problem-solving skills. Such new analysis could indicate occupations where prose skill shortages were dominant, those where numeracy skill shortages were dominant, and those that experienced both types of shortages. It might be possible to also add a dimension dealing with problem-solving skills.

   These findings might well be important in designing remedial interventions in those cases where a significant number of workers experienced shortages in more than one of the essential skills. It might also be useful to conduct additional development work using qualitative data from experts on the best approaches to learning when shortages exist in more than of the essential skills.

4. **What is the role of migration?** At different points, the paper referred to the importance of migration and geographic mobility. However, no attempt was made to quantify the effect of mobility on the demand and supply of skills. Do inter-provincial migrants help to decrease the size of skill shortages or do they increase them? The Census mobility questions should allow for an analysis of these flows and their impact on the problem.

   Further developmental work could be undertaken to quantify the role of immigrants and workers from other provinces in the skills market. The results might be particularly interesting for policy analysis in a province such as Alberta whose economy draws so