Human Resources and Skills Development Canada
Ressources humaines et Développement des compétences Canada

People • Partnerships • Knowledge

Policy Research Directorate

Looking-Ahead:
A 10-Year Outlook for the Canadian Labour Market (2008–2017)

November 2008

SP-615-11-08E

Canada

Looking-Ahead: A 10-Year Outlook for the Canadian Labour Market (2008-2017)

Policy Research Directorate
Strategic Policy and Research Branch
Human Resources and Skills Development Canada

November 2008

SP-615-11-08E
(également disponible en français)

The views expressed in papers published by the Policy Research Directorate are the authors' and do not necessarily reflect the opinions of Human Resources and Skills Development Canada or of the federal government. The goal of these papers is to encourage broad participation in discussion and debate on important public policy issues.

■

This paper is available in French under the title *Perspectives du marché du travail canadien pour la prochaine décennie, 2008-2017.*
La version française du présent document est disponible sous le titre *Perspectives du marché du travail canadien pour la prochaine décennie, 2008-2017.*

■

Paper
ISBN: 978-1-100-12014-0
Cat. No.: HS28-23/2009E

PDF
ISBN: 978-1-100-12270-0
Cat. No.: HS28-23/2009E -PDF

■

General enquiries regarding the documents published by the Policy Research Directorate should be addressed to:

Human Resources and Skills Development Canada
Publications Centre
140 promenade du Portage, Phase IV, Level 0
Gatineau, Quebec, Canada
K1A 0J9
Facsimile: 819-953-7260
http://www.hrsdc.gc.ca/en/publications_resources/research/index.shtml

Table of Contents

Acknowledgements

The Policy Research Directorate of Human Resources and Skills Development wishes to acknowledge the many individuals that contributed to this report. The Directorate would also like to thank the reviewers whose work helped to improve this year's report.

This report was produced under the supervision of Mario Lapointe. Authors of this report include (in alphabetical order):

Martin Charron
Gilles Claveau
Marc Gendron
Erwin Gomez Gomez
Mathieu Grenier
Luke Ignaczak
Ji-Youn Kim
Robert Lamy
Mario Lapointe
Cristiana Pescarus
Nicolas Tremblay-Côté
Nicolas Vincent
Yang Zou

We wish to thank Gilles Bérubé and Cliff Halliwell for their helpful comments and suggestions.

Comments regarding the contents of this report should be addressed via e-mail to Mario Lapointe (mario.lapointe@hrsdc-rhdsc.gc.ca).

Executive Summary

The report *Looking-Ahead: a 10-Year Outlook for the Canadian Labour Market (2008-2017)* is based on a projection produced by the Policy Research Directorate (PRD) of Human Resources and Skills Development Canada (HRSDC).

With a high participation rate and low unemployment rate, the Canadian economy became labour constrained in recent years, through much of 2008 even. However, global financial and economic turmoil, including the slowdown of growth in the U.S., began affecting the Canadian economy in 2008. The projection presented in this report is based on an economic scenario developed in the Spring of 2008. Since then, the severe deterioration of global financial and economic conditions has led forecasters to expect a much more pronounced downturn for the Canadian economy in the short term.

However, it is important to note that the projection presented in this report is about the trends in labour supply and labour demand over the next ten years. Factors such as demography will play an increasingly important role in Canada's labour market over that period. Population growth has been slowing and will slow further as a result of decades of low fertility rates. The projected increase in the number of immigrants will not be enough to compensate for smaller natural increases (births minus deaths). This slowdown in population growth is expected to also reduce growth in demand facing many industries whose market is Canada, while changes in the age structure of the population will modify the industrial structure by favouring service-providing industries, particularly in the health sector.

Population ageing will also affect growth in the labour force. The proportion of older people (aged 55 and over) in the population will increase and this age group is the one displaying the lowest participation rates. The labour force is projected to increase by 1.7 million in the next decade, to 19.6 million by 2017 from 17.9 million in 2007. But, this increase of 0.9% per year, on average, represents half of the growth rate (1.8%) observed between 1998 and 2007.

Labour force growth is the result of large flows of people entering the labour force and large flows of people leaving the labour market. Students coming out of Canada's education system, with educational attainment ranging from an incomplete high school certificate to a PhD, will remain the primary source of labour supply, representing approximately 4.4 million new labour market entrants over the next decade. These “school leavers” will account for four fifths of the projected total new annual inflow into Canada's labour supply. Overall, close to 69% of school leavers over the next ten years will have a college or university education, up from 65% in the previous ten years. The number of new immigrants joining Canada's labour force will be much smaller than the inflow of school leavers, representing 1.0 million entrants.

On the demand side, an often-held view is that growth in total employment, that is *new* jobs, is needed to provide employment to *new* job seekers. It is, but it is only part of the story. There are also huge numbers of job openings created by the need to replace workers in *existing* jobs, due to retirements, in-service mortality and emigration. In the past 15 years, about half of the

new entrants to the labour market were needed to replace workers leaving existing jobs. The other half of new entrants were available to help grow the economy and the total number of jobs.

That will not be so in the decade ahead. The ageing of the workforce will lead to a rising number of people leaving the labour market. Of special interest is the baby boom generation (which is between ages 41 and 60 and currently accounts for about 30% of the total population and over 45% of the labour force) and which has begun to enter the retirement years (a pressure which will continue well beyond the forecasting horizon of 2017). In the decade ahead, it will take three quarters of the new entrants into the labour market just to replace workers leaving existing jobs. In other words, only one quarter will be available to help grow the labour force and the economy. This means that the rate of growth of total employment is projected to be lower than in the past. Canada's total employment is projected to increase by 1.5 million new jobs by 2017, taking employment from 16.9 million in 2007 to 18.4 million in 2017. This represents an average annual growth rate of 0.9%, less than half the pace of the previous ten years (when the rate of growth was 2.1%).

This still means that over the next ten years about 5.5 million (non-student) jobs are expected to open up as a result of increasing economic activity creating new jobs and the far-greater need to replace workers in existing jobs. In large measure, the job seekers will have the education and skills needed for the openings that will occur.

Overall, two-thirds (67.2%) of all job openings over the next ten years will be in occupations usually requiring postsecondary education (university, college or apprenticeship training) or in management occupations (which often but not always require postsecondary education). Although new job creation and retirements will be weakest in occupations usually requiring a high school diploma and those requiring only on-the-job training, 1.8 million jobs are still expected to open up in these occupations.

Labour market indicators suggest that, over the last twenty years, labour supply has increased in line with labour demand across most broad skill levels. Broad skill levels correspond to four groupings of occupations that usually require the same level of education (university, college, high school or on-the-job training) as well as management occupations. Both the unemployment rate and real wage for each skill level (relative to the average of all the other skill levels) have been fairly flat over the last ten years. Labour supply is expected to be growing in line with labour demand across broad skill levels over the next ten years.

At the more detailed level of occupations, excess supply for some occupations will coexist with excess demand for others. The largest number of occupations with significant imbalances will be in management and in the health sector, and shortage pressures should be especially acute for managers in health and education, physicians and nurses. In some cases, supply would need to double or even triple to meet projected demand. Other occupations showing signs of excess demand include senior managers, human resources professionals, contractors and supervisors of trades and occupations related to oil and gas drilling and services. On the other hand, an excess supply situation is projected over the medium term in occupations (mainly low-skilled) specific to the primary sector and to processing, manufacturing and utilities.

The simultaneous existence of occupations where there are jobs without workers and others with workers without jobs suggests that there is a challenge for matching school leavers and worker skills to the needs of the job market. While matching can never be perfect due to the inherent uncertainties of job market prospects, it can be improved with better labour market information on future shortages and surpluses by occupation, greater responsiveness of the postsecondary education system to the evolving skill needs of the labour market and by re-training workers to help re-allocate labour from occupations facing surplus conditions towards occupations facing shortage pressures.

1. Introduction

Each year, the Policy Research Directorate (PRD) of Human Resources and Skills Development Canada (HRSDC) uses a variety of models to produce a detailed 10-year labour market projection at the national level, which focuses on the trends on labour supply and labour demand over the next ten years.

The projection of labour demand takes into account not just where the economy is growing and the types of jobs that will be created but also the age structure of the workforce and retirement trends in order to see how many jobs will open up because existing workers need to be replaced. The projection of labour supply takes into account new job seekers such as school leavers and recent immigrants as well as people re-entering the labour market. The inclusion of the supply side distinguishes HRSDC models from occupational projection models used in other countries. For instance, the U.S. Bureau of Labor Statistics' occupational projections look only at the demand side. A comprehensive projection of the supply side is important from a policy perspective. After all, imbalances occur not just because there is strong job growth in an occupation but because that job growth exceeds the likely growth in supply.

The information derived from such projections serves several complementary purposes. First, it assists medium-term policy planning in the labour market area by providing information about the trends in the major components of labour demand and labour supply over the medium term at the macroeconomic, industrial and occupational levels. By looking at prospective changes in both the demand and supply sides of the labour market, it determines whether imbalances could emerge among broad skill levels (i.e. groupings of occupations that usually require the same level of education). It also acts as an early warning system by identifying the occupations where the current and projected states of supply and demand suggest that imbalances could develop or persist over time.

The projection models also represent a useful tool for policy issue verification and policy analysis. For example, projection models can be used to estimate the impact on labour force growth of increases in immigration or to gauge the capacity of the education system in Canada to meet projected labour demand. Finally, the information on occupational imbalances can be used in labour market information (LMI) products, such as *Job Futures*,[1] targeted at assisting Canadians in their education and career decisions.

Recent economic developments versus medium-term projections

The macroeconomic forecast that underlies this 10-year outlook includes actual economic data up to the end of 2007. This macroeconomic scenario was developed in cooperation with the Conference Board of Canada (CBoC), based on forecasts available as of the Spring 2008 from a number of private and public sector sources, including the survey of forecasters by Consensus Economics, the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF), Finance Canada (2008 Budget) and the Bank of Canada. This scenario included a moderate slowdown in the pace of growth of the Canadian economy

[1] For more information on this labour market information product, go to http://www.jobfutures.ca.

in 2008 and 2009. However, because of initially weak start to growth in 2008 and the well-known but subsequent world financial and credit markets developments in the Fall of 2008, the outlook for the Canadian economy has subsequently worsened and the Canadian economy entered into recession in the fourth quarter of 2008. However, it is important to note that the purpose of this 10-year outlook is to capture broad trends in the Canadian labour market which are expected to happen over the next 10 years. Such trends, and their underlying drivers, should be of value for labour market information and policy development purposes.

The *Looking-Ahead* report

Results of the Policy Research Directorate's labour market projection are reported every two years in *Looking-Ahead: a 10-Year Outlook for the Canadian Labour Market*. This new report covers the period 2008 to 2017. The report also looks at the performance of Canada's labour market over the past 20 years in order to compare the outlook with recent experience.

More specifically, the report tries to answer the following questions:

- How many new jobs will be created over the next decade?
- In which industries and occupations will these new jobs emerge?
- How many existing jobs will open up due to retirements?
- What kind of education will be required to fill these job openings?
- Will labour supply be sufficient to meet labour demand?
- What occupations will face significant labour shortages or surpluses?

The report fills an important gap, as no other publication provides a comprehensive picture of the Canadian labour market. Many public and private organizations in Canada produce reviews of economic conditions and develop short- and medium-term forecasts. However, very few of them focus their reviews and forecasts on the labour market, and none undertakes a detailed outlook by industry, skill level and occupation.

This report provides quantitative guidance about potential future pressures and imbalances at a detailed occupational level over the medium term. There are simply too many fluctuations in the economy for supply and demand to be in balance in every occupation. Adjustments, such as changes in relative earnings, can even out imbalances over time by influencing changes in both labour demand and labour supply, but these adjustments take time. This outlook does not take into consideration the mechanisms that may alleviate imbalances between demand and supply, such as changes in occupational wages and labour market information. These are not accounted for because we want to identify imbalances which could be reduced by young Canadians changing their educational choices.

The labour market outlook presented in this report is at the national level only. At this point, only projections of demand by province are produced as provincial supply data are not reliable enough at the level of detail needed to carry out comprehensive projections of labour supply for all the provinces.

Changes since previous report

The previous report entitled "*Looking-Ahead: a 10-Year Outlook for the Canadian Labour Market (2006-2015)*" was published in May 2007. This current report includes a number of changes to reflect improvements made to the different models:

- The decomposition of the changes in the labour force using a cohort approach has allowed the addition of two new supply components: people re-entering the labour market (also known as re-entrants) and people moving across skill levels, such as those moving within a general occupational stream (e.g. cashiers moving up to be sales and service supervisors).
- Two scenarios are considered when distributing school leavers among occupations: one reflecting the labour market performance of recent graduates and another deriving potential supply by assuming that school leavers will offer their services only in jobs directly related to their educational background. This matters very much because many graduates end up in occupations not related to their field of study.

The report also includes additional information on the projection models methodology and more detailed analysis by occupation.

Structure of the report

The report is divided in four main sections. The next section, which highlights the broad trends in the Canadian economy and labour market, is divided into 4 chapters. The first chapter presents the demographic projections, while chapter 2 provides an overview of past and future trends in broad macroeconomic and labour market indicators. Chapter 3 reviews how the labour force has evolved in the past and what is expected in the future. This analysis is performed by age group, gender and education. Chapter 4 looks at how employment has changed over the last 2 decades by industry and occupation and how it is projected to evolve over the next ten years.

The third section identifies whether imbalances will emerge among broad skill levels. The fourth section, which looks more closely at imbalances by occupation, is divided into 5 different chapters. After introducing the methodology to assess imbalances by occupation, the next two chapters present the projections of job openings and job seekers respectively. These are followed by a presentation of detailed projection results by occupation. The last chapter in the fourth section provides a list of occupations considered to be either in labour shortage or surplus. The last section summarizes our main conclusions. A series of annexes provides additional tables and model methodologies.

2. Broad Trends in the Canadian Economy and Labour Market

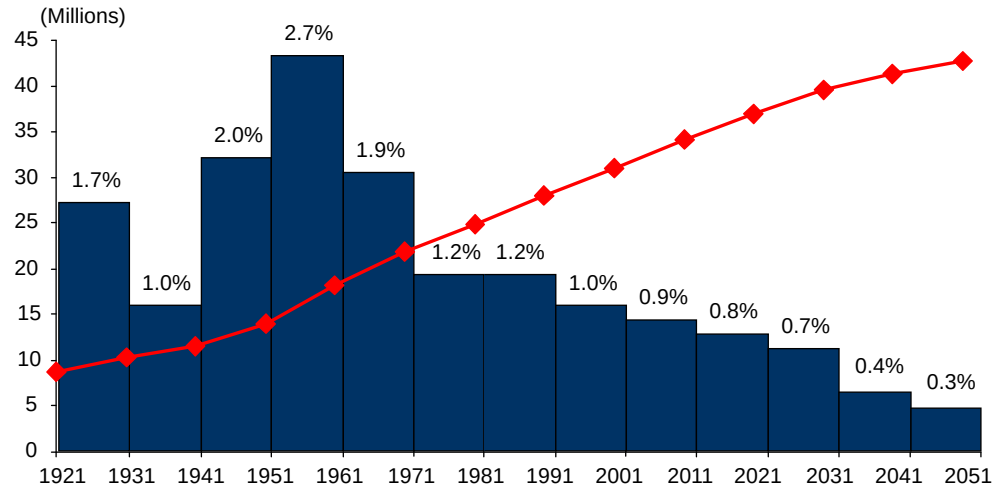
2.1 Demographic Developments and Projections

Demographic changes will have major impacts on Canada's economy and labour market over the coming decades. Indeed, Canadian population growth is expected to decelerate, on account of a low fertility rate. The projected increase in the number of immigrants will not be enough to offset the slowing in the natural increase (births minus deaths). Population ageing will be more pronounced, and the number of elderly and their share of the total population will increase considerably.

Population growth is slowing…

The Canadian population, which stood at 29.9 million in 1997, totalled 32.9 million in 2007. It should reach 35.9 million in 2017, up 3 million over ten years, an increase comparable to that recorded between 1997 and 2007. The average annual growth rate, which was 1.0% between 1998 and 2007, will dip to 0.9% between 2008 and 2017. Demographic growth will continue to decelerate thereafter.

Population and Annual Rate of Increase by Decade (in %), 1921-2051



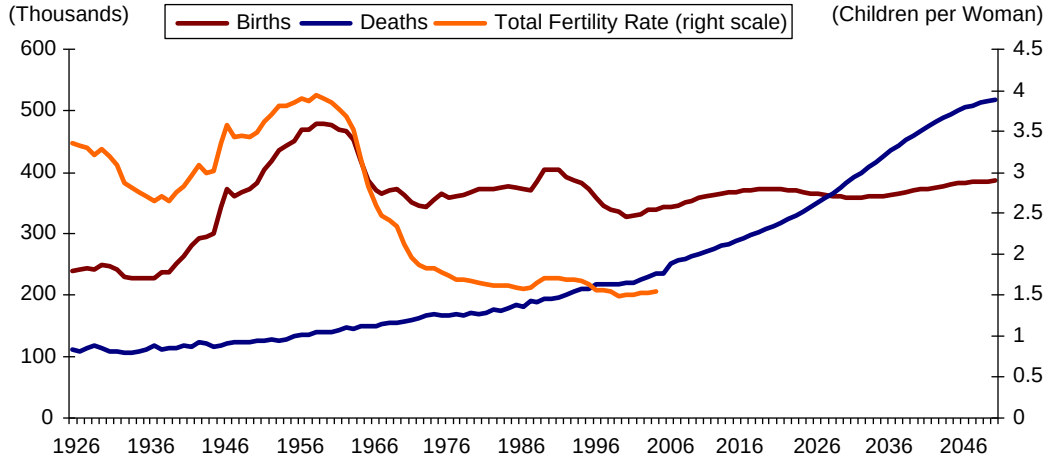
Sources: (1921-2006) Statistics Canada, Historical Statistics of Canada, Series A78-93 and Annual Demographic Statistics 2006;
(2007-2051) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

This weakening population growth is mainly attributable to the decline in the natural increase (births minus deaths) of the population. A number of factors are behind this:

- A low fertility rate directly impacts on the number of births. The total fertility rate observed in 2005 was 1.54, well below the peak of 3.93 reached in 1959. This rate was below the replacement level of 2.1 children per woman, which is the average number of births per woman necessary to assure the long-term replacement of the population. Assuming that the total fertility rate remains at its 2005 level, the number of births will remain relatively constant over time.
- Deaths will be on the rise in Canada due to the ageing of the population. In 2006, 4.3 million people were 65 or over, or 13.2% of the Canadian population. This number should more than double to 10.6 million in 2051, or 24.7% of the Canadian population. Annual deaths in 2051 should be double what they were in 2006 (nearly 519,000 deaths in 2051, versus 235,000 in 2006).
- The increase in life expectancy will not be able to counter the expected spike in deaths. Life expectancy at birth went from 78.2 years in 1995 to 80.4 in 2005. A woman born in 2005 can expect to live to the age of 82.7, while the corresponding figure for a man is 78. A higher standard of living and advances in medicine should continue to increase life expectancy, but at a slower rate than previously seen. Women's life expectancy should rise to 86.1 years in 2051, while men's should rise to 81.1.

The birth and death curves should intersect in 2029 or thereabouts, whereupon natural increase will become negative and the number of deaths will surpass the number of births in Canada.

Births and Deaths (1926-2051) and Total Fertility Rate (1926-2005)

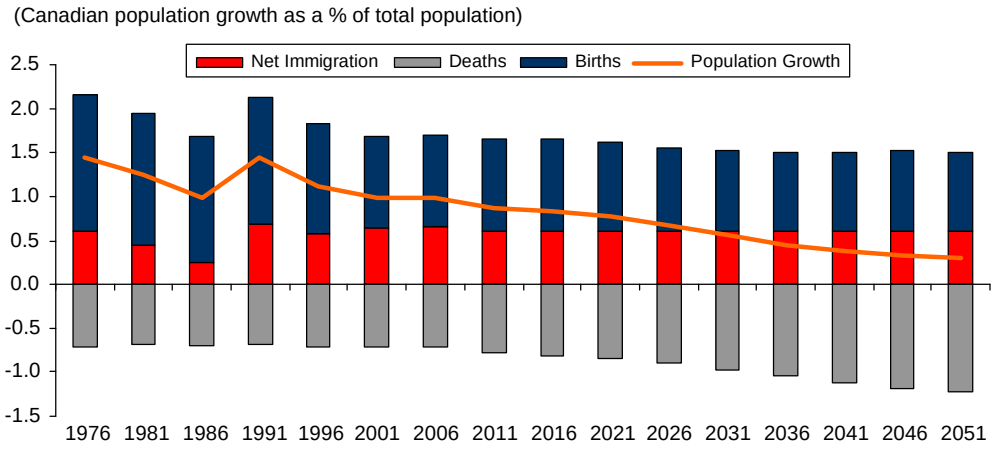


Sources: (1976-2006) Statistics Canada, Annual Demographic Statistics;
(2007-2051) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

…and depends more and more on immigration

Due to the decline in the fertility rate and increase in immigration levels, the contribution of natural increase to annual population growth dropped from 66% in 1987 to 32% in 2007. Immigration's contribution to population growth is expected to rise from 68% in 2007 to nearly 74% in 2017. According to our estimates, starting in 2029 the number of deaths will surpass the number of births, and immigration will then be the sole source of demographic growth in Canada.

Distribution of Demographic Growth by Source (Net Immigration and Natural Increase), 1976-2051

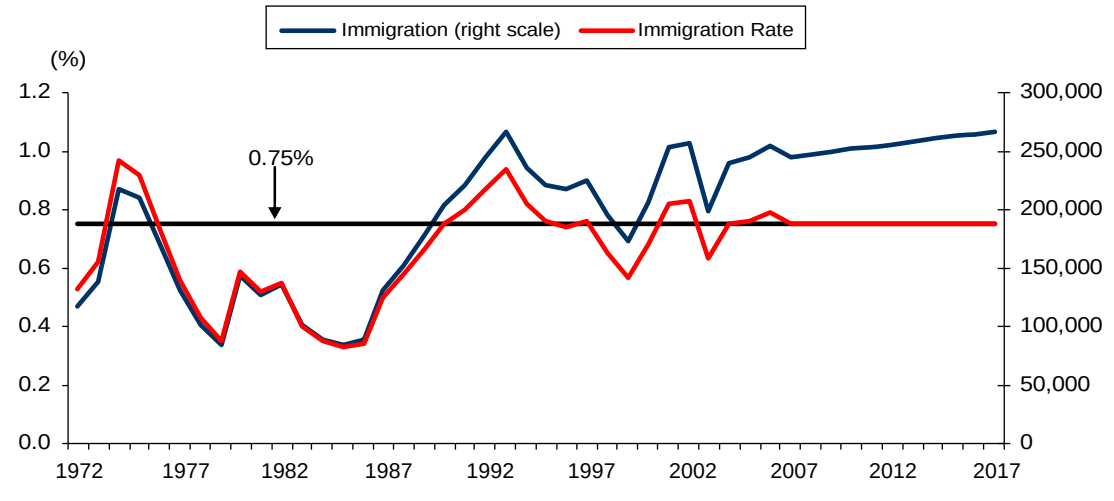


Sources: (1976-2006) Statistics Canada, Annual Demographic Statistics;
(2007-2051) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The following graph shows the trend in the annual number of immigrants and in the rate of immigration (the ratio of the annual number of new immigrants to total Canadian population in the previous year). Canadian immigration has been on the rise over the past two decades. According to our projections, the number of new immigrants in 2008 will be around 247,000, corresponding to the target for 2008 set by the Department of Citizenship and Immigration Canada (CIC), which is between 240,000 and 265,000 new immigrants. Our projections assume that annual immigration will come in at 0.75% of the Canadian population, comparable to what has been observed in recent years. Thus, the annual number of new immigrants should rise to 267,000 in 2017.

In 2006, Canada was one of the four OECD countries with the highest proportion of immigrants among the total population. Its foreign-born population accounted that year for 19.8% of the total population, or 6.19 million inhabitants. This proportion should rise to 22.2% in 2017.

Immigration and Rate of Immigration, 1972-2017



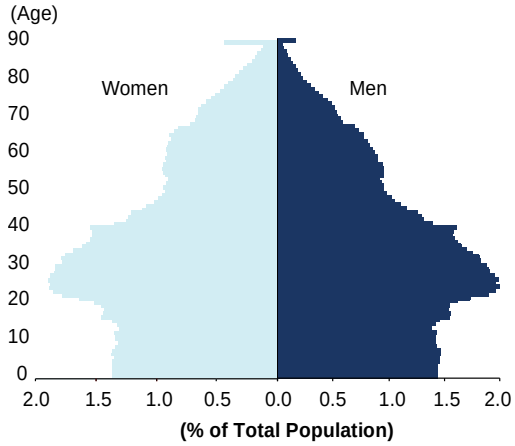
Sources: (1972-2006) Statistics Canada, Annual Demographic Statistics;
(2007-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The Canadian population is ageing despite the contribution from immigration

The data from the latest population census indicate that recent immigrants, i.e. those who have come here in the past five years, are younger than native Canadians and other cohorts of immigrants. In 2006, some 63% of recent immigrants were aged 15 to 44, as compared to 41.4% for the Canadian population as a whole.

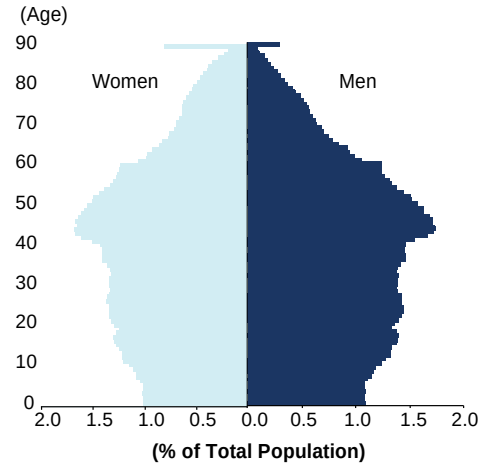
Notwithstanding the clear preponderance of youths among new immigrants, there has been a shift in the age profile of Canada's population. In the mid-1960s, near the end of the baby boom, the population distribution by age was pyramid-shaped. In 1987, the baby boomers (then between ages 21 and 40) accounted for 35% of the total population. In 2007, the baby boomers (now ages between 41 and 60) still represented a significant share of the population, 30%, but the base of the population pyramid continued to narrow, a clear indication that the fertility rate had fallen below the replacement level.

Population by Age and Sex, 1987



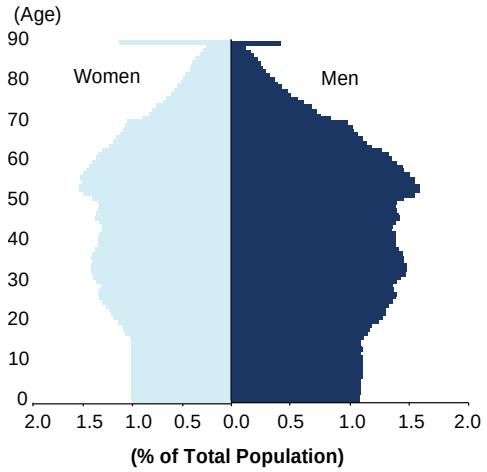
Source: Statistics Canada, Annual Demographic Statistics, 2006.

Population by Age and Sex, 2007



Sources: Human Resources and Skills Development Canada, Policy Research Directorate, MEDS Demographic Model, 2008 Reference Scenario.

Population by Age and Sex, 2017



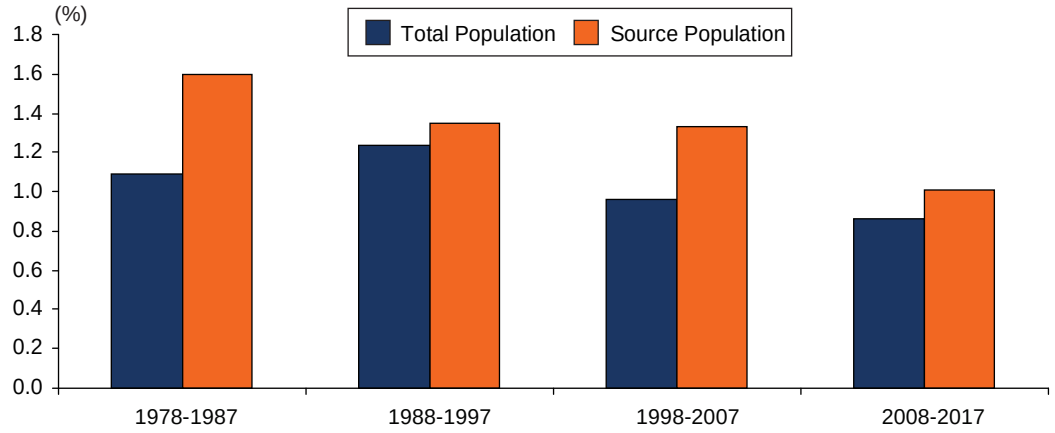
Sources: Human Resources and Skills Development Canada, Policy Research Directorate, MEDS Demographic Model, 2008 Reference Scenario.

According to our demographic projections, in 2017, the baby boom generation (who will lie between the ages of 51 and 70) will account for 27% of the total population. The form of the pyramid in 2017 clearly illustrates the ageing of the population in Canada. Another indicator, the median age of the population, also highlights this trend. It rose from 30.8 years in 1987 to 38 years in 2007.

Slower growth and population ageing are impacting directly on the labour market

The decline in the natural increase will slow down the growth of the labour force source population (individuals aged 15 years and over) over the next decade. The average annual growth rate for the source population is projected to slow down from 1.3% over the 1998-2007 period to 1% over the projection period (2008-17).

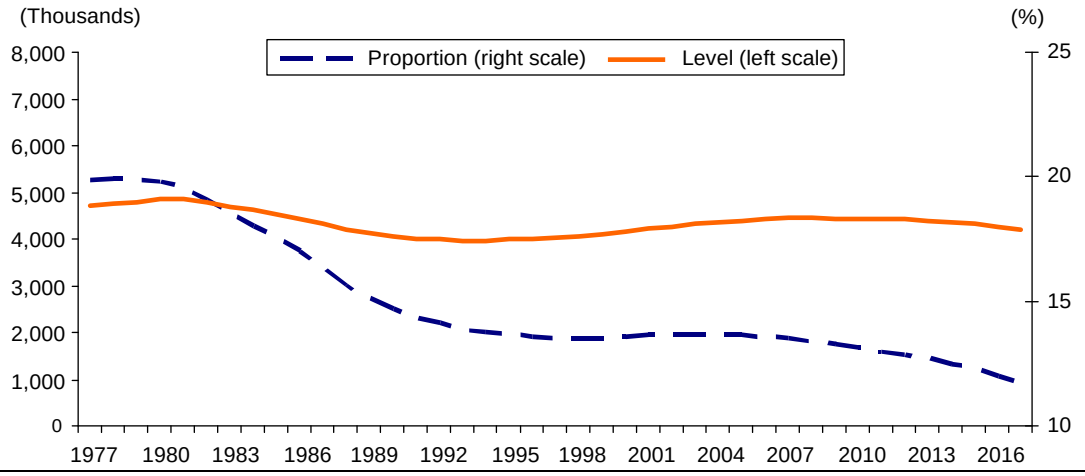
Average Annual Growth Rate of Source Population and Total Population



Sources: (1978-2006) Statistics Canada, Annual Demographic Statistics;
(2007-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The proportion of youths aged 15-24 in the total population will drop from 13.5% in 2007 to 11.7% in 2017. However, the number of youths will remain constant, averaging nearly 4.3 million over the next ten years. Obviously, these are the ones who will swell the ranks of the labour force in the years to come.

15-24 Population: in Level and as a Proportion of Total Population (1977-2017)

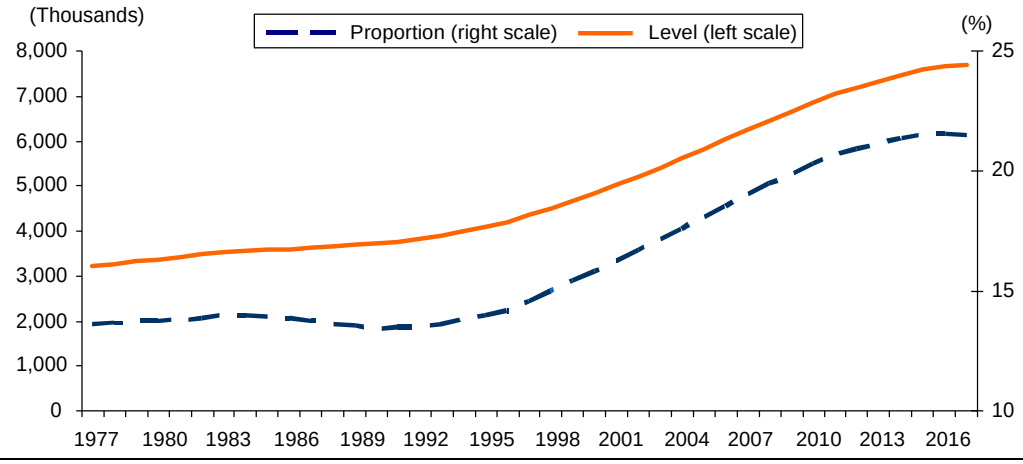


Sources: (1977-2006) Statistics Canada, Annual Demographic Statistics;
(2007-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Unlike the case with youths, the share of older persons in the population and their absolute number will continue their rapid increase. In the 1970s, fewer than one Canadian in seven was between the ages of 50 and 64. In 2007, nearly one in five Canadians belonged to this age cohort. It goes without saying that this shift will have major consequences for the labour market when the baby boom generation (born between 1947 and 1966), which represented 30% of the

Canadian population in 2007, begins to reach retirement age in the coming years. This will generate a large number of job openings as a result of the need to replace these workers.

50-64 Population: in Level and as a Proportion of Total Population (1977-2017)



Sources: (1977-2006) Statistics Canada, Annual Demographic Statistics;
(2007-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

2.2 Macro-economic Developments and Projections

The Canadian economy has been performing well in the past few years, although signs of an economic slowdown have started to appear in late 2007 and 2008. This slowdown is expected to persist over the short term. Over the next ten years, slower population growth and the effects of an ageing population will restrain the economy's capacity to expand. Gross domestic product (GDP) is projected to grow by 2.5% on average over the 2008-2017 period, with the creation of 1.5 million new jobs.

The Canadian economy performed well over the past few years…

After struggling at the beginning of the 1990s in the wake of the recession in the United States and restrictive monetary and fiscal policies aimed at reducing inflation and quelling budgetary deficits, the Canadian economy and labour market performed very well in the second half of the 1990s and for most of this decade. Real GDP increased at an average annual rate of 3.3% over the 1998-2007 period, leading all other G-7 countries, and employment grew at an average annual rate of 2.1% (or 316,400 new jobs per year) during the same period.

In 2007, the Canadian economy continued to expand at a robust pace with an increase of 2.7% in real GDP. As in the previous three years, Canada continued to gain from strong global demand and increases in the prices for primary commodities. Final domestic demand remained the driver of economic growth, supported by rising terms of trade (resulting from high commodity prices, such as oil) and the associated gains in household income, sound personal sector balance sheet and higher corporate profits. However, the export sector continued to exert

a drag on GDP primarily because of the past appreciation of the Canadian dollar and slower economic growth in the United States and other industrialised countries.

Although it performed well in 2007, the Canadian economy weakened as the year progressed. In the last quarter of the year, Canada recorded its lowest rate of growth in three years with an increase of 0.8% (annual rate) in real GDP. In spite of the slowing in the pace of economic activity throughout 2007, labour market conditions improved. The Canadian economy created a total of 380,000 new jobs in 2007, primarily in construction and many services-producing industries. This was the second best historical performance in job creation after the increase of 448,000 recorded in 1979. Stronger employment growth, relative to labour force growth, led to a decline in the unemployment rate from 6.3% in 2006 to 6.0% in 2007, the lowest annual average on record. Both employment and participation rates rose to all-time highs in 2007 of 63.5% and 67.6%, respectively.

…however, economic growth will slow down in the short term

The short-term outlook, however, will be challenging for the Canadian economy because world real GDP growth, particularly in the United States, is slowing down sharply from the very strong pace recorded in previous years. The collapse of the subprime-mortgage market in the United States and the ensuing world financial and credit markets crisis are expected to have a negative impact on the Canadian economy.

The macroeconomic projection already includes a slowdown in the pace of growth of the Canadian economy over the next two years. However, the extent of the slowdown remains a key issue. The macroeconomic scenario, that underlies this 10-year outlook, was developed in cooperation with the Conference Board of Canada (CBoC), based on forecasts available as of the Spring 2008 from a number of private and public sector sources, including the survey of forecasters by Consensus Economics, the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF), Finance Canada (2008 Budget) and the Bank of Canada. This scenario included a moderate slowdown in the pace of growth of the Canadian economy in 2008 and 2009. However, because of initially weak start to growth in 2008 and the well-known but subsequent world financial and credit markets developments in the Fall of 2008, the outlook for the Canadian economy has subsequently worsened and the Canadian economy entered into recession in the fourth quarter of 2008. However, it is important to note that the purpose of this 10-year outlook is to capture broad trends in the Canadian labour market which are expected to happen over the next 10 years.

Slower population growth and the effects of an ageing population will restrain the economy's capacity to expand over the longer term

Over the longer term, growth in real GDP will decelerate to an annual average rate of 2.5%, down from a rate of 3.3% in the previous ten years. The major factor behind this deceleration is a slowdown in the underlying growth potential of the economy,[2] as slower overall population growth will constrain the rate of increase in labour force. Beyond 2010, robust capital investment and good productivity growth will not suffice to offset the impact of the decline in labour force growth on real GDP.

Growth in productivity, as measured by real GDP per worker, is projected to average 1.8% per year over the next decade, exceeding the rate of 1.3% recorded over the period of 1998-2007. The main factors explaining the higher productivity gains are the growing proportion of highly educated workers in the labour force and the rising capital-to-labour ratio that is being fuelled by increased investment in productivity-enhancing machinery and equipment, partly reflecting a decline in the price of capital relative to labour.

The total number of labour force participants is projected to rise from 17.9 million in 2007 to 19.6 million in 2017. This represents an average annual increase of 0.9%, substantially less rapidly than the 1.8% average recorded in the previous ten years. The participation rate is projected to decline to 66.6% by 2017 from 67.6% in 2007, after increasing from 64.8% in the previous decade, as the impacts of population ageing begin to take hold near the end of the present decade.

The total number of persons in employment is projected to increase from 16.9 million in 2007 to 18.4 million in 2017. This represents an average annual growth rate of 0.9%. Although this is a slowdown relative to the previous ten years (when the rate of growth was 2.1%), the Canadian economy is still expected to add 1.5 million new jobs over the next decade.

2.3 Labour Force: Recent Trends and Outlook

In addition to having benefited from the rise in the source population, the growth in Canada's working population has been strengthened in recent decades by the large number of women joining the labour force and a better educated workforce (the higher the education, the higher the participation rate in the labour market). In the coming years, the working population should grow at a slower pace, reflecting the decline in the growth of the source population, a levelling out of the female labour force participation rate and slower growth in the average level of education.

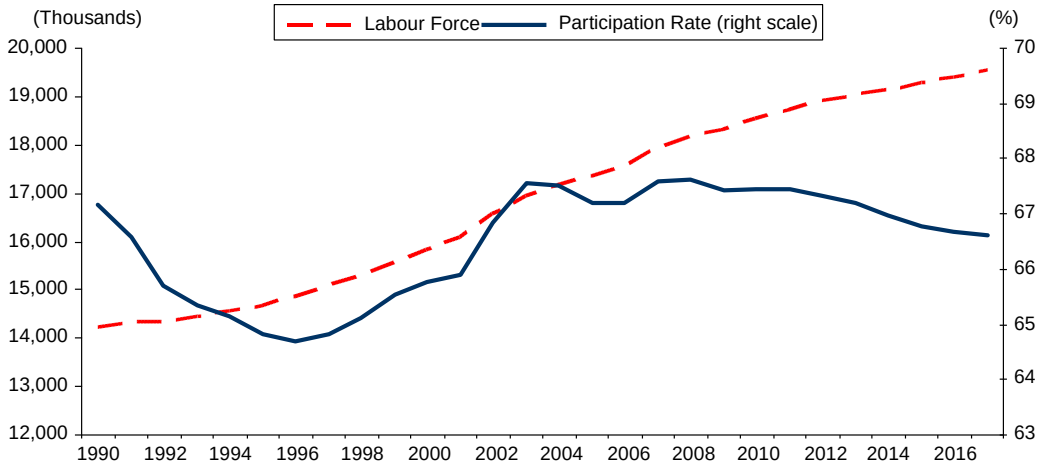
The labour force has steadily grown in recent years…

The labour force has grown by an annual average growth rate of 1.8% over the past decade, rising from 15.1 million individuals in 1997 to 17.9 million in 2007. This can be attributed to an

[2] The underlying growth potential of the economy – the highest level of activity an economy can attain without igniting inflation – is based on the maximum sustainable contribution of each factor input (typically capital and labour) and total factor productivity, a measure of the efficiency with which all factors of production are employed to generate final output.

increase in the working-age population, which grew by 1.3% between 1998 and 2007, and the increase in the labour force participation rate, which attained a record-high of 67.6% in 2007.

Labour Force and Participation Rate, 1990-2017



Sources: (1990-2007) Statistics Canada, Labour Force Survey;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

…growth that should continue in the coming years but at a slower pace

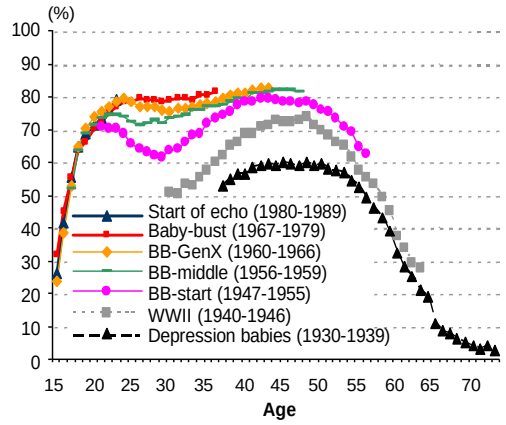
The labour force should continue to expand over the next decade but at a slower pace than in previous years. The labour force is projected to grow from 17.9 million individuals in 2007 to 19.6 million in 2017. The average annual increase of 0.9% projected in the coming decade is only half of the growth rate observed from 1998 to 2007 (1.8%). This change will be caused by weaker growth of the source population and the decline in the overall labour force participation rate after a decade of strong gains.

Indeed, older persons will account for a larger proportion of the Canadian population, and this category of individuals has the lowest average participation rates. The resultant shift in the makeup of the labour force will translate into a decline in the overall participation rate, despite an expected increase in the participation rate among all groups (see the following section on the *Breakdown of labour force by age and gender*). The overall labour force participation rate will dip over the next ten years, from 67.6% in 2007 to 66.6% in 2017.

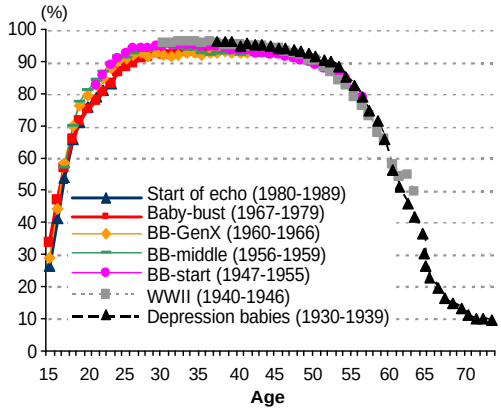
2.3.1 Breakdown of Labour Force by Age and Gender

In order to predict future participation rate trends among men and women, a proper understanding of how these rates have evolved over time is essential. To that end, individuals born in the same generation are grouped together and changes in the participation rate are derived by discrete age for these generations. The generations analysed are Depression babies (those born between 1930 and 1939), World War II babies (those born between 1940 and 1946), baby boom (1947-66) divided into three sub-periods, baby bust (1967-79) and part of the baby boom echo (1980-92). The following charts show the participation rates of these various generations.

Participation Rate among Women, Average by Age by Generation 1976-2007



Participation Rate among Men, Average by Age by Generation 1976-2007



Sources: (1976-2007) Statistics Canada, Labour Force Survey and
Human Resources and Skills Development Canada, calculations by Policy Research Directorate.

First of all, we can see that for each generation, labour force participation rates increase with age, level off and then decline near age 50. We can also see that women have lower participation rates than men, and that they withdraw from the labour market earlier. Also, the participation rate of the most recent female cohorts exceeds that of the previous cohorts. For example, the participation rate among women born during the Second World War (between 1940 and 1946) was about 50% at age 30. For 30-year-old females from the front end of the baby boom (born between 1947 and 1955), it was nearly 65%. The participation rate is now 80% among 30-year-old women of the baby bust generation (1967-1979).

This increase in women's participation rate over time can be attributed to a societal shift in attitudes toward women in the workforce. It also reflects the higher percentage of women with a postsecondary education and more ambitious occupational aspirations, a trend experienced by most of the industrialized countries.[3]

For men, intergenerational differences in labour force participation rates are far less evident. The participation rate of younger generations like the baby bust (1967-1979) is lower than that of the preceding generations, since more young people are pursuing postsecondary education. At the other end of the spectrum, we are seeing an upturn in the participation rate of men late in their career. The following sections review these trends in greater details.

The increase in the participation rate among persons aged 55 and over will lose steam over the coming decade

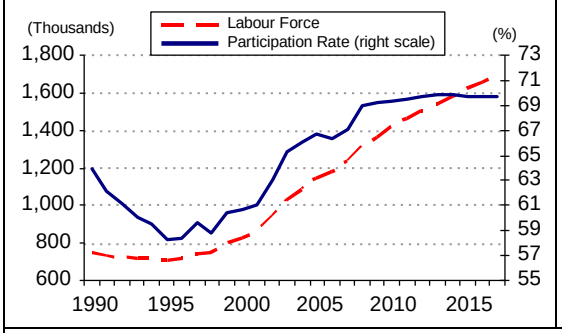
Labour force participation rates have evolved very differently among men and women aged 55 and over in recent years. The participation rate among men declined until 1996, attributable in part to early retirements. Since 1997, their participation rate quickly bounced back, from 32.7% to 40.0% over a period of ten years. This increase should continue until 2017, albeit at a slower

[3] See Ip, Irene, "Labour Force Participation in Canada: Trends and Shifts", Bank of Canada Review (Summer 1998) pp. 29-52.

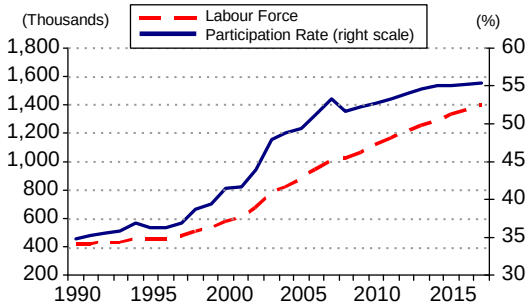
pace. On the one hand, men aged 55 and over from recent generations participate a little less in the labour market than those from preceding generations. But on the other hand, we have seen a relative increase in the participation rate among older men, those born during World War II (1940-1946) as well as those born at the front end of the baby boom (1947-1955), in the last few years. For now it is hard to say whether this is a trend that will continue or a temporary effect of the financial market difficulties of the early 2000s. In addition to this, a larger proportion of educated people (who tend to participate more in the labour force), improvements in the overall health of middle-aged individuals and favourable labour market conditions point to an increase (albeit slower than the increase recorded over the last ten years) in the participation rate among men.

Among women 55 and over, we are still seeing gains in the labour force participation rate across generations. These gains are expected to continue but at a diminishing pace. Indeed, cross-generational differences are fading over time.[4] For example, the participation rate among 50-year-old women born in the middle of the baby boom (between 1956 and 1959) was only 3.2 percentage points higher than among the preceding generation (the front-end baby boom). This gap was 7.3 percentage points between front-end baby boomers (1947-1955) and women born during World War II (1940-1946), and 10.1 percentage points between the latter group of women and Depression babies (1930-1939).

Labour Force and Participation Rate among Men Aged 55 to 64



Labour Force and Participation Rate among Women Aged 55 to 64



Sources: (1990-2007) Statistics Canada, Labour Force Survey;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

More specifically, the participation rate will continue to rise among those aged 55-64, reaching 69.7% among men and 55.4% among women in 2017. Among those aged 65 and over, men's participation rate should increase from 13.0% in 2007 to 19.1% in 2017, and women's from 5.6% to 8.7%. Thus, the working population within this cohort will grow by nearly 50% over the next ten years.

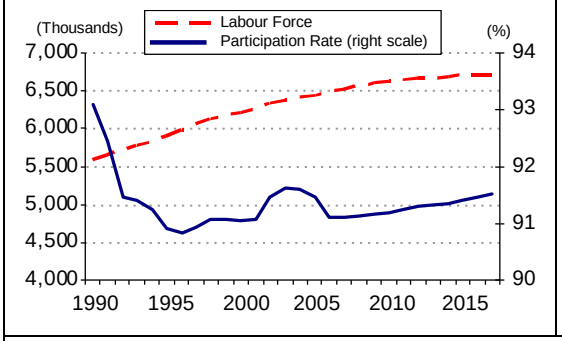
[4] According to James S., T. Sargent, R. Barnett, C. Lavoie, "The Canadian Labour Force Participation Rate Revisited: Cohort and Wealth Effects Take Hold", Department of Finance, Working paper 2007-01, cross-generational differences will fade when women born in the early 1950s turn 65, i.e. after 2015.

A small increase in the participation rate among women will limit growth in the core-age labour force (25-54) over the coming decade

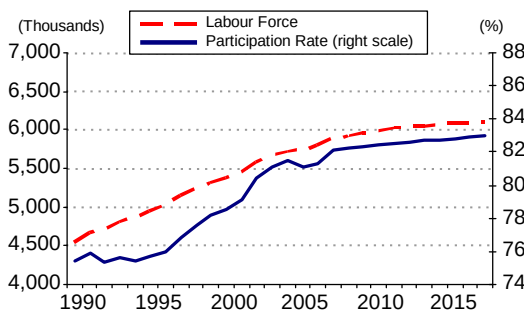
Compared to the 55-and-over cohort, the core-age labour force (25-54) recorded a smaller increase in its participation rate over the past ten years. The rate went from 83.9% in 1997 to 86.3% in 2007. In recent decades, women's increasing labour force participation rate explained much of the increase in the overall participation rate among persons aged 25 to 54.

Among women, the participation rate is expected to continue rising, but at a slower pace. This can be attributed mainly to the fading of generational differences. Indeed, we can see a convergence of participation rates among the most recent generations. The rate for core-age men should inch up, from 91.1% in 2007 to 91.5% in 2017, while the rate for women should post a larger increase, from 82.1% to 83.0%.

Labour Force and Participation Rate among Men Aged 25 to 54



Labour Force and Participation Rate among Women Aged 25 to 54

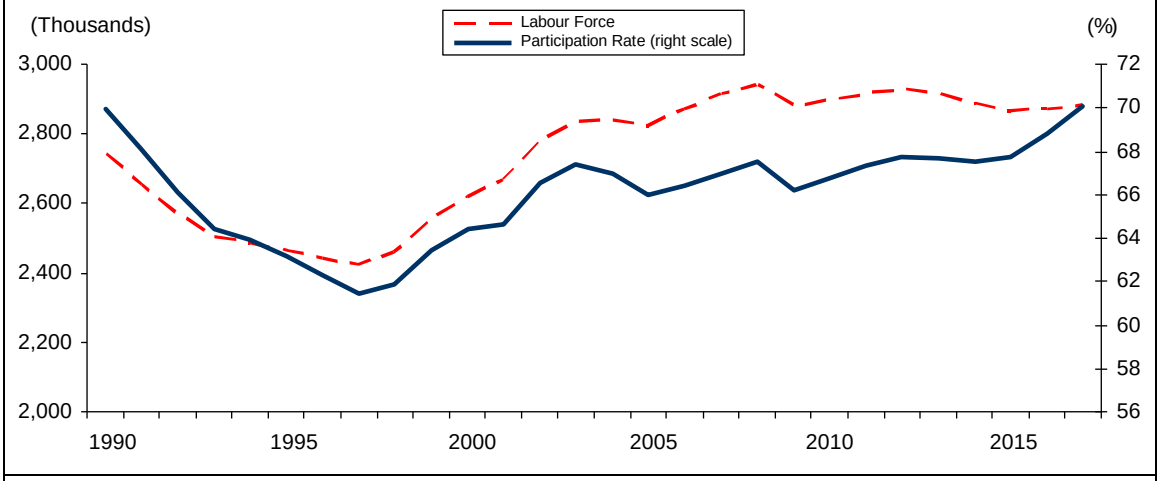


Sources: (1990-2007) Statistics Canada, Labour Force Survey;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Despite increased postsecondary enrolment rates among young people (15-24), labour force participation rates for this age group are expected to rise

The participation rate among youths declined considerably during the first half of the 1990s. More youths had decided to continue their education, as evidenced by the rise in the school attendance rate. Since 1997, improved economic conditions have drawn larger numbers of youths to the labour market (even though enrolment rates have not dropped), and their participation rate has increased as a result. The youths participation rate is expected to rise gradually, reaching 70.1% in 2017 (up from 67.0% in 2007), just under the peak of 71.1% recorded in 1989. Most of the gains will be recorded by women, as their participation rate increasingly lines up with that of young men. Despite a rising participation rate, weak growth is expected among the working population in this age group over the coming years, due to a lack of population growth in this age group.

Labour Force and Participation Rate among Youths (15 to 24)

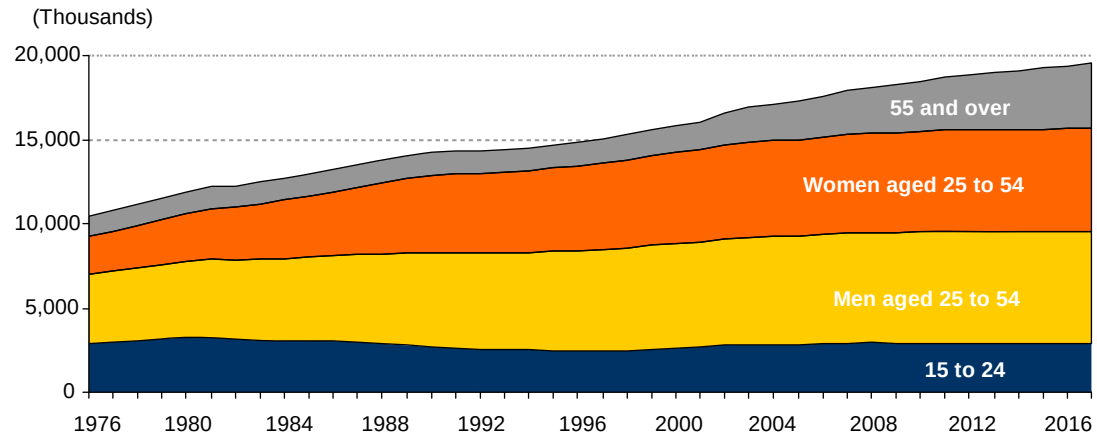


Sources: (1990-2007) Statistics Canada, Labour Force Survey;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The ageing of the population is also reflected in the labour force

Population ageing is reflected by an increase of more than six years in the median age of workers over the last two decades, from 33.4 years in 1987 to 39.6 in 2007. This greying of the labour force is expected to continue, given the anticipated demographic changes and a stronger increase in older workers' participation rates. Consequently, the share of the labour force aged 55 and over will go from 14.6% to 19.6% between 2007 and 2017, while the share of youths (15-24) will drop from 16.2% to 14.8% over the same period.

Composition of Labour Force by Age and Gender



Sources: (1976-2007) Statistics Canada, Labour Force Survey;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

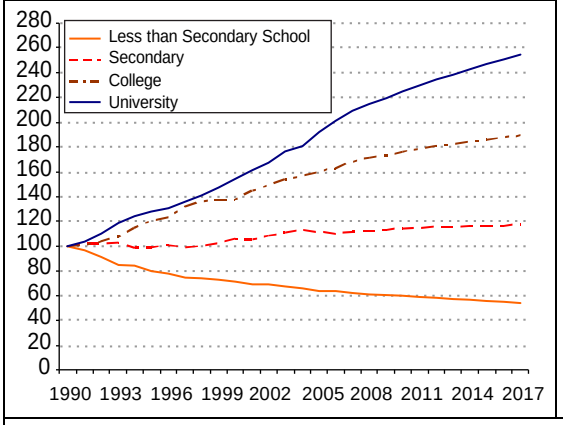
2.3.2 Breakdown of Labour Force by Level of Education

The level of education, which has risen considerably in recent decades, will continue its upward trend over the next ten years but at a slower pace

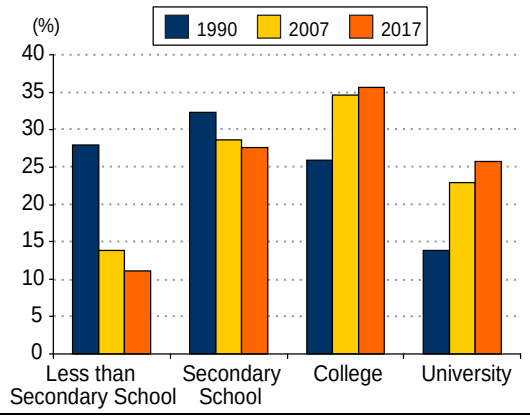
The Canadian labour market comprises more and more jobs requiring higher skills. The labour force has responded by becoming more educated. This trend should continue in the future.

The proportion of the labour force with postsecondary education has grown rapidly since 1990.[5] Thus, the number of persons possessing a university degree has increased by an average of 4.4% a year since 1990, a rate three times higher than the growth of the labour force as a whole (1.4%). The number of labour force participants with a university degree is expected to rise by an average of 2.0% a year, a rate of growth surpassing that of the labour force (0.9% on average, annually).[6] Hence, university graduates' share of the labour force, which was 13.8% in 1990 and 22.9% in 2007, should reach 25.7% in 2017.

Labour Force Growth by Level of Education, 1990-2007 (1990=100)



Labour Force Distribution by Level of Education, 1990, 2007 and 2017



Sources: (1990-2007) Statistics Canada, Labour Force Survey;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The number of persons with a college level diploma or certificate[7] will rise by 1.2% a year on average, compared to a 3.1% growth over the 1990 to 2007 period. Their share of the labour force will remain relatively stable, rising slightly from 34.6% in 2007 to 35.7% in 2017 (up from 25.8% in 1990).

---

[5] The analysis period begins in 1990, because Statistics Canada adopted new questions on education in its Labour Force Survey that year, which makes it difficult to compare the results with those of previous years.

[6] Labour force forecasts by level of education are obtained by (1) projecting the population data by level of education, an operation that takes account of the steady increase in level of education and postulates that the youth of tomorrow will be as educated as the youth of today, and (2) applying assumptions regarding the participation rates of various age groups by level of education.

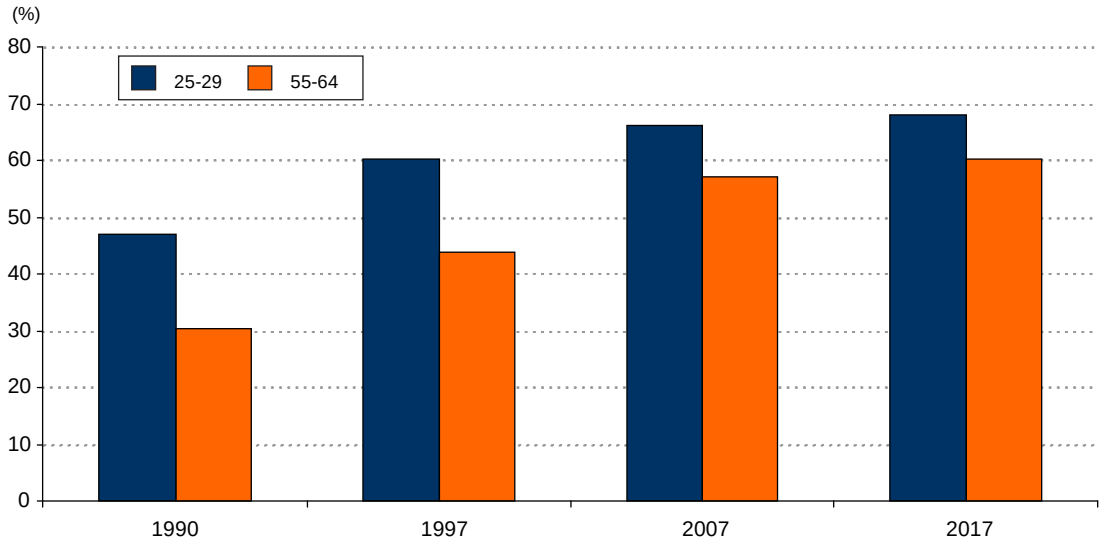
[7] The group "college" includes persons having completed i) a certificate or diploma from a postsecondary institution (community college, CEGEP, nursing school, etc.) and ii) a certificate below the Bachelor's level at university.

Thus, it is expected that in 2017, 61.4% of the labour force will possess a postsecondary degree or diploma (university or college), compared to 57.5% in 2007 and under 40% in 1990. Two factors can explain this trend:

- Young people continue to increase their education above those of previous generations. In 2007, nearly two thirds (66.3%) of the labour force aged 25 to 29 were postsecondary graduates, compared to 46.9% in 1990. This proportion should increase slightly and level off over the next ten years (68.1%).

- Those leaving the labour market are less educated than those entering it. In 2007, some 57.1% of the labour force aged 55 to 64 had received a postsecondary education. Replacing these less educated workers with more educated ones significantly increases the proportion of the labour force having graduated from a postsecondary program. Although this phenomenon will continue over the next ten years, it will do so at a slower rate, because the education gap between the generations has already narrowed considerably.

Proportion of Labour Force with Postsecondary Education among Young People (Aged 25 to 29) and Persons Aged 55 to 64



Sources: (1990, 1997 and 2007) Statistics Canada, Labour Force Survey;
(2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The share of the labour force with a high school diploma or less will decline

The number of labour force participants with only a high school education[8] will increase by only 0.5% a year, on average, over the next ten years (down from an average of 0.7% from 1990 to 2007). Those with less than high school will see their numbers continue to fall, at an average yearly rate of 1.3% (compared to 2.8% since 1990); their share of the labour force

[8] The "high school" group includes those with a secondary school diploma and those who have taken some postsecondary courses without having obtained a degree or certificate.

should decline from 13.8% to 11.1% between 2007 and 2017, or less than half what it was in 1990 (28%).

Labour Force by Level of Education, 1990-2017

	Thousands			Distribution (%)			Variation (AAGR[1]) 1991-2007	Variation (AAGR) 2008-2017
	1990	2007	2017	1990	2007	2017		
Total	**14,244.6**	**17,945.8**	**19,550.6**	**100.0**	**100.0**	**100.0**	**1.4**	**0.9**
Education level								
University	1,968.6	4,111.9	5,015.0	13.8	22.9	25.7	4.4	2.0
College	3,681.5	6,208.9	6,973.3	25.8	34.6	35.7	3.1	1.2
High school and postsecondary studies incomplete	4,608.3	5,146.2	5,392.1	32.4	28.7	27.6	0.7	0.5
Less than high school	3,986.2	2,478.8	2,170.2	28.0	13.8	11.1	-2.8	-1.3

Sources: (1990 and 2007) Statistics Canada, Labour Force Survey;
(2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

[1] AAGR: Average Annual Growth Rate.

2.3.3 Breakdown of Labour Force by Broad Skill Level

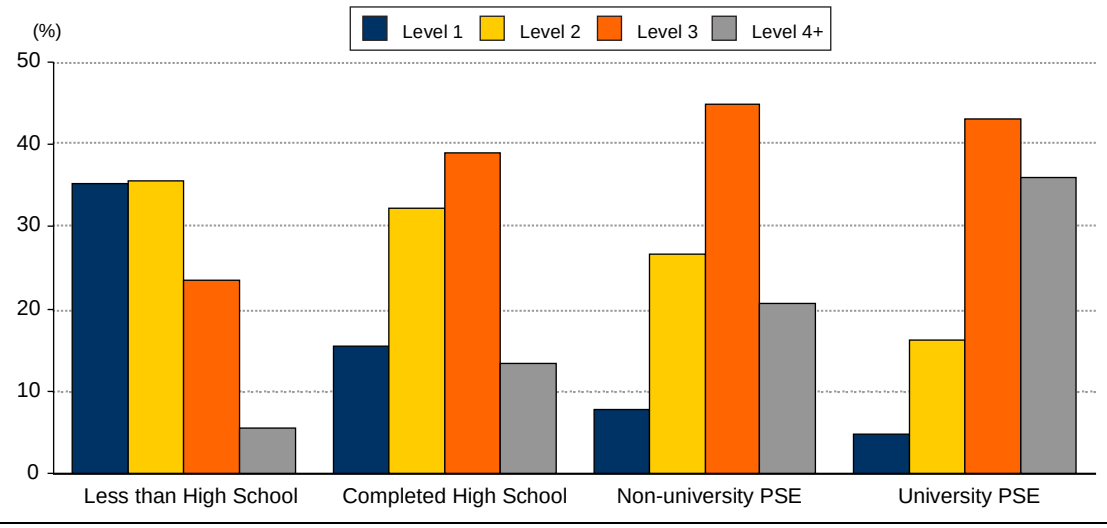
Although the previous section showed that labour force growth will be stronger for those with a university education, this does not mean that all of these graduates will seek work in occupations that generally require a university degree or in management occupations.

Indeed, there is no perfect correlation between a worker's education and eventual occupation. One thing we have noted is that in occupations typically requiring only on-the-job training, about 30% of workers have a postsecondary education. In occupations requiring high school, this ratio is higher, with nearly half of workers having a postsecondary education. Conversely, there is also a significant proportion of less educated workers in highly skilled occupations. For example, nearly 40% of workers in occupations that generally require a college education or apprenticeship training have no more than high school.

There are numerous factors that can explain why a highly educated individual ends up in an occupation usually requiring less education:

- Highly educated workers might not work in an occupation commensurate with their level of education because of gaps in some of the qualifications that employers expect of university and college graduates (deficient skills in communication, teamwork, project management, etc.). The next chart shows the results for understanding prose from a series of international literacy tests taken by Canadians. A level 3 literacy ranking is generally considered a minimum for understanding and using information contained in materials that characterize the modern economy. Clearly, those with a postsecondary education tend to do much better than those with less than high school. However it should be noted that of those with a university education, 21% of respondents had results below this minimum level;

Prose Literacy Ranking* by Level of Education, Canadians Aged 16 and Over



Source: International Adult Literacy and Skills Survey, 2003.

* The prose literacy levels computed in IALSS use level 3 as a desired minimum standard of achievement. Levels below 3 are considered to have a low proficiency level.

- Normal career progression, where young educated workers must fill low-skilled occupations before moving to higher skilled jobs;
- Older educated workers or parents of young children choosing to work in low-skilled occupations that offer more flexible work arrangements;
- People voluntarily withdrawing from the graduate labour market for personal reasons (e.g. because they need more time to take care of their children) or as a result of a joint decision, with one spouse taking a higher-paid job;
- Demand deficiencies or oversupply in certain fields of study, forcing graduates to seek employment in low-skilled occupations (e.g. low demand for biology graduates may force them to settle in lower skilled jobs as they cannot simply apply in other sciences occupations);
- A lack of information, with potential candidates being unaware of vacancies or jobs being offered in a different region;
- The occupational classification system, which is updated every ten years or so, not capturing in a timely manner the increase in skills requirements of some occupations.

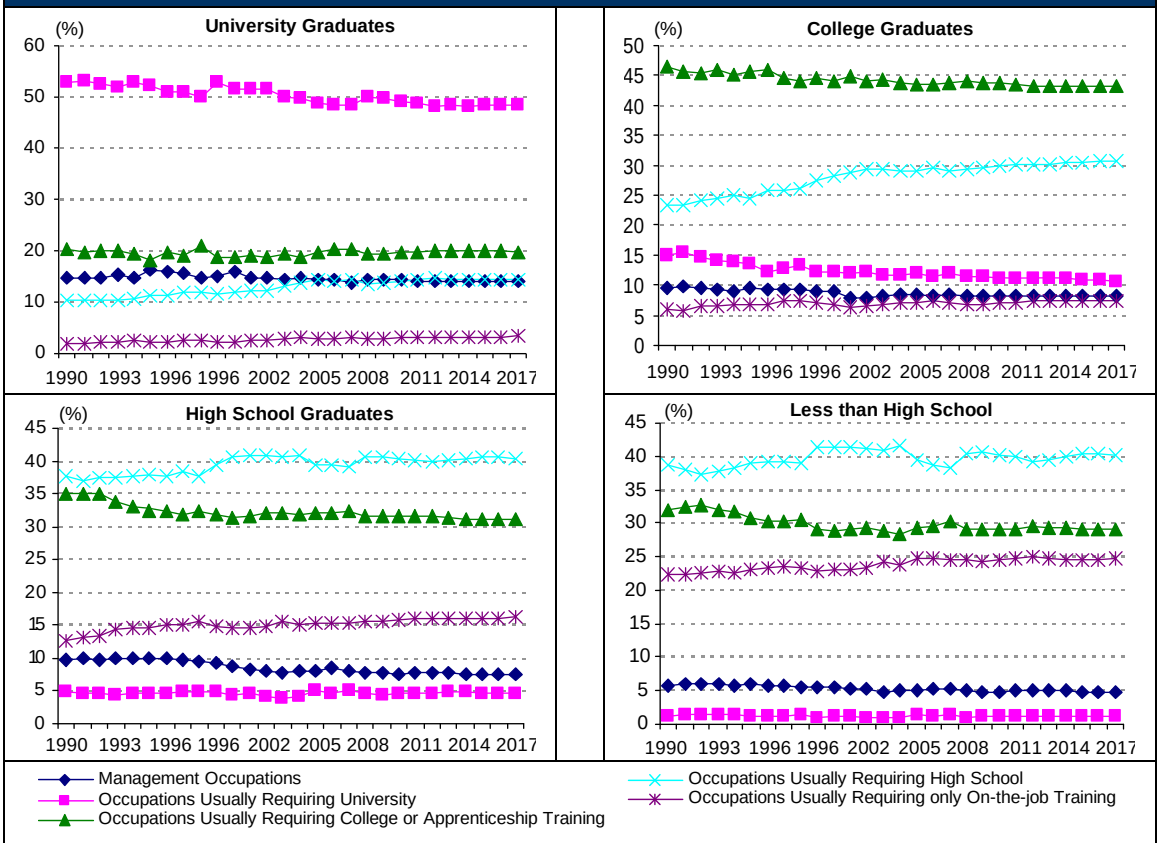
Conversely, several reasons can explain why low-educated individuals may fill jobs usually requiring a higher level of education:

- Individuals may have been able to accumulate job experience that sufficiently qualifies them for a position normally requiring a higher level of educational attainment. This is especially the case in management occupations where an individual can start as a clerk and rise up to become a manager;

- In a tight labour market, some less-educated individuals with appropriate skills may be hired because no individuals with appropriate educational qualifications are available;
- The national occupational classification system may not always capture the heterogeneity between occupations when bundling occupations together. For example, "chefs and cooks" are considered as one 3-digit occupation and are defined in the occupational classification system as "usually requiring college education or apprenticeship training". However, cook positions usually require lower educational qualifications.

To convert the labour force by level of education to labour force by skill level,[9] the distributions of the non-student labour force with a given level of education into occupations with a given skill level are used. The following graphs illustrate these distributions for the four levels of education.

Distributions of Non-student Labour Force by Level of Education and by Skill Level



Sources: (1990-2007) Statistics Canada, Labour Force Survey;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

[9] The level of skills sought by employers is derived by using an occupational classification system. This system groups occupations by skill level according to the educational attainment "usually required" by employers. Five skill levels are considered: (1) management occupations, a very broad group ranging from CEOs to restaurant managers; (2) occupations usually requiring university education; (3) occupations usually requiring college education or apprenticeship training; (4) occupations usually requiring high school or occupation-specific training; and (5) occupations only requiring on-the-job training.

For example, we can see that roughly half of the university-educated labour force are in occupations typically requiring a university education and 13% are in management occupations. Thus, more than a third are in lower skilled occupations. These distributions have remained relatively stable over the historical period (since 1990) for all levels of educational attainment, despite the pronounced structural transformations and cyclical fluctuations that the Canadian economy has experienced.

These distributions are extrapolated over time. They can fluctuate slightly in the future, because when projected, they take account of the ageing workforce and labour force mobility movements across age groups, i.e. upward mobility (to management ranks as workers gain labour force experience) and downward mobility (where workers choose to enter lower-skilled occupations as they transition towards retirement).

The fastest labour force growth will take place in occupations usually requiring university education

Over the next ten years, the labour force in occupations usually requiring university education is expected to be the fastest-growing component of labour supply, advancing at an average rate of 1.3% per year. This is not surprising, since those with a university education – the primary group of supply into occupations typically requiring a university education – will record the strongest growth.

Conversely, the labour force will grow slowest (an average of 0.6% a year) in occupations requiring less than high school. Labour force growth will be weak, given the impact of the decline in the number of those with less than high school. The increased supply for occupations requiring less than high school will come from high school graduates and, to a lesser extent, college graduates.

The impact of the decline in the number of those with less than high school will also be felt in occupations usually requiring a college diploma or apprenticeship training, because nearly 25% of these individuals end up in these occupations.

The labour force growth rate in management occupations is projected to be about the average (0.8%) over the next ten years, even though the primary group feeding this category – persons with a university education – will record above-average growth. Two factors come into play: (1) the increased qualifications required for management occupations in recent years limit the access to these jobs for those with lower educational attainment, and (2) the trend on the part of workers transitioning to retirement to leave management positions for lower skilled jobs, for example in sales and service occupations, where working conditions are more flexible (flex-time, etc.). The latter factor will increase the supply in occupations usually requiring high school, which will average 1.0% growth over the next ten years despite the below-average growth of the primary feeding group for these occupations: high school graduates.

2.4 Employment: Recent Trends and Outlook

Employment growth by industry over the last ten years has been driven mainly by the strong performance of the domestic-oriented sector, which includes construction and all the service industries.[10] This sector accounts for 78% of economic activity and 84% of total employment in Canada. On the other hand, the primary and manufacturing sectors did not fare as well in terms of employment. The domestic-oriented sector, which is less sensitive to globalization, will continue to post the strongest employment growth over the next ten years. Due to its substantial share of the overall economy, this sector will account for almost all the employment gains over the next decade.

By occupation, the fastest employment growth since 1987 has been recorded in high-skilled occupations. Approximately 7 out of 10 jobs created during that period were in these occupations. This proportion is expected to rise over the next ten years with job creation remaining firm for high-skilled occupations while the recent economic slowdown and the weak performance of the manufacturing sector will negatively impact employment growth in low-skilled occupations, at least in the short term.

2.4.1 Employment Growth by Industry

As highlighted in the macro-economic section, following a relatively strong performance over the last ten years, real GDP growth and employment growth are projected to slow down over the coming decade. This is attributable mainly to a sluggish world economy in the short term and, in the longer term, to demographic factors that will gradually affect the demand of goods and services and the labour supply in Canada. That being said, it is worthwhile to break down the analysis by industry, since trends differ considerably from one sector to another, each being affected differently by anticipated demographic and economic developments.

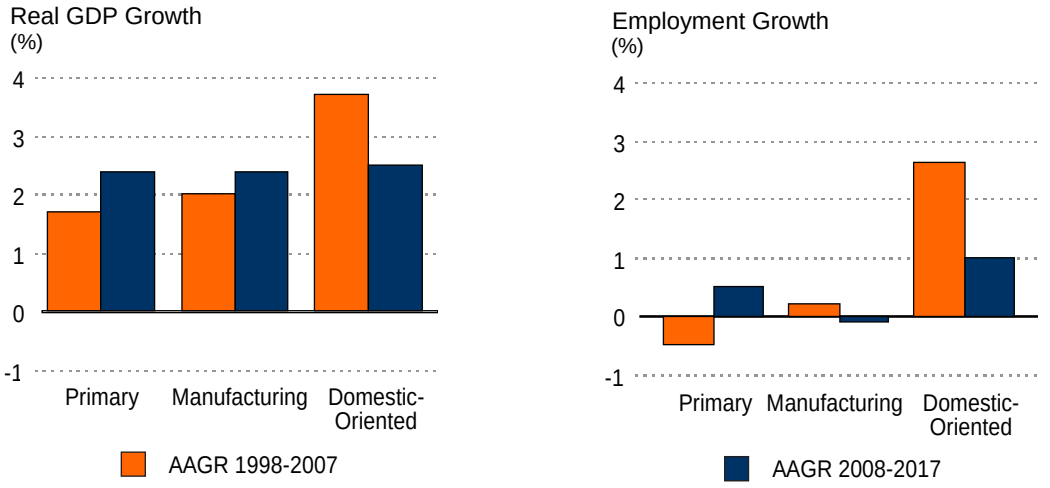
For the purposes of the upcoming analysis, the various industries were grouped into three main sectors: primary, manufacturing and domestic-oriented. This categorization helps identify certain issues and characteristics of the Canadian economy, such as the abundance of natural resources and the growth in the world demand for energy and base metals, or the difficulties faced by the manufacturing sector as a result of intensified international competition. The primary and manufacturing sectors, very sensitive to global economic conditions, will feel the effects of the global economic slowdown in the short term, particularly in the United States. In contrast, the domestic-oriented sector is less vulnerable to external economic conditions and less exposed to globalization. This sector will be, however, more affected by internal factors such as the slowdown of demographic growth and the ageing of the Canadian population.

[10] For the historical period, new job creation represents effective employment growth. This is defined as the number of people who are in fact hired, which is affected, among other things, by the number of people available for specific jobs. For instance, if there are shortages, the number of people working is constrained by supply. For the projection, new job creation is referred as "required employment" – that is, the number of people needed to reach a certain level of production, given a specific level of productivity.

The domestic-oriented sector has recorded the strongest employment growth in the last ten years

Employment growth over the past ten years has been driven mainly by the strong performance of the domestic-oriented sector, which includes construction and services[11] and accounts for nearly 80% of Canada's economic activity. Since 1997, the domestic sector has recorded an average annual growth rate of 3.7% in real GDP and 2.6% in employment. The primary and manufacturing sectors have not performed as well, however, particularly in terms of employment, recording an annual loss of 0.5% in the primary sector and marginal growth of 0.2% per year in the manufacturing sector. Over the past three years, the manufacturing sector has lost nearly 250,000 workers because of intensified competition from emerging economies, rising costs of raw materials (including energy) and the appreciation of the Canadian dollar, thereby cancelling out nearly all the employment gains of previous years.

Growth in Real GDP and Employment by Sector



Sources: (1997-2007) Statistics Canada, Labour Force Survey and System of National Accounts;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

AAGR: Average Annual Growth Rate.

[11] Including public utilities such as the production, transport and distribution of electricity, natural gas distribution, and water and sewage systems.

The domestic-oriented sector will continue to post the strongest employment growth over the coming decade, while the number of workers should rebound slightly in the primary sector and remain relatively stable in the manufacturing sector

During the next decade, all the three sectors are expected to post similar GDP growth of about 2.5% annually. The differences in employment growth will narrow somewhat across the sectors but will nonetheless persist on account of intersectoral disparities in terms of productivity growth. Lower output growth in the domestic-oriented sector should translate into slower job creation in that sector to a rate of 1.0% annually. However, accelerated real GDP growth in the primary sector should help employment rebound to 0.5% per year on average. Additional, yet limited, reductions are expected in the number of manufacturing workers (-0.1%) despite a slightly faster expansion in manufacturing activity (when compared to the last ten years). That said, the domestic-oriented sector will continue to post the strongest employment growth over the next ten years. Also, due to its importance in the overall economy, this sector will contribute to almost all job gains.

A better understanding of sectoral trends requires a more detailed analysis of the economic factors and the challenges facing each of the three sectors. This is precisely the purpose of the following three sub-sections.[12]

Primary sector

The mining and fuels industry supported growth in the primary sector over the past ten years

The primary sector has posted an annual real GDP growth of 1.7% since 1997, only half the rate of the domestic-oriented sector. Primary support for this growth has come from the mining and fuels industry, which accounts for nearly 70% of the sector's total output. In terms of employment, the sector recorded an annual decline of 0.5% caused by major losses in the forestry industry (-3.0%) and in agriculture/fishing (-2.1%). These declines have been partially offset, however, by an annual increase of 3.3% in the number of workers in the mining and fuels industry, which brought to 38% the share of this industry in the sector's total employment in 2007, up from 26% in 1997. Despite a major increase, the mining and fuel industry's share of employment remains relatively low when compared to its share of GDP, since this industry is far less labour-intensive than the other industries in this sector.

The steady growth in the mining and fuels industry, more specifically over the past five years, is attributable to a strong increase in global demand for fuels and metals, amplified by the rapid development of emerging economies, particularly China's. This caused prices to rise and attracted major investments to Canada's energy and mining activities, creating 85,000 new jobs since 2002. The 26,000 cumulative job losses in the forestry industry since 2000 are attributable to a series of difficulties, such as the softwood lumber dispute between Canada and the United States (which ended in 2006); intensified competition from subtropical Asian and South American countries; the resultant downward pressures on prices; and, more recently,

[12] The industrial section in Annex A offers a more detailed profile on 33 industries.

the rise of energy prices and the appreciation of the Canadian dollar, as well as the collapse of residential construction in the United States. The agriculture and fishing industry also had its share of difficulties, with the continuing weakness in world prices in the early 2000s, severe drought in the Western provinces and the imposition of moratoria and quotas on fishing in response to dwindling fish stocks. Employment in this industry fell by 98,000 between 1997 and 2001, before inching back up due to a strong recovery in agricultural output from 2003 to 2005, despite the embargo on exports of Canadian beef in the wake of the mad cow disease.

Employment Trends in the Primary Sector

Sources: (1997-2007) Statistics Canada, Labour Force Survey and System of National Accounts;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

AAGR: Average Annual Growth Rate.

Job creation in the primary sector will continue to be driven by the mining and fuels industry over the next ten years, while a slight rebound in the number of workers in the agriculture industry will contribute to a recovery in employment for the sector as a whole

Over the coming decade, economic growth in the primary sector is projected to accelerate at an annual rate of 2.4% due to a one percentage point increase in real GDP growth in the mining and fuels industry. This faster economic growth should be accompanied by a modest recovery of 0.5% annually in primary sector employment caused by a 0.3% rebound in the number of workers in the agriculture and fishing industry. Despite faster-paced economic growth, job creation in the mining and fuels industry should slow down to an average growth rate of 1.1% annually as technological improvements, especially in oil sands development, reduce the need for new workers. The continued contraction of real GDP in the forestry industry will translate into additional job losses in the order of 1.6% per year on average, a slower decline than that witnessed in the last decade.

While fuel prices should go back to historically high levels due to strong demand from China and the other emerging countries, the projected growth in the mining and fuels industry will come mainly from substantial investments in oil sands development aimed at increasing production capacity. The decline in the supply of conventional petroleum will be offset by oil sands development in Western Canada and offshore development in Newfoundland and Labrador. Drilling should also pick up as the price of natural gas increases. Mineral exploration should intensify across the country, leading to the development of new mines and even the reopening of old ones. Opportunities in non-metallic minerals are also promising, particularly in diamond mining in Northern Ontario and the Northwest Territories as well as potash production in Saskatchewan and New Brunswick. In short, some 29,000 new jobs are projected in the mining and fuels industry by 2017.

After a slight dip in 2006 and 2007 caused in part by a warmer and drier climate, the agriculture industry will enjoy short-term growth on account of the significant increase in the price of food commodities and the reopening of America's borders to exports of Canadian beef since November 2007. Over the longer term, this industry will continue to benefit from the strong demand of developing countries and emerging economies as well as the increase in global demand for biofuels. However, employment growth should slow down considerably from 2010 onward, as global competition obliges farmers and breeders to produce more with fewer workers. As for the fishing industry, it will continue to be affected by supply constraints linked to the decline in fish stocks, on both the West and East coasts, which will limit the growth in the number of fishers over the projection period. For the agriculture and fishing industry as a whole, 12,000 jobs are projected to be created, with 95% of the gains in agriculture.

The long-term outlook for the forestry industry has scarcely improved. This industry is facing a major supply shortage caused by the mountain pine beetle infestation in British Columbia and reduced cutting rights in a number of provinces, including Quebec. The industry must also contend with a downturn in demand caused by the drop in North American residential construction prompted by the U.S. housing crisis, slower demographic growth linked with the ageing of the population, and the difficulties faced by the pulp and paper and wood products manufacturing industries. Combined, these factors should translate into 9,000 additional job losses in the forestry industry by 2017. This reduces the net job creation projection for the primary sector as a whole to 32,000 over the coming decade, with the bulk of the gains concentrated in the mining and fuels industry.

Manufacturing sector

A significant downturn in manufacturing activities has led to substantial job losses in recent years

The manufacturing sector has recorded a 2.0% average annual GDP growth since 1997, slightly outperforming the primary sector. However, this growth masks a marked deterioration of the sector's performance since the year 2000, when manufacturing production started recording declining growth to the point where it contracted in 2006 and 2007. The employment picture has become even darker in a sector that posted annual growth of only 0.2% over the

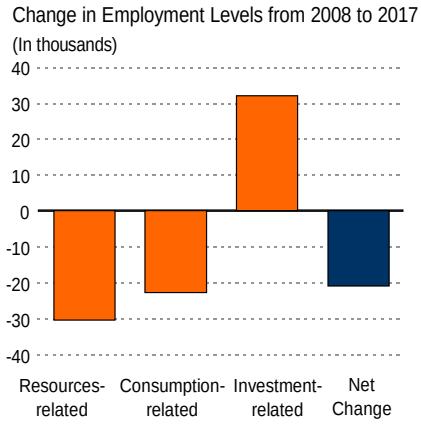
past decade. Indeed, the solid gains recorded until the early 2000s[13] have been largely wiped out by continued and substantial losses since 2005. The group of investment-related manufacturing industries has nonetheless enjoyed positive employment growth of 0.8% per year since 1997. In contrast, the group of resource-related industries has seen its employment shrink by 1.3% annually, while the number of workers in the group of consumption-related industries has remained stagnant (+0.1%). That said, all the manufacturing industries have shed jobs over the past three years, except for the computer, electronic and electrical products industry.

The downturn in Canada's manufacturing sector is mainly attributable to the emergence of the BRIC countries (Brazil, Russia, India, China) on the world economic scene. These countries have unleashed an escalation in international competition and a substantial rise in the demand for raw materials in order to develop their infrastructure and increase their industrial output. This has translated into lower prices for manufactured goods and rising raw material costs, particularly for petroleum and base metals, thus affecting the manufacturing sector's competitiveness on the Canadian and foreign markets. Furthermore, rising raw material prices have also translated into a strong appreciation of the Canadian dollar, taking a large bite out of Canada's export revenues, particularly with the United States, which account for over 80% of our manufacturing shipments abroad. The appreciated currency, combined with vigorous consumer spending and business investment, has also led to an increase in Canadian imports of manufactured goods, particularly in machinery and equipment. Since the Canadian manufacturing sector is very much exposed to international trade, in terms of both exports and imports, these various factors have had adverse effects on production, and this in turn has given rise to major employment restructuring and consolidations.

The number of workers in the manufacturing sector started to peak as early as 2003, before shrinking by 3.7% per year starting in 2005, causing 247,000 jobs to be lost over the past three years. In percentage terms, the most affected group of industries was the resource-related industries, with an annual decline of 5.8% for a total of 77,000 jobs lost, followed by the consumption-related industries (annual decline of 4.3% for a total of 96,000 jobs lost) and the investment-related industries (annual decline of 2.4% for a total of 74,000 jobs lost). However, employment in the latter group began to fall in 2003 rather than 2005, which brings to 112,000 the number of jobs lost during the last five years in the investment-related industries. In addition, with the gradual deterioration of the American and global economy, further job losses are projected in Canada's manufacturing sector in the short run.

[13] The G7 countries saw their employment share shift from manufacturing into services over the past thirty years, due to the decline in the production of goods as a share of total output and due to faster productivity growth in the manufacturing sector. However, this trend was different in Canada during the 1990s, when the country was the only one to post increases in manufacturing employment, benefiting from the considerable depreciation of the Canadian dollar against the U.S. dollar.

Employment Trends in the Manufacturing Sector



Resources related: Wood product manufacturing; Paper manufacturing; Manufactured mineral products.

Consumption related: Food and beverage products; Printing and related activities; Other manufacturing (textile, clothing, furniture).

Investment related: Rubber, plastics and chemicals; Metal fabrication and machinery; Computer, electronic and electrical products; Motor vehicles, trailers and parts; Other transportation equipment (aerospace, railroad, boats).

Sources: (1997-2007) Statistics Canada, Labour Force Survey and System of National Accounts;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

AAGR: Average Annual Growth Rate.

While job losses are expected to continue over the short term, the anticipated rise in productivity over the longer term will limit the hiring of new workers in the manufacturing sector, particularly in resource- and consumption-related industries

Although manufacturing output should continue to decrease over the short term on account of the global economic downturn, production in most of the industries is expected to rebound over the medium term, with faster growth in the second half of the projection period. This should result in increased manufacturing activity, averaging 2.4% annually over the coming decade, up by 0.4 percentage points from the previous decade. However, despite accelerated real GDP growth, manufacturing employment is projected to contract at an average rate of 0.1% per year over the complete projection period.

The investment-related industries will be the only group to post strong enough employment growth over the medium term to offset the losses recorded in the short run. The resource- and consumption-related industries, however, will see their employment numbers dwindle by 0.6% and 0.4% per year, respectively. These results tell us that the increased growth in manufacturing output over the next ten years will come mainly from a faster increase in productivity rather than expanded employment in the sector.[14]

[14] This rise in productivity will come mainly from massive investments in machinery and equipment. These investments have surged in recent years, spurred by the appreciation of the Canadian dollar against the U.S. dollar, since most machinery and equipment are imported from the United States. This upward trend in investment should continue over the long term and lead to an increase in capital stock per worker, which should eventually translate into increased labour productivity. R&D investment aimed at spurring innovation will also play a major role in improving manufacturing industries' productivity.

Economic growth in the emerging markets will continue at a rapid pace over the long term, particularly in China and India, and will constitute the largest driver of manufacturing activity, particularly among high export-oriented industries. However, intensified global competition will generate additional restructuring and lead manufacturers to continue their massive capital investments to increase their productivity and become more competitive. This should result into additional layoffs in the short term and limit new hirings in the sector over the longer term.

In the resource-related industries group, employment will continue to decline over the next ten years, but at a slower pace. This decline will come mainly from the wood products industry and, to a lesser extent, from the paper manufacturing industry. The wood products industry will be increasingly affected by supply shortages and inflated transport costs, as well as by competition from China in certain low-value-added product niches. In addition, the paper manufacturing industry will be affected by the drop in demand caused by the growing use of the new electronic media and by the strong competition from South America in low-cost production of pulp from eucalyptus. Some 23,000 jobs are expected to be lost in the resource-related manufacturing industries by 2017.

Employment should also contract significantly in consumption-related industries. This decline will come mainly from the textile, clothing and furniture industries, which are very labour-intensive and which saw significant layoffs in recent years caused by intensified competition from low-cost economies, particularly China. On the other hand, employment should be up slightly in the food and beverage products industry and hold steady in the printing industry. Nevertheless, 30,000 fewer jobs are projected in the consumption-related manufacturing industries when compared to 2007 level.

The investment-related industries will be the only group to enjoy employment growth over the coming decade, with anticipated gains in the rubber, plastics and chemicals industry, the computer, electronic and electrical industry, and the other transportation equipment industry, particularly aerospace. The demand from the emerging countries will constitute their primary source of long-term growth. However, employment in the motor vehicles, trailers and parts industry will decline during the projection period, while the number of workers in the metal fabrication and machinery industry should remain stable. Despite slower growth than over the past decade, an increase of 32,000 jobs is projected in the investment-related manufacturing industries during the next decade.

Overall, a net loss of some 21,000 manufacturing jobs is projected by 2017, but the vast majority of these losses should occur during the current economic downturn. However, the restructuring and the anticipated rise in productivity will limit the hiring of new workers in this sector, particularly in the resource- and consumption related industries.

Domestic-oriented sector

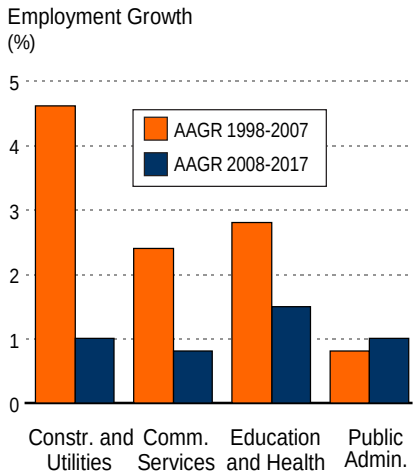
Solid performance of the domestic-oriented sector during the past decade

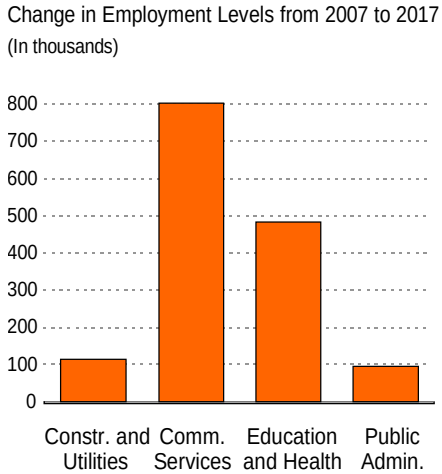
The domestic-oriented sector is less vulnerable to globalization as it does not export much and its degree of exposure to foreign competition is rather low. This sector has posted annual economic growth of 3.7% since 1997, largely outperforming the primary and manufacturing

sectors. This growth was mainly supported by commercial services, which recorded annual production growth of 4.0% and which account for 70% of total sector's activity. The construction industry (which is combined here with utilities) has also posted strong growth in its real GDP, at a pace of 3.8% annually. In terms of employment, the domestic-oriented sector has again left the other two sectors behind, posting an annual growth of 2.6%. The construction industry recorded the highest rate of job creation (4.3% per year), followed by health and education (2.8%), commercial services (2.4%) and public administration (0.8%).

The strong performance of the domestic-oriented sector over the past ten years can be explained by the vigorous growth in domestic demand and by favourable economic conditions in Canada. Indeed, the growth in profits and disposable income stimulated business investment and household consumption in construction and commercial services. The construction industry experienced an unprecedented boom due to the increased demand for new homes and major renovation projects, and more recently, due to substantial rises in non-residential investment, particularly in the energy sector. This industry has created 435,000 jobs since 1997, including 23,000 in utilities (which is far less labour-intensive). Commercial services activities also posted solid growth, across all industries. The strongest employment growth was recorded in computer system design services (5.5% per year), management, administrative and support services (4.7%), scientific and technical services (3.6%), and professional business services (3.3%). In total, commercial services created nearly two million jobs over the past ten years, accounting for 62% of all gains made by the domestic-oriented sector. Health and educational services activities also posted relatively strong growth, with the increased government spending in hospitals and educational institutions, creating nearly 725,000 jobs since 1997, including more than 450,000 in health. Lastly, improved government finances have spurred the creation of 92,000 new jobs in public administration since 2000.

Employment Trends in the Domestic-Oriented Sector





Commercial services include: Wholesale trade; Retail trade; Transportation and warehousing; Finance, insurance, real estate and leasing; Professional business services; Other professional services; Management, administrative and other support services; Information, culture and recreation services; Accommodation and food services; and Other commercial services.

Sources: (1997-2007) Statistics Canada, Labour Force Survey and System of National Accounts;
(2008-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

AAGR: Average Annual Growth Rate.

A slowdown in employment growth is projected in most domestic-oriented industries over the coming decade, with the most pronounced in construction and commercial services

Over the coming decade, economic growth is projected to slow down in the domestic-oriented sector at an annual rate of 2.2% due to a substantial weakening in real GDP growth in the construction and commercial services industries. On the other hand, production growth in health and educational services will accelerate, while public administration should maintain its cruising speed. In terms of employment, slower growth is also projected for the domestic-oriented sector, at an average rate of 1.0% annually. In contrast to GDP, this slowdown will be felt in all industry groups, except for public administration. Health and educational services will record the strongest employment growth (1.5% per year), followed by relatively similar growth in public administration (1.0%), construction (0.9%) and commercial services (0.8%).

The anticipated weakening in real GDP growth for the domestic-oriented sector over the coming decade is mainly attributable to slower demographic growth and population ageing, which will have an adverse impact on construction and commercial services activities. The construction industry will be the most seriously hit, since residential investment should plunge after the unprecedented boom of recent years. Non-residential construction will support this industry, however, with major investments in the energy sector in Quebec (hydro-electric dams), in Ontario (nuclear plants) and in Alberta (pipelines and oil sands). Non-residential investment will be the main driver of job creation in the construction industry where 120,000 new jobs are projected by 2017.

Employment growth will also slow down considerably in all commercial services, reflecting slower growth in their respective GDP. Production and employment growth will remain relatively high, however, in the knowledge based economy-related services, such as computer system design, scientific and technical services, and professional business services (legal, accounting, engineering and architecture services). In total, an increase of over 800,000 workers is projected in commercial services over the next decade, representing 54% of all employment gains anticipated in the domestic-oriented sector as a whole.

In contrast to construction and commercial services, activity in health and educational services will grow at a faster pace as a result of the increase in government spending to address the growing health care needs of an ageing population and the importance of education in the knowledge based economy. Despite accelerated GDP growth, a slowdown in job creation is anticipated in health and educational services, due to a faster increase in productivity brought on by technological innovations in the health care sector. In education, employment growth will be limited by the declining share of the population aged between 6 and 24. Still, an increase of nearly 500,000 workers is projected in health and educational services by 2017, including 400,000 workers in health care services alone.

Finally, it is only in public administration that a modest acceleration in job creation is expected. Slight budgetary surpluses (after projected deficits in the short term) should enable governments to create some 90,000 additional jobs over the coming decade. This brings to 1.4 million the total number of new jobs in the domestic-oriented sector by 2017, accounting for almost all the expected gains for the Canadian economy as a whole.

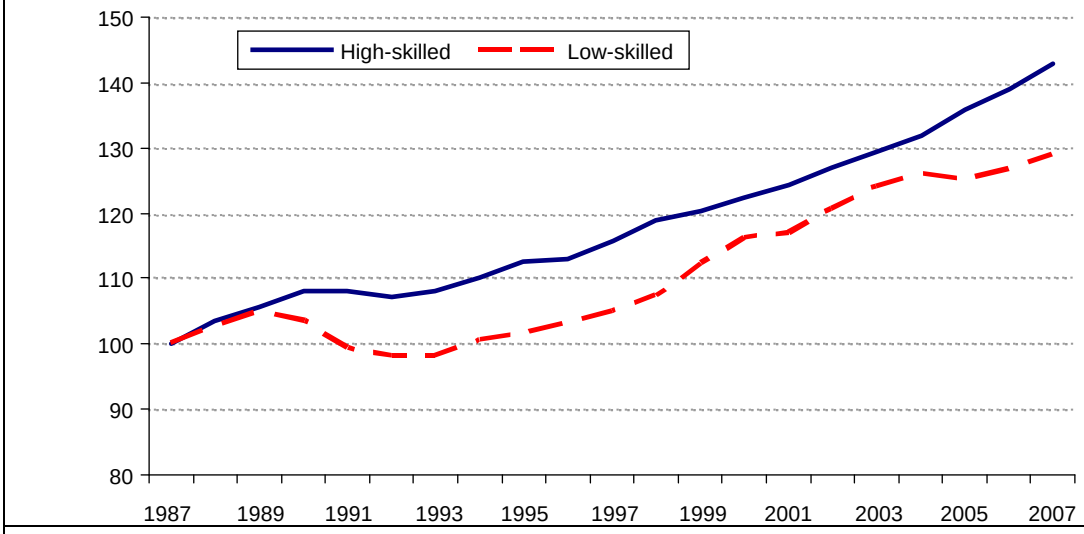
2.4.2 Employment Growth by Occupation

By occupation, employment growth is mainly affected by how the industries employing people in particular occupations evolve. For example, job creation among carpenters, masons and plumbers are dependent on the GDP outlook for the construction industry. Other factors, such as technological change, can influence the level of employment in a specific occupation. For one, the development of office automation (computers, email, voice messaging systems, etc.) has affected employment in clerical and administrative occupations. The analysis by occupation pertains to non-student employment only because the focus is on the permanent labour market and thus excludes young people who are employed while studying.

High-skilled occupations have recorded the fastest employment growth since 1987…

The Canadian economy has undergone structural changes generated by rapid technological advancement and expanding trade liberalization. These two factors have intensified worker specialization in highly skilled tasks. Since 1987, employment in highly skilled occupations[15] has grown at an annual average rate of 1.8%, compared to a much lower rate of growth for low-skilled occupations (1.2%). High-skilled occupations include i) occupations usually requiring university education, ii) college education or apprenticeship training and iii) management occupations (which do not always require postsecondary education), while low-skilled occupations usually require secondary school or occupation-specific training or only on-the-job training. Approximately 7 out of 10 jobs created during that period were in high-skilled occupations. In 2007, more than 60.8% (9.4 million) of the country's non-student workers were employed in high-skilled occupations, while 39.2% (6.1 million) were in low-skilled jobs.

Employment Growth in High- and Low-skilled Occupations, 1987-2007 (Index 100=1987)



Source: Statistics Canada, Labour Force Survey.

[15] The 2006 National Occupational Classification (NOC) classifies occupations according to the education level or training usually required to work in a given occupation.
(To view the 2006 National Occupational Classification Matrix, click here.)

… with occupations usually requiring a university education as well as management occupations leading the way

Among high-skilled occupations, two sub-categories – occupations usually requiring a university education and management occupations – have recorded particularly strong employment growth since 1987 (3.1% and 1.8% respectively). This is reflected in the employment share of occupations usually requiring a university education, which climbed from 13.1% in 1987 to 17.8% in 2007. Occupations requiring a college education or apprenticeship training recorded the lowest employment growth (1.2%) among high-skilled occupations. More specifically, the high-skilled occupations with the strongest employment growth over the last twenty years included computer and information systems occupations, engineers, human resource management professionals, policy and program officers, researchers and consultants, and psychologists.

Other occupations have recently recorded above-average employment growth. In particular, employment in occupations related to the health sector have greatly benefited as a result of greater demand for health care and the financial support to health services enabled by improved government fiscal situations. Most health-related occupations have reported average annual growth of at least 2% since 2002. Those that have not reached this growth rate – such as nurse supervisors, registered nurses, pharmacists – were affected by a shortage of labour to meet the rising demand.

Similarly, oil and gas extraction, exploration and drilling occupations have greatly benefited from major investments made over the past few years under the impetus of the sharp increases in the demand for and in the prices of oil. By the same token, construction occupations have also benefited from these investments, especially over the past seven years.

Employment in low-skilled occupations has been affected by the recent performance of the manufacturing sector

Employment in low-skilled occupations has increased at a slower pace (1.2%) than high-skilled occupations since 1987. These occupations are generally more vulnerable to economic slowdowns because they tend to be concentrated in cyclical industries such as manufacturing and transportation. During the recession of the early 1990s, for example, over 330,000 low-skilled jobs were lost, whereas employment in high-skilled occupations increased by more than 120,000.

More recently, employment in the manufacturing industry (2.0 million workers in 2007) has been particularly hit hard, declining by 241,000 workers since its last peak in 2002. Most of the jobs lost were low-skilled. The surge of the Canadian dollar and strong international competition (especially from countries with low labour costs) have had a severe impact on manufacturing employment in the past few years, in particular for machine operators in clothing, textiles, pulp and paper, and wood products, and for electronics assemblers/fabricators.

Employment by Occupation, 1987-2017							
	Non-student Employment (000s)			Growth (AAGR)[1]	Change (000s)	Growth (AAGR)	Change (000s)
	1987	2007	2017	1988-2007		2008-2017	
Total	**11,414.1**	**15,531.2**	**16,917.1**	**1.6%**	**4,117.1**	**0.9%**	**1,385.9**
Skill level[2]							
Management	1,027.1	1,469.2	1,589.7	1.8%	442.1	0.8%	120.4
Occupations usually requiring:							
– university education	1,490.9	2,765.8	3,215.3	3.1%	1,274.9	1.5%	449.5
– college education or apprenticeship training	4,085.2	5,208.9	5,681.4	1.2%	1,123.8	0.9%	472.5
– high school diploma	3,592.3	4,532.3	4,808.9	1.2%	940.0	0.6%	276.7
– only on-the-job training	1,218.6	1,555.1	1,621.9	1.2%	336.4	0.4%	66.8

Sources: (1987 and 2007) Statistics Canada, Labour Force Survey; (2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

[1] AAGR: Average Annual Growth Rate.

[2] Skill levels are based on the 2006 NOC Matrix, which groups occupations according to the education level and training that is normally required.

Three-quarters of all new jobs created over the next ten years are expected to be in occupations usually requiring postsecondary education or in management

Over the next ten years, approximately three-quarters (75.2%) of the 1.4 million new non-student jobs created are expected to be in occupations usually requiring postsecondary education (university or college) or in management. This proportion is higher than the ratio recorded over the past 20 years – when 7 out of 10 jobs created were in high-skilled occupations. Job creation will continue to remain firm for high-skilled occupations, driven mainly by health-related occupations, while the recent economic slowdown and the weak performance of the manufacturing sector will negatively impact employment growth in low-skilled occupations. Low-skilled occupations always tend to suffer more strongly the effects of an economic slowdown.

Among the occupations that generally require postsecondary education or that are in the management group, demand will be particularly high for those usually requiring a university degree. Employment in this category is projected to increase by an average rate of 1.5% annually over the 2008-2017 period. This rapid growth is explained mostly by the continuing shift towards a knowledge-based economy and the increasing need for health care services for an ageing population. Employment growth will be somewhat weaker in the remaining occupations within the high-skilled category: an annual average rate of 0.8% and 0.9% respectively in management occupations and in occupations usually requiring college education or apprenticeship training. More specifically, demand will be particularly strong for physicians, dentists and veterinarians; nurses; therapy and assessment professionals; medical technologists and technicians; creative designers and craftspersons; computer related professionals; managers; and engineers.

Job creation will be weaker in low-skilled occupations. For those usually requiring only on-the-job training, the average growth rate is projected to be 0.4% annually, whereas in occupations usually requiring a high school diploma, the average is anticipated to be slightly higher at 0.6%. Examples of low-skilled occupations with slower job growth include machine operators and related workers in textile processing; machine operators and related workers in fabric, fur and leather; machining, metalworking, and woodworking related machine operators; labourers in processing, manufacturing and utilities; logging and forestry workers; and other transport equipment operators.

3. Imbalances by Broad Skill Level

Labour market indicators, such as the unemployment rate and wages, suggest that there were enough workers in the past several years to respond to employment growth for all skill levels.

Over the next ten years, employment growth is expected to be on a par with labour force growth. Slight imbalances are expected in occupations typically requiring a college or university degree, whose employment growth should slightly outpace the growth of the available labour force over the next ten years. On the other hand, employment is expected to grow at a slower pace than the labour force in occupations usually requiring high school. These imbalances are not extensive, and could be offset if potential labour is redirected toward occupations with excess demand.

3.1 Labour Market Imbalances by Broad Skill Level in Recent Years

It is hard to quantify imbalances over the historical period because data on the labour market show only the employment growth obtained. This employment growth may very well have been constrained by an undersupply (nurses are a prime example) or insufficient demand (the low demand for IT specialists after the high-tech bubble burst in the early 2000s). We are able, however, to qualitatively identify imbalances by skill level through the use of various indicators, such as unemployment rates and wages.

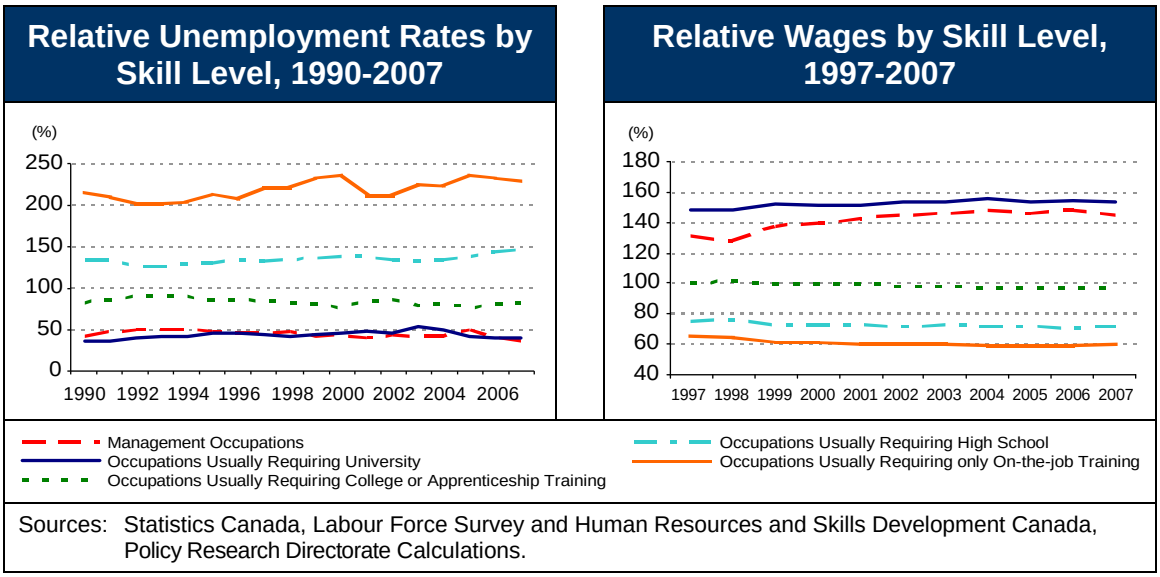
Any significant skill level imbalances should generally be revealed by noticeable movements in real wages and/or unemployment rates over time. For example, strong demand by employers in occupations usually requiring university education, coupled with difficulties in finding qualified labour supply to meet this demand, will generally lead to real wage increases and a declining unemployment rate for those occupations, as has been observed in the United States for a number of years.[16] However, to uncover a true skill level imbalance one must go a step further and look at relative (i.e. to all other skill levels) rather than absolute real wages and unemployment rates. If real wages are rising and the unemployment rate is falling for all skill levels at the same rate, this may only reflect the general strength of the economy.

There has been limited evidence of imbalances among broad skill levels in recent years...

The following charts show the evolution of real wages and unemployment rates for each skill level (relative to the others) since 1997 and 1990, respectively.[17]

[16] See Lin, Z. and X. Chen, "Education Premia in Canada and the U.S. 1981-2004: Demand-pulled or Supply-pushed?", Policy Research Note, HRSDC (November 2005).

[17] The data in both charts are taken from the Labour Force Survey, Statistics Canada. The wage data in this survey begin in 1997.



Sources: Statistics Canada, Labour Force Survey and Human Resources and Skills Development Canada, Policy Research Directorate Calculations.

These charts show that relative real wages have been fairly stable since 1997, suggesting that the labour market has not experienced significant imbalances by broad skill level over this period. This is also demonstrated by unemployment rates, which have remained virtually flat in relative terms since 1990.

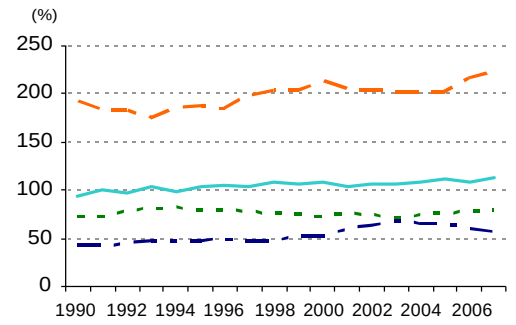
An overall balance between broad skill levels suggests that from the point of view of employers, there was enough labour to fill the required demand for all skill levels. However, this does not mean that all these workers necessarily had the level of education usually required. For example, employers offering positions usually requiring college were able to find enough workers, but some of these workers may have completed university while others may have been less educated (not having completed college) but demonstrated appropriate skills.

...however, this does not preclude the possibility of some labour supply over-qualification

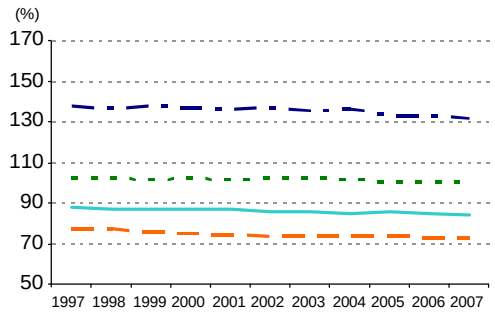
Although from an employers standpoint the indicators show that they could count on enough workers to fill their positions for each skill level, it is quite possible that, from a workers standpoint, there were not enough jobs corresponding to their level of education. Thus, it is possible that individuals with a university education may have taken up lower skilled occupations, indicating a potential oversupply for this educational level.

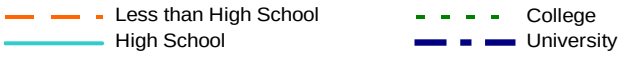
We can gain a better understanding of this issue by analysing the trends for relative unemployment rates and wages by level of education.

Relative Unemployment Rates by Education Level, 1990-2007



Relative Wages by Education Level, 1997-2007





Sources: Statistics Canada, Labour Force Survey and Human Resources and Skills Development Canada, Policy Research Directorate Calculations.

Changes in these trends have been minor over time. There has been a slight increase in the unemployment rate for university graduates in relation to other levels of education. The relative unemployment was 55% in 2007, up from 47% in 1997. However, this rate has been declining for a few years after peaking in 2003 (66%).[18] As for college graduates, the relative unemployment rate remained stable from 1997 to the early 2000s, before rising as of 2003 (from 68% to 73%). In addition to the rising unemployment rate, university graduates have seen their relative wages dip, from 138% of the mean wage in 1997 to 131% in 2007.

The proportion of university and college graduates in positions usually requiring a corresponding level of education has dropped in recent years. In 2007, 47.8% of university graduates were in positions that corresponded[19] to their level of education, down from 50.2% in 1997. The share of university graduates in management occupations also declined. These graduates are increasingly holding down positions requiring a high school diploma. This trend can also be seen among college graduates, but at a slower pace. The proportion occupying positions corresponding to their education declined from 43.9% in 1997 to 43.1% in 2007, and fewer college graduates are entering management occupations.

[18] There are several possible explanations for this stronger labour market performance of university graduates since 2003. Certain occupations that typically hire university graduates in the field of technology – IT professionals, information systems professionals (NOC 217); business service professionals (NOC 112); and finance, audit and accounting professionals (NOC 111), for example –, saw their fortunes improve significantly after the high-tech and stock market bubbles burst in 2001-2003.

[19] Corresponding employment denotes a position whose usual educational prerequisite corresponds to the worker's level of education.

Distribution by Skill Level of the Labour Force Possessing a University Degree or College Diploma, 1997-2007			
University degree	**1997**	**2007**	**1997-2007**
Management occupations	14.8%	13.0%	-1.7
Occupations usually requiring university	50.2%	47.8%	-2.4
Occupations usually requiring college or apprenticeship training	19.2%	20.2%	1.0
Occupations usually requiring high school	13.1%	15.4%	2.3
Occupations requiring only on-the-job training	2.8%	3.6%	0.9
College diploma	**1997**	**2007**	**1997-2007**
Management occupations	9.2%	8.2%	-1.0
Occupations usually requiring university	12.9%	12.0%	-0.9
Occupations usually requiring college or apprenticeship training	43.9%	43.1%	-0.9
Occupations usually requiring high school	26.2%	29.5%	3.3
Occupations requiring only on-the-job training	7.8%	7.2%	-0.5
Source: Statistics Canada, Labour Force Survey.			

There are several possible explanations for the changes in university graduates' situation, and to a lesser extent that of college graduates, on the labour market.[20] These include personal/family choices, lack of skills or oversupply in certain fields of study (which would force the person to accept a lower skilled job). There is also the matter of better wage prospects in other sectors requiring a lower skill level (including oil sands development in Western Canada).

Despite the relative downturn in these three indicators (job corresponding with education, relative unemployment rate and relative wages), estimates of rates of return to education remain high. According to Hansen (2006),[21] internal rates of return to university education (in relation to high school) averaged 9% in 1991, as against 11% in 2001. Drews (2006)[22] conducted a similar analysis for college graduates, calculating an 11.4% rate of return for women and 11.8% for men.

The following table shows that even if a postsecondary graduate ends up in a lower skilled position, this person will earn a higher wage potentially reflecting a higher productivity. For example, in occupations requiring a college diploma, university graduates have a higher hourly wage ($23.30) than college graduates ($22.40), the latter being in a position that corresponds to their education. In occupations requiring high school, university graduates have a higher hourly wage ($17.20) than college graduates ($17.00) and high school graduates ($16.30).

[20] The chapter *Labour Force: Recent Trends and Outlook* lists several factors that can explain why an individual with a certain level of education can end up in an occupation usually requiring another level of education.

[21] Hansen, Jorgen, "Returns to University Level Education: Variations Within Disciplines, Occupations and Employment Sectors", HRSDC, SP-662-09-06E (September 2006).

[22] Drews, Torben, "Returns to College Education: Evidence from the 1990, 1995 and 2000 National Graduate Surveys", HRSDC, SP-654-09-06E (September 2006).

Hourly Wage by Level of Education and Skill Level, 2007				
	University	College	High School	Less than High School
Management occupations	34.7	28.5	25.3	22.2
Occupations usually requiring university	30.7	27.8	26.4	22.6
Occupations usually requiring college or apprenticeship training	23.3	22.4	21.0	18.7
Occupations usually requiring high school	17.2	17.0	16.3	14.3
Occupations requiring only on-the-job training	13.4	14.0	13.0	11.2
Sources: Statistics Canada, Labour Force Survey.				

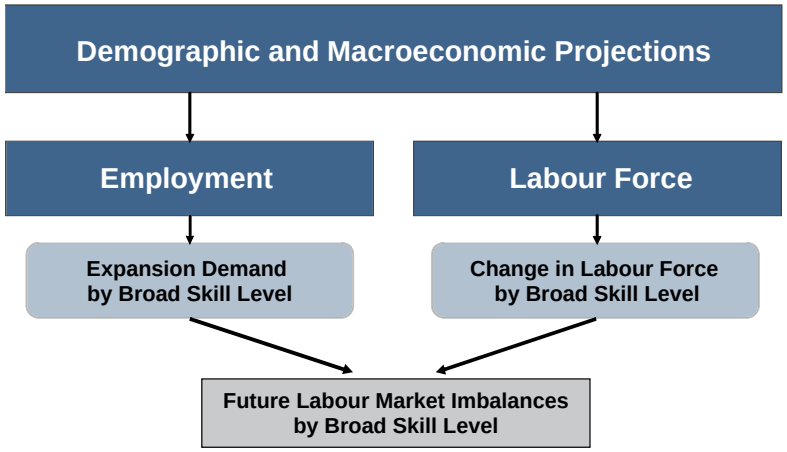
However, this higher wage seems to fade as the skill level required for the position becomes lower. The hourly wage difference between those with different levels of education is low for jobs usually requiring a high school diploma and lower still for jobs requiring only on-the-job training. This is to say that regardless of education, productivity levels are the same in the jobs requiring a low level of skill.

Thus, the situation of postsecondary graduates in the labour market remains very favourable in relation to the other levels of education. This is not to say, however, that all these graduates will find jobs corresponding to their education level.

3.2 Future Labour Market Imbalances by Broad Skill Level

To determine imbalances by broad skill level in the coming decade, non-student labour force changes are compared to non-student employment changes (also called expansion demand) for the five broad skill levels. These projections were developed in the previous section. The aim is to see whether the labour force will evolve in such a way as to be able to fill the new positions created over the coming ten years. It should be pointed out that the labour force projections were developed in a static manner, i.e. by extrapolating historical trends from participation rates, educational attainment and the distributions of workers with a given education level by broad skill level. This allows us to identify potential imbalances between broad skill levels over the projection period.

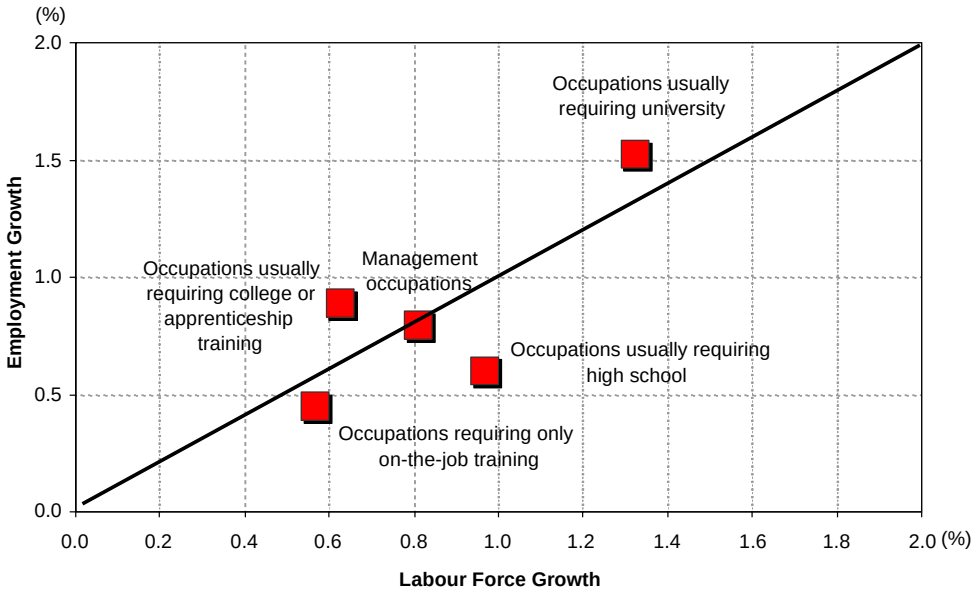
Determination of Imbalances by Broad Skill Level



Employment growth and labour force growth by broad skill level should be similar over the coming decade…

The following chart plots the average annual rates of growth of the labour force against the average annual rates of growth of employment for each of the five broad skill levels over the next decade (obtained in the previous section). Overall, the points fall close to the 45° line, which implies that the growth in employment and in the labour force by broad skill level should be roughly in balance over the medium term.

Annual Growth of the Non-Student Labour Force and Employment by Broad Skill Level, 2008-2017



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The labour market performance of management occupations over the medium term should remain stable, with growth rates identical to those for employment and the labour force (0.8%). Likewise for occupations requiring only on-the-job training. Occupations usually requiring a university degree or college diploma should see their employment growth slightly outpace the growth of the labour force over the next ten years. But in occupations usually requiring high school, employment will grow at a slower pace than the labour force.

The slight imbalance in occupations usually requiring a postsecondary degree can easily be corrected by an additional infusion of postsecondary graduates. For example, we have already seen that some 50% of the labour force with a university education typically seek work in occupations usually requiring university education. This proportion would need to be increased by a single additional percentage point for there to be a balance in these occupations. Such a proportion has been observed in the past. Thus, there is a virtual balance between growth in employment and the labour force for the five skill levels if slight adjustments are made.

That said, it is altogether possible that this situation is masking a great many imbalances at a more detailed level, and that certain occupations are grappling with an oversupply of labour at the national level whereas others are experiencing an excess labour demand. A more detailed determination of these imbalances is the subject of the next section.

4. Imbalances by Occupation

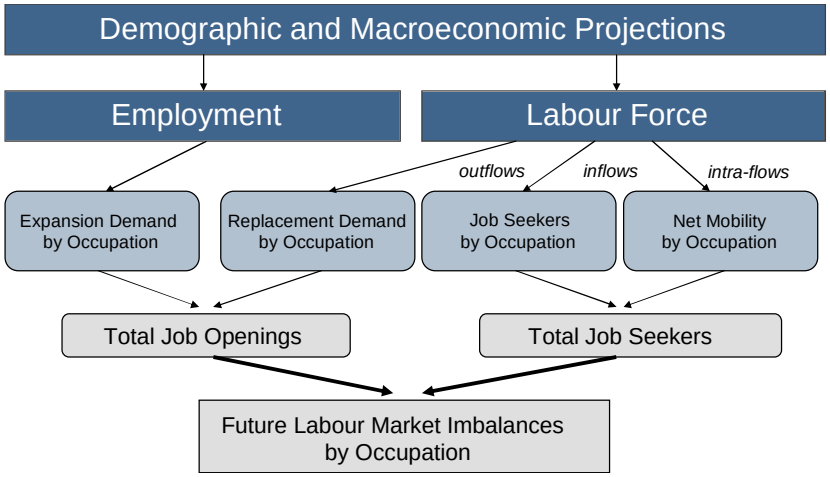
4.1 Methodology to Assess Imbalances by Occupation

Various labour market indicators, such as unemployment rates and wages, suggest that there were no imbalances by broad skill level in the past several years. Over the next ten years, the growth of the labour force should more or less mirror the changes in employment for the five skill levels, indicating that this balance will be maintained. That said, it is altogether possible that this situation is masking a great many imbalances at a more detailed level, and that certain occupations are grappling with an oversupply of labour at the national level whereas others are experiencing an excess labour demand.

Indeed, from one occupation to another, the relationship between supply and demand is in a constant state of flux as a result of various factors: adoption of new production techniques, variability of consumer preferences, demographic change, changes in prices for goods and services, and so on and so forth. Since the adjustments needed to restore a balance between the demand for and supply of workers do not happen overnight nor at the same time, it is quite possible that certain occupations will experience labour shortages while others will have a surplus of labour.

Future labour market imbalances by broad skill level were assessed by comparing changes in employment (or what is often referred to as expansion demand) to changes in the labour force. To assess future imbalances by occupation, we will use a more detailed, albeit conceptually similar, approach. The use of more detailed models allow to project likely trends over the medium term in the level and sources of job openings and job seekers by occupation – a key objective of this report.

Determination of Imbalances by Occupation



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

As shown in the schematic above, the major difference is the sharing out of the movements in the labour force into three components:

- The "inflows" are job seekers entering the labour force for the first time such as school leavers and recent immigrants, as well as people re-entering the labour force. Projections for each occupation are done separately for these three types of job seekers.
- The "outflows" are people leaving the labour force for reasons such as retirements, deaths (also referred to as "in-service mortality") and emigration. It is assumed that these job openings need to be filled. This corresponds to replacement demand. Separate projections by occupation are done for each of these reasons: retirements, deaths and emigration.
- The "intra-flows" are individuals currently in the labour force that move into occupations outside their current skill level [note that the occupational mobility within the same skill level has not yet been modelled]. For example, this corresponds to postsecondary school leavers who might have to settle in low-skilled occupations early in their career and eventually settle down in high-skilled occupations, workers gaining labour force experience and moving up to management ranks or older highly skilled workers taking low-skilled jobs as part of their transition towards retirement. The projected "intra-flows" are based on historical trends and do not represent adjustments to projected imbalances.

Once this is done, replacement demand (the "outflows") is combined with expansion demand to come up with the total number of job openings. Job seekers (the "inflows") are combined with net mobility (the "intra-flows") to come up with the total number of job seekers. Future imbalances by occupation are assessed by comparing the number of job openings to the number of job seekers over the next ten years. Summing up occupational imbalances within a given skill level will amount to the same numerical imbalances by broad skill level as determined in the previous section.

As mentioned above, the use of detailed models allows to project likely trends over the medium term in the level and sources of job openings and job seekers. It also makes it possible for example to compare the educational level of recent immigrants with the skill level of the occupation they settle in or to analyse the occupational distribution of school leavers by field of study.

The next two chapters highlight projections results of job openings and job seekers respectively. This is followed by a detailed analysis of future imbalances by occupation and the determination of occupations where supply and demand trends signal the possibility of imbalances.

4.2 Job Openings

Over the next ten years, about 5.5 million non-student jobs are expected to open up as a result of increasing economic activity (expansion demand) and the need to replace existing workers. Existing positions opened up by retiring workers will be the primary source of job openings in the coming decade. In total, replacement demand will account for over three-quarters of job openings, higher than in the last 15 years, when job openings were equally divided into expansion and replacement demand. This is largely the result of the large cohort of the baby

boom generation (now aged 41 to 60 years old) starting to enter their retirement years. Overall, over two-thirds of all jobs openings will be in occupations usually requiring postsecondary education or in management occupations.

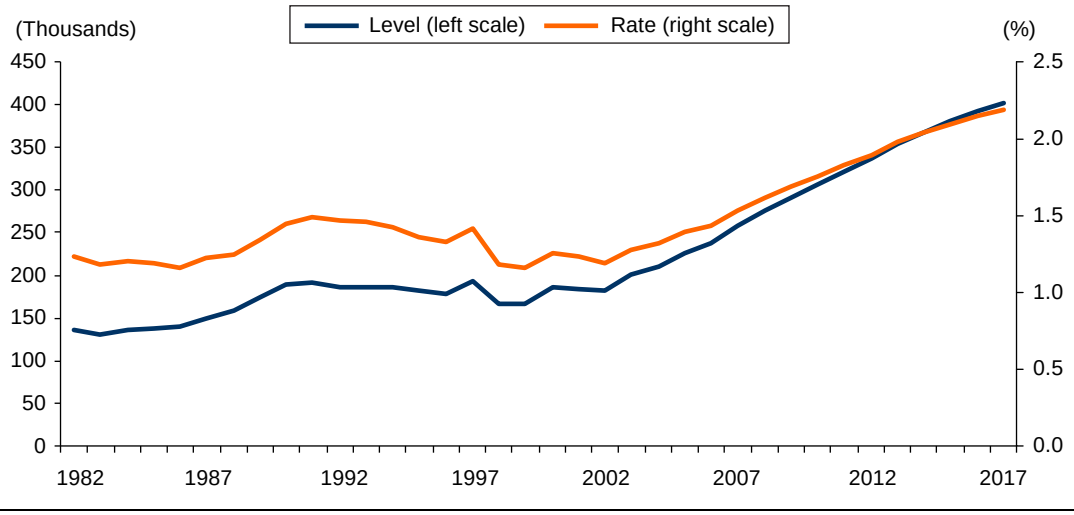
Job openings are comprised of two primary components: expansion and replacement demand.[23] The first one, the creation of new jobs as a result of economic expansion, has already been covered (see the chapter *Employment: Recent Trends and Outlook*). Accordingly, this chapter will first review the key component of replacement demand, retirements. It will then highlight the importance of each of the components of job openings before identifying in which skill levels these job openings will be most important.

4.2.1 Retirements

The number of retirements has increased steadily since 2002

Retirement is defined as a job separation by a worker aged 50 or over that entails a complete and permanent withdrawal from the labour market. It is largely influenced by three key factors: the number of people in that age group (population), the labour market attachment of these individuals (often expressed by the employment rate, as you need to be employed before being able to retire) and their retirement behaviour. The annual number of retirements has evolved greatly over the past 25 years.

Retirement Level and Rate, 1982-2017



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario using Statistics Canada's Longitudinal Administrative Databank (LAD).

According to our estimates, retirements rose consistently over the 1980s and early 1990s, from about 135,000 in 1982 to just fewer than 200,000 in 1991. This growth is mainly explained by an increase in the retirement rate as a result of rising wealth levels and weak labour demand conditions for older workers. Following this, the recession of the early 1990s and the ensuing

[23] Annex B provides information on the different models used to derive job openings by occupation.

slow recovery pushed many older workers out of employment. Moreover, legislative changes in the Canada Pension Plan/Quebec Pension Plan (CPP/QPP) program led to an increase in retirement rates for those under the age of 65.

With the exception of a run up in 1997, which corresponded with a period of significant public sector downsizing and the offering of early retirement packages, estimated retirement flows gradually diminished over the remainder of the 1990s, reaching 165,000 in 1999. Strengthening labour demand conditions for older workers as a result of the economic recovery and an increase in the age of retirement led to a decline in the retirement rates causing a reduction in the number of retirees. Demographic changes, with the arrival in 1997 of the baby-boomers in the 50+ age group, partly offset the decline in retirement rates.

Since 2002, retirement levels have begun to rise strongly once again, reaching approximately 250,000 in 2007. Demographic changes have been the main contributor to this development with baby-boomers continuing to move into the 50+ age group. The share of those aged 50 and over in the population has increased from 28.4% in 2000 to 32.4% in 2007, representing an increase of almost 2 million people. Moreover, baby-boomers are more educated than earlier generations and hence significantly more attached to the labour market. This causes an increase in the number of potential retirees. The employment rate of older people (50+) began to grow strongly in 1996, reaching 41.2% in 2007 from 32.5% in 1996.

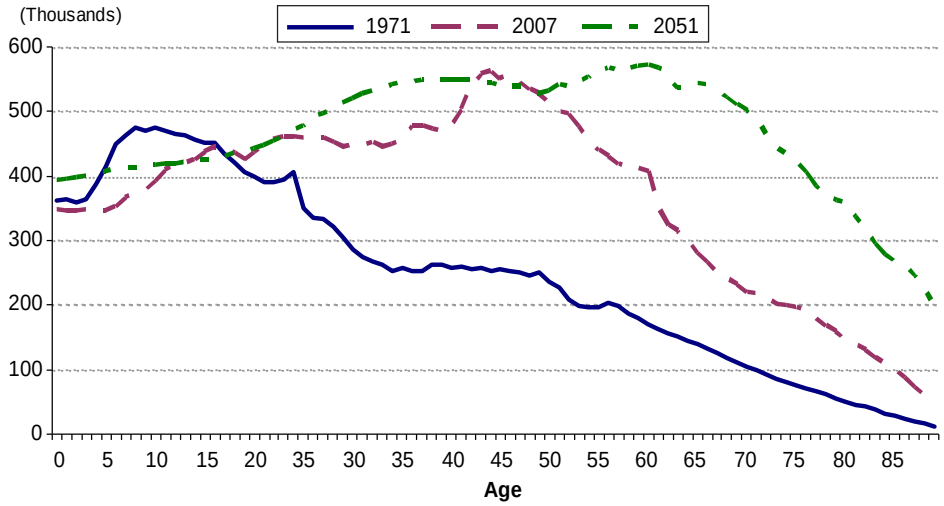
The retirement rate, which corresponds to the level of estimated retirements divided by the level of employment in a year, has followed the same trend as the number of retirements. After holding relatively steady over the 1980s at about 1.2% of employment, the retirement rate rose over the late 1980s and early 1990s to reach a high of 1.5% in 1991. Over the remainder of the 1990s, the estimated retirement rate gradually declined reaching a low of 1.1% in 1999. Since 2002, the retirement rate has begun to trend back up, reaching 1.5% in 2007.

The ageing of the workforce will have a direct impact on the number of retirements…

Because of the sweeping demographic changes and the ensuing ageing of the workforce, retirements will become an important source of job openings over the coming decades. Of special interest is the large cohort of the baby boom generation (which currently accounts for about 30% of the total population and is between ages 41 and 60) which have begun to enter their retirement years. Given that the impact of this large cohort will still be felt beyond our projection horizon of 2017, and benefiting from the fact that our demographic projections extend out to 2051 (with all potential retirees up to 2051 being already born ensuring that the base population for the analysis is known with a great deal of certainty), the analysis that follows looks at a longer time horizon. It shows that the impact of baby boom retirements will still be felt well beyond the next ten years.

When looking at population distributions across an 80-year horizon, the shift in population from one composed mainly of younger people, as in the 1970s, to one composed primarily of older people, as in the 2051 distribution, is easily observable.

Population Age Distributions

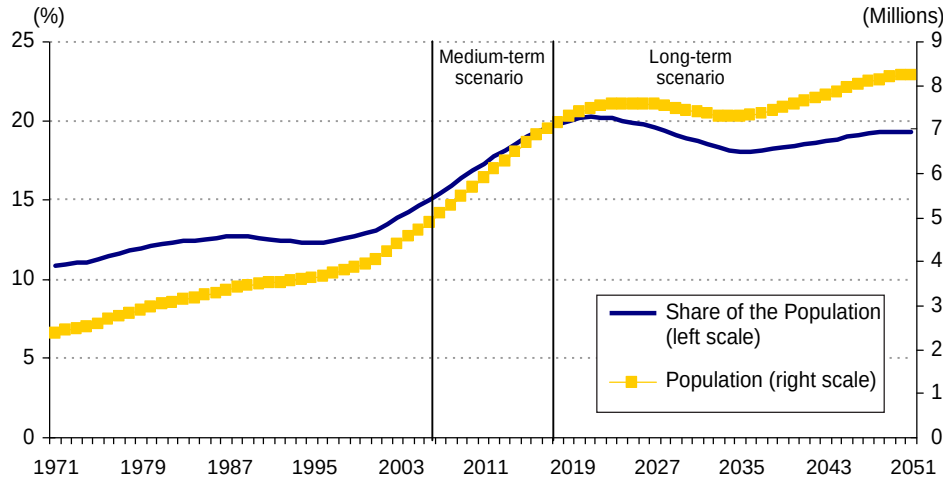


Sources: (1971) Statistics Canada, Annual Demographic Statistics;
(2007-2051) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

In 1971, 36% of the population were in their prime working years (25-54). In 2007, 45% of the population was in this group, while by 2051 this share will fall to 37%. It is interesting to note that the proportion of the population of core working age in 2051 is expected to be similar to that seen in 1971. The primary difference will be that the 'non-core' population will be an older population in 2051 versus the very young one in 1971. When we examine the ratio of population 65 and over to total population, the change in age composition becomes more evident. In 1971, 8% of the population were aged 65 and over, in 2011 this proportion will rise to 14% and by 2051 it will reach 25%.

Looking more closely at the population aged 55 to 69, the prime years for entering retirement, it can be seen that this group's share of the population will rise precipitously from an average of 12.5% before 2007 to stabilize at an average of 19% after 2022. It is this demographic shift which will be a prime driver of retirements in decades to come. In effect, the source population for retirements will rise from under 5 million Canadians of retirement age before 2007 to over 7.5 million retirement-aged Canadians after 2022.

Canadian Population Aged 55-69



Sources: (1971-2006) Statistics Canada, Annual Demographic Statistics;
(2007-2051) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

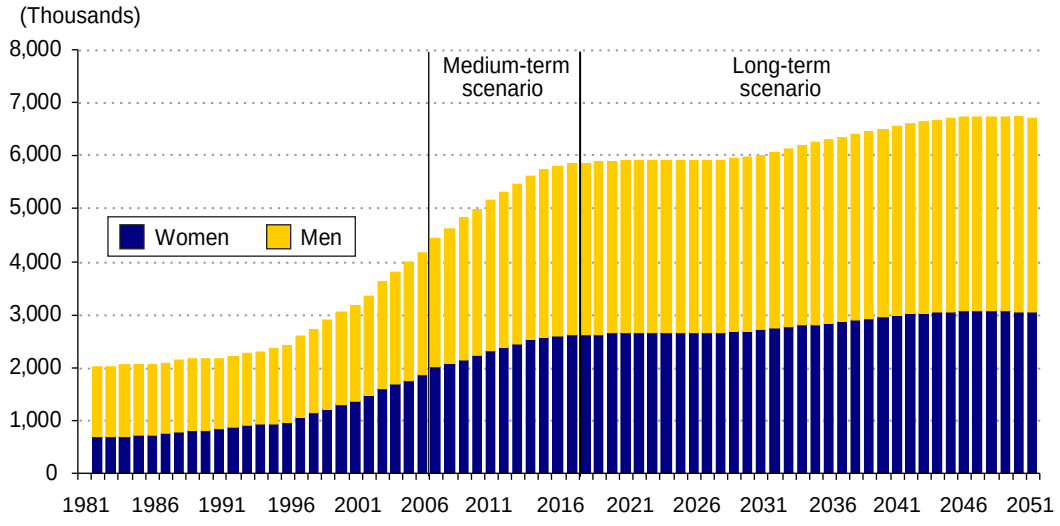
… and will be exacerbated by rising employment rates among older people

In addition to this demographic pressure, rising employment rates among older people have contributed to the high levels of employment. Employment rates for those aged 50 and over are expected to rise further over the next ten years. This is the result of subsequent generations of workers entering into the older age groups with both higher education levels and preferences for work (see chapter on *Labour Force: Recent Trends and Outlook* for a detailed analysis).

Indeed, the number of employed men and women aged 50 and over has been increasing significantly since the mid 1990s, rising from 2.6 million workers in 1997 to 4.4 million today. It is expected that this number will rise to 5.8 million workers in 2017 after which time, it will plateau before beginning to rise slowly again in the 2030s.[24] This plateau will occur as the result of the bulk of the baby boomers moving past the median retirement age. Because a large number of these workers will be leaving employment, to be replaced by the smaller baby bust generation (those born between 1967 and 1979), employment growth will cease until the echo boom generation (those born between 1980 and 1995) begins to enter the 50+ age category in the 2030s.

[24] Employment rates are assumed to remain stable after the 10-year forecast horizon (post-2017).

Employment for Men and Women Aged 50 and Over

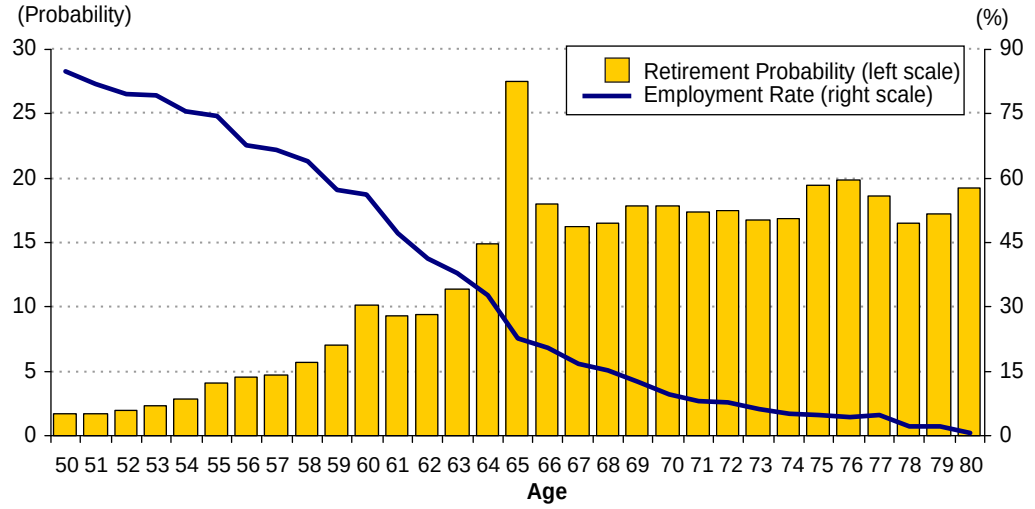


Sources: (1981-2007) Statistics Canada, Labour Force Survey;
(2008-2051) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

As working boomers move into the 50+ age category they will begin to retire, but the deluge will not arrive until they begin to reach their late 50s and early 60s. As shown below, the probability of an employed person retiring reaches 10% at age 60 and increases rapidly to about 25% by age 65.[25] At this point, the vast majority of retirements will have occurred as expressed by the low employment rate for those 65 years or older (in 2007 the employment rate of those aged 66 years was 21.1%). About 17% of those employed at ages above 65 tend to leave each year. Thus, as the bulk of the baby-boom generation moves closer and closer to age 65 the number of retirements will begin to climb rapidly.

[25] The probabilities described here are computed simply as the number of retirements by discrete age over the number of employed persons of that age. These probabilities do not sum to 100%.

Average Probability of Retirement by Discrete Age, 2008-2051



Sources: Statistics Canada, Labour Force Survey (employment rate); Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario (retirement probability).

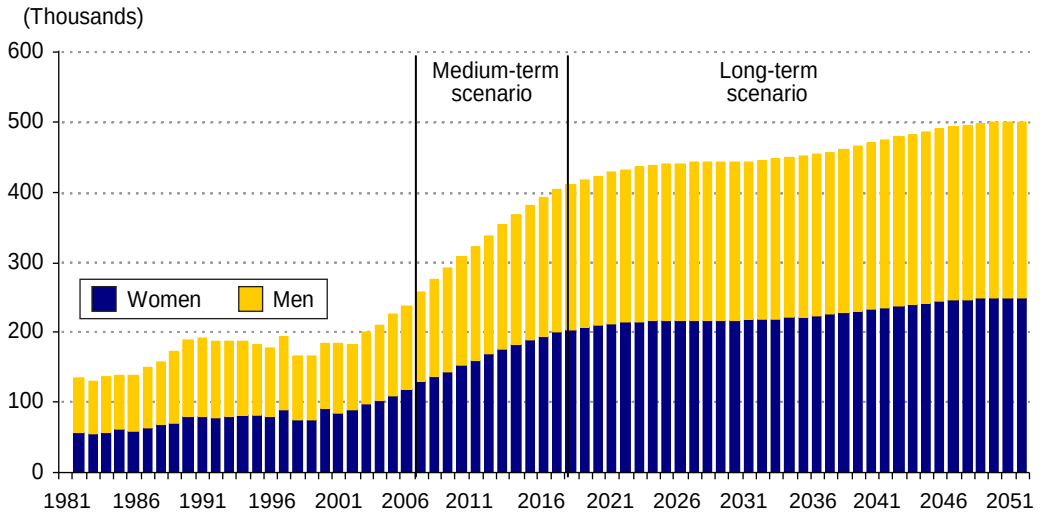
The probabilities of an employed person retiring by discrete age tend to be fairly stable over time. Factors that may affect workers' retirement decisions include overall economic conditions, household net wealth holdings, the crowding effects of excess labour supply, implicit subsidies for retirement embedded in defined benefit pension plans, and birth-cohort or generational effects.[26] Although the probabilities might change slightly and affect the timing of retirement for an individual, it will not affect the overall retirement figures when analysing it over a long timeframe.

The number of retirements will increase markedly over the next 10 years, and beyond

In the coming decade, retirements are projected to rise rapidly, from 260,000 a year in 2007 to 420,000 a year in 2017, for a total of 3.4 million over the next ten years. This is the primary reason why most job openings in the coming decade will come from retirements. However, after the majority of the baby-boomers enter retirement, the new flows into retirement will stabilize somewhat until 2030. They will then start to gradually rise again to just below 500,000 a year by 2051, coinciding with the echo boom generation entering their retirement years.

[26] For more information, see Dunn, Kevin, "Estimating and Forecasting Aggregate Retirement Flows in the Canadian Labour Market", Human Resources and Social Development Canada (December 2005).

Retirements for Men and Women



Source: (1982-2051) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Management occupations will be facing the strongest retirement pressures

The projected number of retirements within each occupation is primarily determined by the interaction of two variables: the distribution of the workforce by age and the average age of retirement, both of which vary significantly amongst detailed occupations. Retirement pressures should be highest in occupations with an older workforce and where the retirement age is relatively low. In 2007, the average age of employed workers across all occupations was 40 years, while the median retirement age was 61.

Management occupations are expected to be most affected by retirement pressures over the 2008-17 period. On average, 2.8% of workers in management occupations are expected to retire each year, primarily because the workforce is older (average age of 44). The management occupations where retirement pressures will be the most intense include managers in health, education, social and community services, and legislators and senior management.

Workers in occupations usually requiring only on-the-job training have the lowest projected retirement rate of all (1.8%). This is attributable to their relatively young workforce (34 years of age) and their above-average retirement age (63 years). Sales and service occupations, including cashiers, food counter attendants and helpers, and other sales and related occupations, are occupations where the retirement pressures will be less severe.

In general, occupations that usually require university, college or high school education are expected to experience average retirement pressures with annual retirement rates between 2.0% to 2.4% over the next decade. Among these occupational groupings, there may be some occupations with higher than average retirement pressures such as college and other vocational instructors, nurse supervisors and registered nurses and librarians, archivists, conservators and curators, as well as some occupations with lower than average retirement pressures such as computer and information systems professionals.

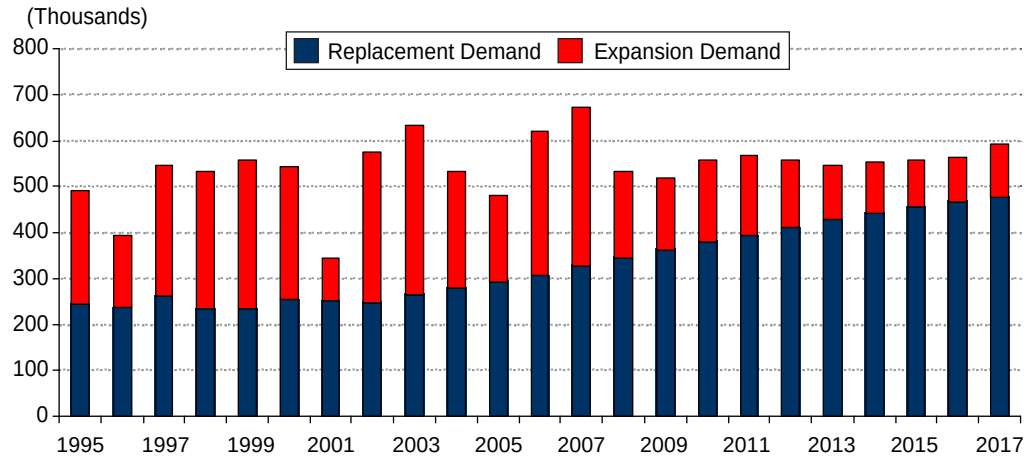
Additional results about retirements by occupation are available in Annex C.

4.2.2 Breakdown of Job Openings by Source

Over the last ten years, expansion and replacement demand generated similar numbers of job openings

Historically, expansion demand has generated about half of all job openings. Because economic growth occurs in cycles, expansion demand tends to ebb and flow to a greater degree than replacement demand which is driven largely by demographic factors. Replacement demand has been rising steadily, with the significant growth in retirements being the driving force behind this trend. This trend should persist as the average age of the population continues to climb.

Job Openings: Replacement and Expansion Demand, 1995-2017



Sources: Statistics Canada, Labour Force Survey (1995-2007 expansion demand), and Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario (2008-2017 expansion demand and 1995-2017 retirements).

However, over the next ten years, replacement demand will be the main source of job openings, due to the rapidly increasing number of retirements

Over the next ten years, replacement needs will become much more important than expansion demand as a source of job openings. In total, replacement demand will account for over three-quarters of all job openings. Over the 2008-17 period, it is projected that about 1.4 million new non-student jobs will be created as a result of increasing economic activity, while over 4.1 million existing positions will be freed up as replacement needs grow.

Retirements will be, by far, the largest component of replacement demand and account for 3.4 million of the 4.1 million positions being vacated. This component will comprise just over 80% of total replacement demand in the coming decade. Deaths and emigration will comprise the remaining 20% of this demand component. Deaths are projected to rise to approximately

440 thousand job openings over the projection period as the workforce ages. Emigration, on the other hand, is projected to slow to 283 thousand job openings as older workers tend to be less geographically mobile.[27]

4.2.3 Job Openings by Skill Level

Over two-thirds of all jobs openings will be in occupations usually requiring postsecondary education or in management

Future occupational demand (excluding students) will vary across skill levels. Both expansion and replacement demand will generally be strongest in occupations usually requiring postsecondary education and in management, although replacement demand is more evenly spread across all occupations.[28] Over the next ten years, over two-thirds of job openings (67.2%) will be in occupations usually requiring some form of postsecondary education or in management. In 2007, these occupations represented three-fifths of total employment (60.8%).

Job Openings by Skill Level, 2008-2017

	Expansion Demand (non-student)		Replacement Demand			Total Job Openings	
	Level (000s)	Rate (AAGR[1])	Level (000s)	Rate (AR[2])	Share of Demand	Level (000s)	Share
Total	**1,385.9**	**0.9%**	**4,124.9**	**2.7%**	**74.9%**	**5,510.8**	**100.0%**
Skill Level[3]							
Management	120.5	0.8%	493.5	3.4%	80.4%	614.0	11.1%
Occupations usually requiring:							
– university education	449.5	1.5%	790.8	2.9%	63.8%	1,240.3	22.5%
– college education or apprenticeship training	472.5	0.9%	1,381.0	2.7%	74.5%	1,853.5	33.6%
– high school diploma	276.7	0.6%	1,118.4	2.5%	80.2%	1,395.1	25.3%
– only on-the-job training	66.8	0.4%	341.1	2.2%	83.6%	408.0	7.4%

Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

[1] AAGR: average annual growth rate.

[2] AR: the annual replacement rate corresponds to the ratio of the average level of replacement demand over the projection period to the employment level in the base year (2007).

[3] Skill levels are based on the 2006 NOC Matrix, in which occupations are grouped according to the education and training normally required.

Among occupations usually requiring postsecondary education, demand will be particularly strong in occupations usually requiring a university degree. Here employment is projected to grow (expansion demand) at an annual average rate of 1.5% with an annual replacement rate of

[27] Other job leavers, such as discouraged workers or those who leave the labour force for other reasons, are not included in replacement demand but are considered as net re-entrants (see next chapter *Job Seekers*).

[28] In fact, three-quarters (75.2%) of jobs created by economic expansion will be in occupations generally requiring postsecondary education or in management, whereas 64.6% of job openings due to replacement will be in these occupational groups, for a combined average of 67.2%.

2.9%. Occupations in management and those usually requiring a college education or apprenticeship training are expected to experience average annual employment growth of 0.8% and 0.9% respectively. Annual replacement rates in these occupational groupings are projected to be 3.4% and 2.7% respectively.

Job openings will be relatively weak in low-skilled occupations. Those working in occupations requiring only on-the-job training or a high school diploma will face the lowest rate of new job creation (0.4% and 0.6% annually) as well as below average annual replacement rates (2.2% and 2.5%).

On the whole, occupations usually requiring college education or apprenticeship training will account for about one-third of all job openings (approximately 1.8 million). These occupations also represented about one-third (33.5%) of employment in 2007. Although occupations requiring only high school education will account for a significant share of job openings (25.3%), this share will be lower than their proportion of employment in 2007 (29.2%). In contrast, occupations requiring a university education, which accounted for 18% of employment in 2007, will represent 22.5% of job openings over the next ten years. Similarly, management occupations will account for a more significant share of job openings (11.1%) than their share of total employment in 2007 (9.5%).

4.3 Job Seekers

Over the next ten years, over 5.5 million people are expected to enter the Canadian labour market. School leavers will continue to represent the majority of job seekers. However, the decrease in population growth among young people will limit the rise in this source of supply. In fact, the proportion of young people in the total population will continue to drop, despite the fact that their numbers will remain relatively constant. However, the number of postsecondary school leavers should continue to increase, due to the increasing rate of enrolment in universities and colleges. Immigration will continue to play a significant role by contributing to an increasingly educated labour force in Canada.

The number of job seekers is based on the number of school leavers (those permanently leaving the Canadian school system, whether as high school drop outs, high school graduates or college and university graduates), newcomers to Canada and individuals re-entering the labour market.[29] This section starts by showing the importance of each of these components and then provides more details on the two primary components, school leavers and immigrants. Lastly, the distribution of job seekers by occupation is discussed.

[29] See Annex D for more information on the job seekers models.

Changes to the Method of Estimating Job Seekers

In the previous edition of *Looking Ahead*,[30] it was stated that taking into consideration only school leavers and immigrants tended to underestimate supply in certain occupations. For example, there was little supply for management occupations because school leavers and immigrants have limited experience in the Canadian labour market.

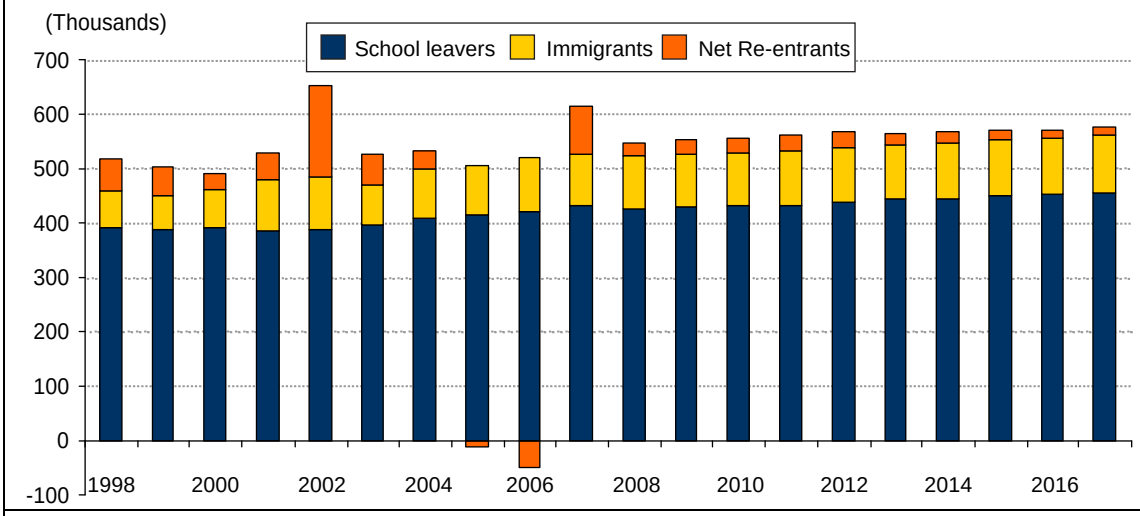
Two new measures are now being taken into account: net re-entrants (those re-entering the labour market minus those leaving it) and mobility between occupations of different skill levels (vertical mobility). It is important to note that this section presents the overall results; therefore, mobility will not play any role because flows between different occupational groups offset each other. However, mobility plays a role in determining imbalances by occupation, which is the subject of the next section.

4.3.1 Breakdown of Job Seekers by Source

School leavers are by far the primary source of job seekers

Over the last ten years, it is estimated that job seekers totalled 5.2 million people, 4 million (77%) of whom came from the school system. During that time, immigration also contributed significantly to this increase in job seekers with close to 840,000 (16%) new immigrants in the labour market. During this same period, there was also a considerable increase in the labour force participation rate by people over 50 years of age and older, and by women. It is estimated that this increased participation in the labour market added approximately 350,000 persons (7%) to the number of job seekers.

Distribution of Job Seekers by Source, 1998-2017



Sources: (1998-2007) Statistics Canada, Educational Administrative Data (school leavers) and Annual Demographic Statistics (immigrants);
(1998-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

[30] See "Looking Ahead: A 10-Year Outlook for the Canadian Labour Market (2006-2015)", Human Resources and Skills Development Canada (October 2006).

Over the next ten years, over 5.5 million people will enter the Canadian labour market, four-fifths of whom will come from the school system – a ratio similar to that seen over the past ten years. In 2007, there were an estimated 432,000 new entrants into the labour market from Canadian educational institutions (with or without a degree). The number of these school leavers should reach 457,000 in 2017.

The number of immigrants to Canada has been on the rise for the past 15 years. In fact, in the 1980s, Canada welcomed an average of 123,000 new immigrants each year. This number rose to an annual average of 220,000 in the 1990s and 236,000 since 2000. It is estimated that approximately 96,000 of all new immigrants to Canada in 2007 entered the labour market.[31] This number should increase at an average annual rate of 1% to reach close to 105,000 in 2017. However, while immigration is an essential source of new job seekers, its weight remains relatively low in comparison to school leavers, counting for only one-fifth of job seekers for the 2008-2017 period.

Net re-entrants will represent 112,000 workers over the next ten years, which is approximately 2% of the total number of job seekers over that period. The projected slowdown of the rise in the labour force participation rate for most age groups is behind this slower influx.

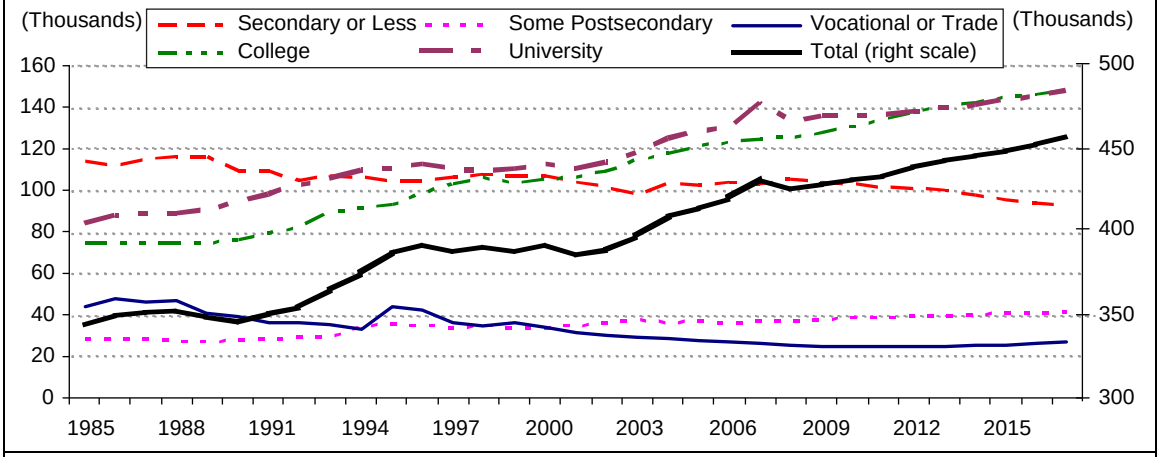
The following sections provide more information on the two main job seekers components, i.e. school leavers and immigrants.

4.3.2 School Leavers

Overall, the flow of school leavers is projected to represent 4.4 million people over the next ten years (compared to 4.0 million over the last decade), which is an average increase of 0.6% per year. This increase will be due to the rise in the population of young people between 15 and 34 years of age, by 0.2% on average over the next ten years. However, the population of young people should decline after 2014. But the impact of this decline on the labour market will only be felt after 2017, when most of these young people leave the school system.

[31] In 2007, 244,700 new immigrants settled in Canada, of whom 78%, or 190,760 people, were 15 years of age or older. Among those 15 years of age and older, 70%, or 134,000 people, were not in school. A labour force participation rate of 71.8% is applied to this non-student population source to obtain an immigrant labour force of 96,000 people in 2007.

School Leavers by Level of Education, 1985-2017



Source: (1985-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario, using Statistics Canada's Educational Administrative Data.

The number of school leavers entering the labour market will increase, especially at the postsecondary level…

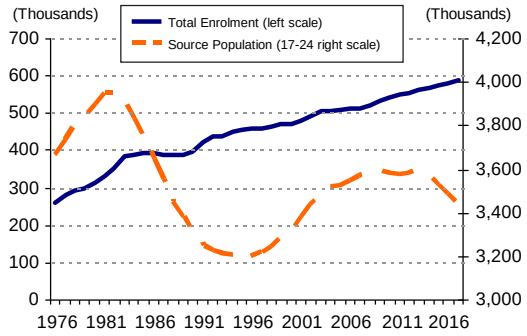
The annual influx of school leavers should be especially high among postsecondary graduates during the projection period. In fact, school leavers from universities and colleges will represent close to 69% of all school leavers.[32]

It is expected that the number of school leavers from university will increase annually by 0.4%, which constitutes a level of growth much lower than that seen over the past ten years (2.6%). The source population for university students (18-29 years of age) will increase only slightly (0.1% annually) over the coming decade. This population will even experience a decline starting in 2012. However, it is expected that there will be a continuing rise in university enrolment rates, which will increase from 9.9% in 2007 to 11.7% in 2017. The net effect of these two factors creates a projected increase in university enrolment (1.6% annually during the projection period). The increase in the number of university leavers (0.4%) will be lower than the increase in enrolments because a large number of students will enrol in graduate programs.

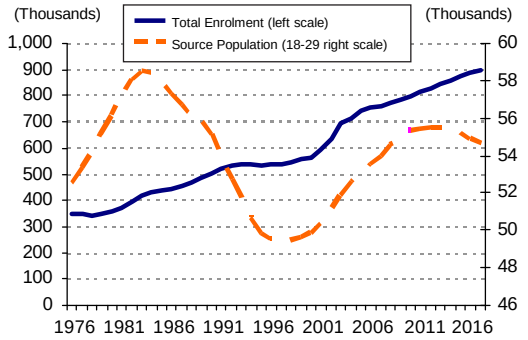
With regard to colleges, a rising enrolment rate should also offset the impact of a source population (17-24 years of age) on the decline (-0.3% on average per year). Enrolments will increase (1.3% annually) over the next ten years. The number of college leavers should increase by 1.8% annually, similar to what has been seen over the past decade (1.9%).

[32] This proportion is similar to that shown in the chapter on labour force, where 68.1% of the youth labour force (25-29 years of age) will have completed postsecondary studies in 2017.

College Enrolment Rate and Source Population (17-24)



University Enrolment Rate and Source Population (18-29)



Source: (1976-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario using Statistics Canada's Educational Administrative Data.

…while the number of school leavers from trade and secondary schools will be on the decline…

Contrary to university and college leavers, the number of vocational school leavers should continue its downward trend, which began in 1999, before getting stable and increasing again after 2011. On average, the number of vocational school leavers will increase by 0.3% in the next ten years, compared with a decrease of 3.3% over the past decade.[33] This trend is due to the decline in vocational training in all provinces (but Quebec), where these programs are increasingly classified as college programs.

Lastly, the number of secondary school leavers should decrease at an average rate of 1.0% per year over the 2008-2017 period, compared with an annual average decrease of 0.3% over the last ten years. This trend is due to the lower number of 13- to 14-year olds (resulting in a decline in secondary school enrolment numbers). Furthermore, the proportion of secondary school graduates who decide to pursue a postsecondary education is on the rise.

[33] Estimates for vocational school leavers were calculated separately for Quebec (where the trend is on the rise) and for the other provinces (where the trend is on the decline). This is largely due to the fact that many of these programs are now classified as college programs. It should also be noted that 1999-2000 was the last year for which Statistics Canada produced data for college and vocational training, increasing the risk to these projections.

Full-time Enrolments by Level of Education, 1997-2017					
	Level (in thousands)			Variation (AAGR[1])	Variation (AAGR[1])
	1997	2007	2017	1997-2007	2008-2017
Total	**1,485.7**	**1,755.4**	**1,926.8**	**1.7%**	**0.9%**
Level of Education					
University	539.4	761.7	897.0	3.5%	1.6%
College *	458.5	515.5	588.9	1.2%	1.3%
Vocational Studies	82.0	65.0	69.9	-2.3%	0.7%
Secondary	405.8	413.2	371.0	0.2%	-1.1%

Sources: (1997 and 2007) Statistics Canada, Educational Administrative Data;
(2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

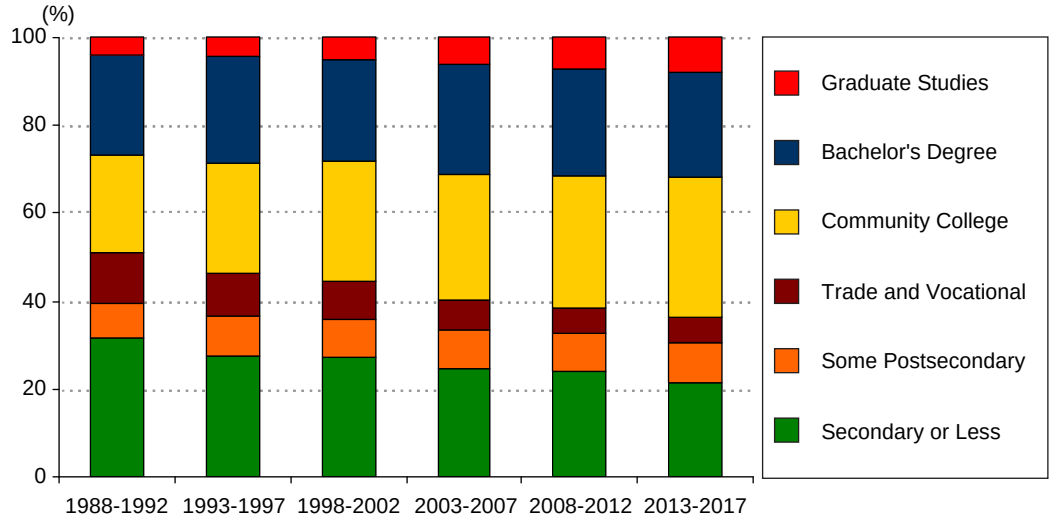
* Includes university certificates below a bachelor's degree.

[1] AAGR: Average Annual Growth Rate.

…resulting in significant changes in the distribution of school leavers by level of education

The distribution of school leavers by level of education has evolved substantially over the past 20 years. The proportion of school leavers with a secondary school diploma or less has diminished significantly in favour of those with a college diploma or university degree. Between 1988 and 1992, 32% of school leavers had a secondary school diploma or less, compared with only 25% having this as their highest level of educational attainment over the last five years (2003-2007). The opposite is true of college and university graduates, whose proportions rose from 22% and 27% respectively between 1988 and 1992 to 29% and 31% today.

**School Leavers:
Distribution by Level of Education, 1988-2017**



Sources: (1988-2017) Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario using Statistics Canada's Educational Administrative Data.

From 2013-2017, the proportion of school leavers with a secondary school diploma or less will stand at 21%, and at 32% for college and university graduates. This pattern of rising educational attainment follows historical trends and will meet the growing need for knowledge workers in the Canadian economy.

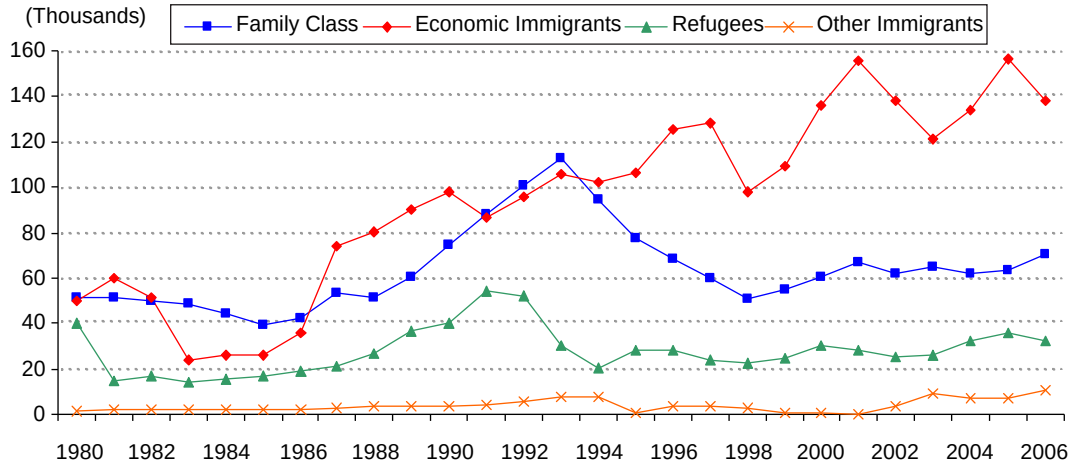
4.3.3 Recent Immigrants

The labour force participation rate and the level of education of new immigrants is on the rise

Over time, immigration has become a key element in the demographic growth of the Canadian population. The number of immigrants entering the country each year has been on the rise for 15 years. In 2008, Citizenship and Immigration Canada expects 240,000 to 265,000 new immigrants to enter the country.

Of the major immigration categories (family class, economic immigrants,[34] refugees and other immigrants),[35] the dominant category is that of economic immigrants, which, since 1995, has surpassed the family class category and has continued its upward trend. In 2006, economic immigrants represented 55% of newcomers to the country for a total of 138,000 immigrants. Of that number, 27% were principal applicants, with the rest made up of spouses and dependants.

Immigration by Category, 1980-2006



Source: Citizenship and Immigration Canada, Facts and Figures 2006.

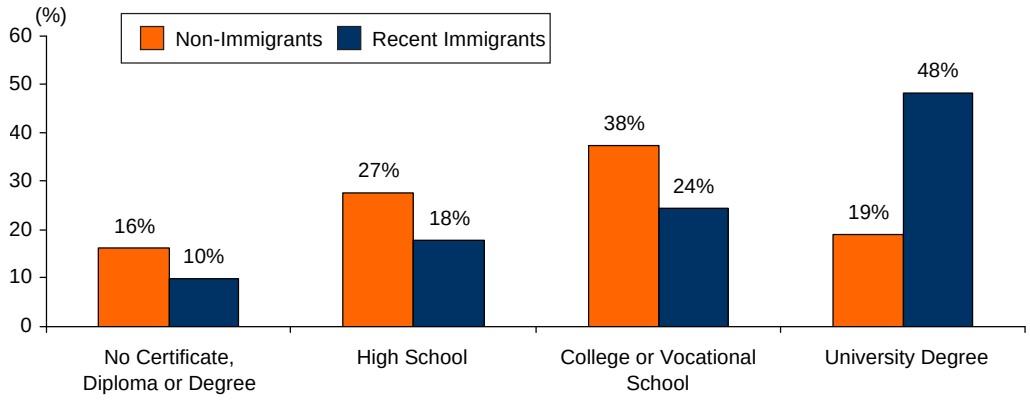
[34] The *economic immigrants* category includes skilled workers, entrepreneurs, self-employed people, investors, provincial or territorial nominees and live-in caregivers.

[35] Permanent residents in the *other immigrants* category include post-determination refugee claimants, deferred removal orders, retirees, temporary resident permit holders, humanitarian and compassionate cases, sponsored humanitarian and compassionate cases outside the family class, and people granted permanent resident status based on public policy considerations.

Economic immigrants have higher levels of education than other categories of immigrants. For example, in 2006, 77% of principal applicants among economic immigrants had a university degree, compared with 28% among immigrants in the family class category.

An ever-increasing number of economic immigrants has meant that, overall, recent immigrants[36] are more educated than Canadian-born labour force participants. The proportion of immigrants with university degree is particularly high. In 2006, 48% of those labour force participants had a university degree, compared with 19% for the Canadian-born. Again within the labour force, the proportion of recent immigrants who had pursued a postsecondary education was 16 points higher than that of Canadian-born labour force participants (72% vs. 56%).

Labour Force Distribution by Level of Education for Canadian-born and Recent Immigrants



Source: Statistics Canada, 2006 Census.

It is therefore not surprising, given that labour force participation increases with level of education, that the labour force participation rate of recent immigrants has increased over the past decade. In 2006, recent immigrants not attending school had a labour force participation rate of 71.8%, compared with a rate of 69.3 % in 2001 and 64.8 % in 1996. The participation rate of recent immigrants in 2006 was slightly higher than that of all Canadians who were not attending school (69.2 %).

Overall, assuming a stable participation rate of 71.8 %, it is estimated that approximately 96,000 of all new immigrants who came to Canada in 2007 entered the labour market. This number should reach close to 105,000 people in 2017.

[36] Recent immigrants are those who entered the country over the past five years, including the Census year.

4.3.4 Methodology to Distribute Job Seekers by Occupation

Doing projections for job seekers by occupation is a challenge in itself. In fact, several factors can influence this distribution. For example:

- several occupations have “specific requirements” when it comes to education and experience, limiting potential supply;
- non-recognition of foreign credentials or foreign work experience can impede recent immigrants from entering certain occupations;
- school leavers may have all the qualifications required by employers in occupations directly related to their field of study, but the occupation may be over-supplied and some may have to enter occupations that are not related to their level of education or field of study. They could be forced to accept work in a lower skilled occupation, especially if they are not willing to move.

These factors must be taken into consideration before effecting the distribution of job seekers by occupation.

School leavers may be limited in their career choices

People have career aspirations that lead them to choose a certain educational path. They must decide on a field of study and complete the education required to be able to meet an occupation’s requirements. In some cases, even if they complete their studies, their aspirations are not achieved. In fact, several factors may prevent them from being able to work in their desired occupation. Demand deficiencies or oversupply in certain fields of study may force graduates to seek employment in other occupations. That is the case for life science graduates, but not nursing graduates who can more easily find work. It is estimated that some 25% of Canadian workers are in an occupation requiring an educational level below their qualifications.

Given this problem, two supply scenarios are used: the first reflects these access problems, while the second derives a supply that is intended to reflect school leavers’ aspirations.

More particularly, the first scenario, called the ex post scenario, reflects the experience of recent graduates, including their difficulties in accessing certain occupations. This scenario uses the Labour Force Survey (LFS) data to establish occupational distribution by age and level of education. This scenario does not restrict graduates to holding an occupation directly related to their field of study or to their level of education.

The second scenario, called the ex ante scenario, restricts school leavers to holding occupations directly related to their field of study. This scenario thus makes it possible to derive a supply that more reflects school leavers' career goals. For example, someone with a Bachelor's in nursing may be a nursing sciences professional, health care technical personnel, or health sciences technologist. However, those same graduates are restricted to not wanting an occupation as a cashier, even though in reality some graduates may have such an occupation. It is important to note that this scenario uses the Follow-up Survey of Graduates, two years

after graduation. This scenario also reflects the difficulties graduates may face early on in their career, by allowing graduates to fall back on occupations which require lower qualifications, if they are directly related to their field of study. Therefore, this scenario makes it possible to reflect graduates' aspirations, while at the same time taking into account access problems in certain occupations.

Using these two scenarios makes it possible to understand the size of the supply in certain occupations. For example, allocating all life science graduates to occupations directly related to their field of study (e.g. biologists), as the ex ante scenario does, leads to the conclusion that there is an excess supply for these occupations. In practice, however, some of those graduates will fall back on other unrelated occupations (ex post scenario), highlighting the matching problems between occupational demand and supply.

Immigrants have more education-job matching problems than Canadian-born

Despite a continued increase in the level of education and labour market participation of recent immigrants, a recent study[37] shows that recent immigrants face matching problems between their level of education and the level of skills required by the occupation that they hold in the Canadian labour market. The authors found that among recent immigrants who succeed in finding a job in Canada, almost half (46 %) hold an occupation that usually requires a level of education that is lower than what they hold, four years after they settled in the country. At the same time, among the Canadian population with a job, 25% have a job that usually requires a level of education below the one they have. The gap increases with the level of education. In fact, 60% of recent immigrants with a university degree hold jobs that usually require a lower level of education, compared with 36% among Canadian workers. According to this study, the main reason for this gap is the lack of recognition of foreign work experience.

Other researchers have also examined the occupational distribution of recent immigrants. In a 1995 study, Green[38] found that the distribution of immigrants by occupation in Canada is often different from the initial distribution of occupations expected by immigrants before arriving in the country. Galarneau and Morissette (2004)[39] found that among new immigrants with a university degree who had a job between 1991 and 2001, at least one out of four held a job requiring a secondary school diploma or less.

Given this issue, data from the last Census, not immigrants' intentions, was used to distribute recent immigrants by occupation.

---

[37] Pescarus, C. and M. Bouaissa, "How Well do Recent Immigrants do on the Canadian Labour Market? An Education-Occupation Matching Analysis", Human Resources and Skills Development Canada. (unpublished)

[38] Green, David A., "Intended and Actual Occupations of Immigrants", in Don J. DeVoretz, ed., *Diminishing Returns: The Economics of Canada's Recent Immigration Policy*, Policy Study 24 (1995).

[39] Galarneau, D. and R. Morrissette, "Immigrants: Settling for less?", June 2004, Perspectives, Statistics Canada — Catalogue no. 75-001-XIE.

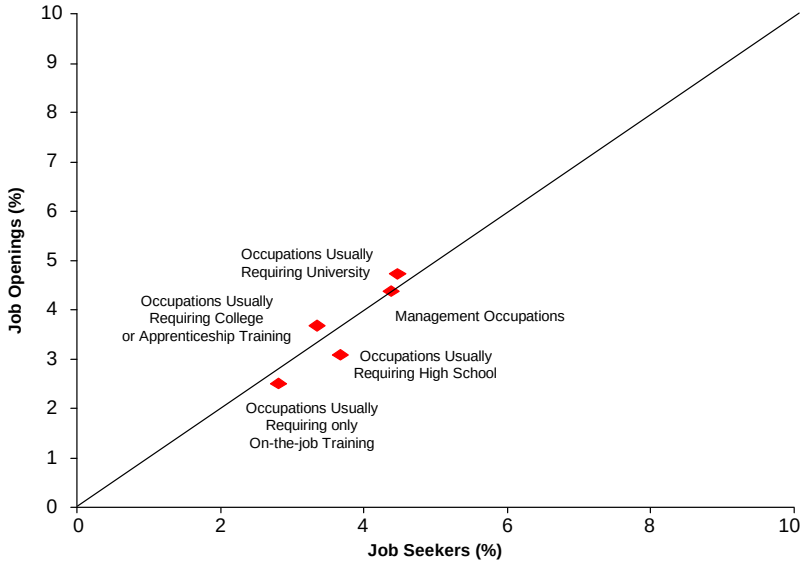
4.4 Future Imbalances by Occupation

There do not appear to have been any labour supply and demand imbalances by broad skill level in the past several years. Although this situation is projected to continue in the medium term, it may very well mask a significant number of imbalances at the occupational level. The largest number of occupations with significant imbalances over the next decade will be in management and in the health sector. These imbalances should be especially acute for managers in health and education, and for physicians and nurses. In some cases, supply would need to double or even triple to meet projected demand. Other occupations showing signs of significant imbalances include senior managers, human resources professionals, contractors and supervisors in trades and occupations related to oil and gas drilling and services.

Potential imbalances by occupation are determined by comparing the number of job openings to the number of job seekers over the next ten years. Projections indicate upward (or downward) labour market pressures in a given occupation when the number of job openings for that occupation is considerably higher (or lower) than the number of job seekers.

The following chart plots projected job openings against projected job seekers on the vertical and horizontal axis respectively. The figures are normalised to the 2007 employment for the five broad skill levels over the period 2008-2017. Results shown in this chart are based on the ex post scenario. An annual job openings rate of 4% indicates that the average annual level of job openings in a skill level (which consists of expansion and replacement demand) over the coming decade represents 4% of its 2007 employment level. As expected, the points fall close to the 45-degree line, implying that the number of job openings and job seekers by broad skill level should be roughly in balance over the coming decade.[40]

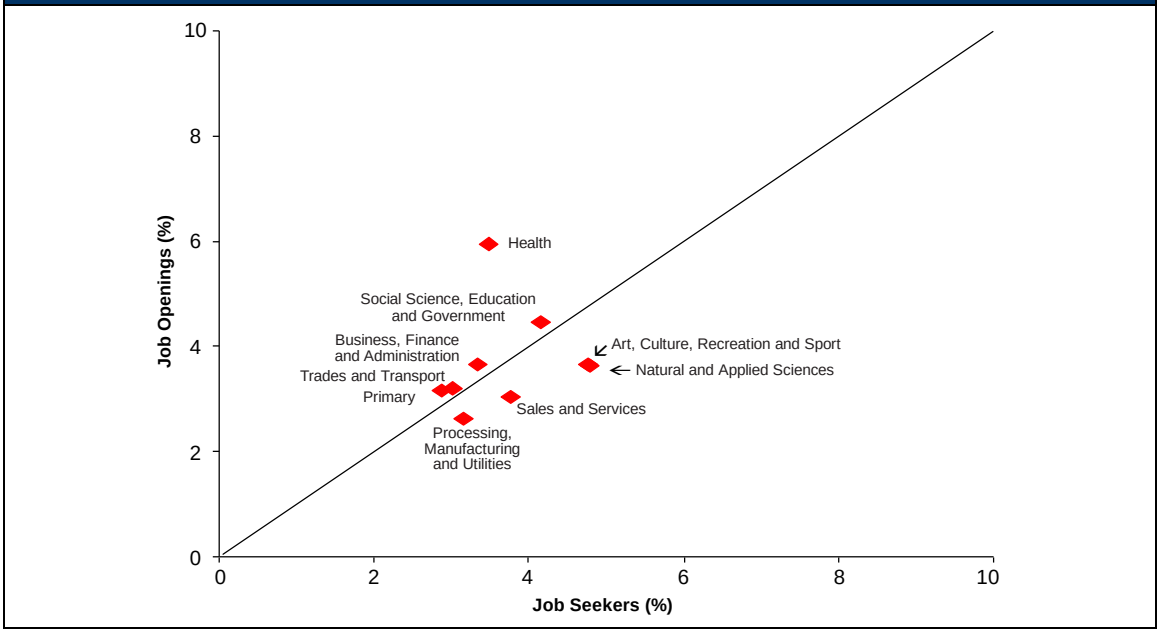
Job Openings and Job Seekers by Skill Level (as a Proportion of the 2007 Employment Level), 2008-2017



[40] See the chapter *Methodology to Assess Imbalances by Occupation* to review why comparing expansion demand to changes in the labour force is similar to comparing job openings to job seekers.

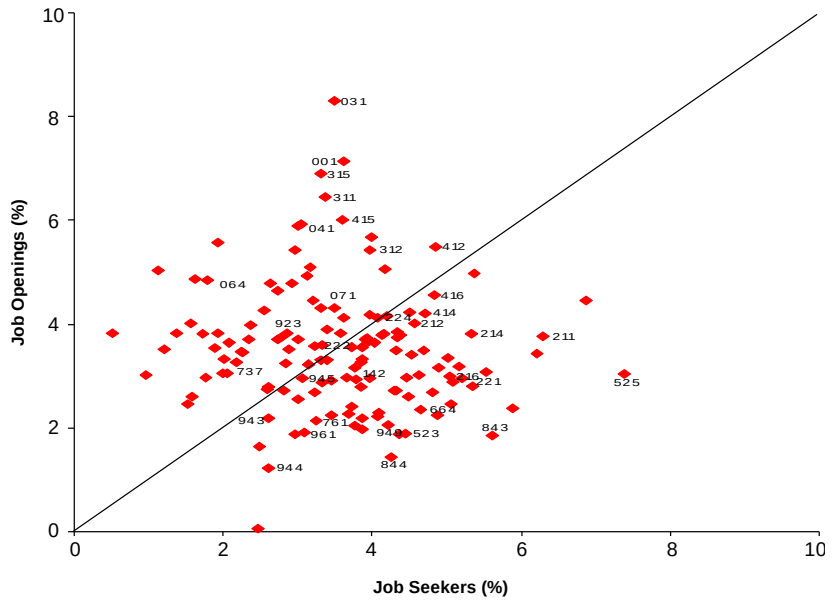
The following sub-sections present these results in detail for occupations clustered under the nine NOC skill types. A skill type represents the type of work performed and may be associated with a function (e.g. management, clerical or sales), a field (e.g. science, health, education or culture) or an industry (primary industry or manufacturing). The chart below compares the projections of job openings and job seekers by skill type. As may be seen, a large excess demand (more job openings than job seekers) is projected in health sector occupations. There will be excess supply in four skill types namely in business, finance and administration; natural and applied sciences; art, culture, recreation and sport; and in sales and service occupations. The remaining four skill types: social science, education, government service and religion; trades, transport, and equipment operators; primary industry; and processing, manufacturing and utilities should register a balance between job openings and job seekers, if projected trends are borne out over the next ten years.

Job Openings and Job Seekers by Skill Type (as a Proportion of the 2007 Employment Level), 2008-2017



The situation is even worse when one looks at detailed occupations (shown here by occupational code number). Several occupations are far off the 45-degree line, which indicates an imbalance between the number of job openings and job seekers.

Job Openings and Job Seekers by 3-digit Occupation (as a Proportion of the 2007 Employment Level), 2008-2017



The occupations with the largest imbalances will be more fully discussed in the next sub-sections. This analysis by skill type will also make use of the two labour supply scenarios discussed in the preceding section. The ex post scenario reflects the actual labour market outcomes of recent graduates. Under the ex ante scenario, school leavers are limited to occupations directly related to their chosen field of study, in an attempt to model their career intentions. When the number of school leavers for a specific occupation in the ex ante scenario exceeds that of the ex post scenario, it means that a large number of school leavers will end up working in occupations not directly related to their field of study (e.g. many life science graduates do not work in occupations related to their field of study, but in other unrelated occupations). Conversely, when the number of school leavers in the ex post scenario exceeds that of the ex ante scenario, a large number of school leavers end up working in occupations outside their chosen field of study (e.g. many postsecondary school leavers take jobs as cashiers).

4.4.1 Business, Finance and Administration

The business, finance and administration sector accounted for some 20% of non-student employment in 2007, or nearly 3.2 million workers. This sector includes auditors, accountants and investment professionals (NOC 111), human resources and business service professionals (NOC 112), skilled administrative and business occupations (NOC 12), including administrative and regulatory occupations (NOC 122), secretaries, recorders and transcriptionists (NOC 124), and the various clerical occupations (NOC 14). These workers are found in most industries, with a greater concentration in finance, insurance and real estate and in government services.

Job openings

Business, finance and administration occupations will see about 1.16 million job openings over the next ten years. As a share of 2007 employment, this represents the same rate of growth as the all-occupation average.[41] These openings will derive primarily from retirements, which will account for an average of 70% of job openings for these occupations. This is a substantial increase over the preceding decade (1998-2007), during which retirements accounted for only 40% of job openings. The difference is due in part to an expected increase in retirements and in part to a significant drop in employment growth related to expansion demand.

Expansion demand for these occupations is projected to be weak over the next ten years, with an average annual employment growth rate of only 0.6%. The 200,000 jobs that will be created in this sector will comprise 14% of all new jobs whereas, in 2007, 20% of total non-student employment was in business, finance and administration occupations. Projected growth over the next ten years is much lower than that observed over the past decade, when employment grew an average of 2.0% a year. The low level of job creation will be due mainly to a slowdown in real estate activity, greater use of new technology (Internet banking and real estate services) and difficulties faced by several industries (most notably manufacturing) which will limit growth in administrative staff.

In addition to these 200,000 new jobs, over 810,000 positions are projected to be vacated over the next ten years as a result of retirements. In fact, the retirement rate in these occupations from 2008 to 2017 will be above average, with 2.6% of workers retiring each year,[42] compared with only 2.2% for all occupations combined. This relatively strong rise in retirements will be due to a combination of a slightly older than average workforce (41 years compared with 40 years for all occupations) and a slightly lower than average median retirement age (60 compared with 61 years). Finally, deaths and emigration are expected to account for a relatively small share of future job openings for this skill type, with about 150,000 job openings to replace workers who die or leave the country.

Looking more closely at the three-digit occupations, job openings, as a percentage of 2007 employment, for most occupations in business, finance and administration will be near average. However, job openings for human resources professionals (NOC 112), administrative and regulatory occupations (NOC 122) and senior managers (NOC 001) will be above average, primarily because of much higher than average replacement demand. The average age of workers in these occupations is higher than the all-occupation average. Conversely, demand for workers in the occupations of library, correspondence and related information clerks (NOC 145) and in recording, scheduling and distributing occupations (NOC 147) will be below the all-occupation average as process automation and improvements to computerized tools (such as email and the Internet) continue to take over certain services traditionally provided by those occupations. Finally, it is expected that there will be a substantial drop in the number of new jobs for secretaries, recorders and transcriptionists (NOC 124) in the coming years. These occupations have been in decline for some years now as a result of changes in office

[41] The different components are compared with the average for all occupations by using a rate that represents the average number of persons in a component (e.g. demand, supply, retirements, school leavers or immigrants) relative to employment level in 2007. This rate is then compared with the rate for all occupations to determine whether the skill type or occupation is above, equal to or below average for a given component.

[42] The "retirement rate" here is the average number of retirements relative to the employment level in 2007.

technology (e.g. word processing software, email and automated voice systems) and in the definition of duties, which have led to staff being moved to other occupations (in particular administrative and clerical personnel). However, replacement demand resulting from retirements will more than offset job losses, meaning that job openings for secretaries, recorders and transcriptionists are expected to be comparable to the all-occupation average.

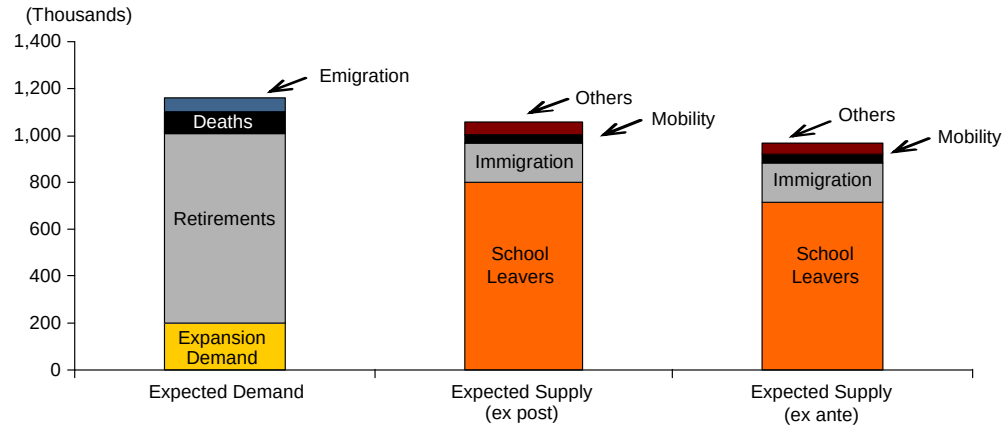
Job seekers (ex post scenario)

Job seekers, as a share of 2007 employment, are projected to be slightly below the all-occupation average over the next ten years, with slightly fewer than 1.1 million people looking for work in these occupations. These job seekers will in large part be emerging from the school system (about 76%, or 800,000 school leavers). Although there should be a steady rise in the number of immigrants working in these occupations, immigrants will continue to account for only a small proportion of total supply (slightly fewer than 169,000 workers). Finally, mobility and other factors are expected to continue to be a negligible source of supply of new workers over the coming years.

Balance between job openings and job seekers

Over the next ten years, the 1.16 million job openings being created in business, finance and administration will exceed the 1.06 million job seekers in this skill type. The small excess demand (100,000 workers over 10 years) represents less than 3% of employment in 2007. Moreover, despite a relatively low unemployment rate[43] in these occupations, 2.9% in 2007, a pool of over 100,000 unemployed workers was available to work and fill that excess demand.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Business, Finance and Administration



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

[43] The unemployment rates used in this section are slightly different from those generally published because, for purposes of the occupational analysis, they do not include students nor unemployed workers who have not worked in the past 12 months. The 2007 unemployment rate for all occupations based on our definition was 4.1%, while the economy-wide unemployment rate was 6.0%.

This relative balance between job openings and job seekers over the next ten years is not the norm for all occupations in this skill type, however. High demand occupations, such as senior managers (NOC 001) and human resources professionals (NOC 112), will face excess demand over the next ten years as job seekers fail to keep pace. There are also signs of an excess labour demand over the next ten years for certain other occupations, such as clerical supervisors (NOC 121), administrative and regulatory occupations (NOC 122), and administrative support clerks (NOC 144). Conversely, occupations such as library, correspondence and related information clerks (NOC 145) and recording, scheduling and distributing occupations (NOC 147) show signs of excess supply. There will be a balance or near-balance between the number of job seekers and job openings for the other occupations.

When school leavers are limited to occupations related to their chosen field of study (ex ante scenario), the number of school leavers intending to work in these occupations is smaller. The larger number of job seekers in the ex post scenario indicates that the chosen field of study for a large number of school leavers is not directly related to administration. These school leavers will for the most part enter skilled administrative and business occupations (NOC 12) and clerical occupations (NOC 14).

On the other hand, a number of university graduates in fields of study related to auditors, accountants and investment professionals (NOC 111) will have to work in other occupations. This is especially true for graduates with a bachelor's degree in commerce (the main field of study for auditors, accountants and investment professionals), some of whom will work in occupations usually requiring a lower level of education, such as sales representatives (NOC 641), insurance and real estate sales occupations and buyers (NOC 623), and finance and insurance clerks (NOC 143).

In summary, it is projected that the number of job seekers and job openings will be broadly balanced if the projected trends are borne out over the next ten years. Only senior managers (NOC 001) and human resources professionals (NOC 112) appear to show significant evidence of excess demand in the coming decade.

4.4.2 Natural and Applied Sciences

The natural and applied sciences sector accounted for 7.8% of non-student employment in 2007, or just over 1.2 million workers. This sector comprises primarily engineers (NOC 213 and NOC 214), computer and information systems professionals (NOC 217), physical science professionals (NOC 211) and life science professionals (NOC 212), and technical occupations related to natural and applied sciences (NOC 22). These occupations are mainly in the professional services industry, although some workers are employed in government services, construction or manufacturing.

Job openings

Natural and applied sciences occupations will see about 438,000 job openings over the next ten years. As a share of 2007 employment, this represents a rate of growth similar to the all-occupation average. Growth will be the result of both expansion demand and

retirements. However, the proportion of the demand coming from retirements will be much lower, at 44%, than that observed for the economy as a whole.

Employment growth (expansion demand) in these occupations should be above average over the next ten years, with an average annual growth rate of 1.5%, compared with 0.9% for all occupations combined. The 194,000 jobs that will be created in this occupational group will represent 14% of all new jobs over the next ten years, whereas these occupations accounted for only 7.8% of total employment in 2007.

This strong job creation will derive from the robust growth in professional business services, especially those related to engineering, computer services, and research and development. Although growth will be above the all-occupation average, it will still be much lower than that observed over the past ten years (4.0%), when occupations in the natural and applied sciences, in particular in information technology, experienced remarkable growth with the shift to a more knowledge-based economy.

The number of job vacancies resulting from retirements should be equivalent to job openings resulting from expansion demand, with some 194,000 positions to be filled. However, the retirement rate among these occupations will be below average during this period, with only 1.6% of workers expected to retire annually. This low retirement rate is due to the lower than average age of workers in several of the occupations in this group, especially computer and information systems professionals and technicians (NOC 217 and NOC 228), and later than average retirement, especially among engineers (NOC 213 and NOC 214) and computer and information systems professionals (NOC 217). Finally, deaths and emigration will account for only a small proportion of future job openings. In fact, only about 50,000 new workers will be needed over the next ten years to replace workers who die or leave the country.

Looking more closely at the three-digit occupations, it is projected that job openings for most of these occupations, as a share of 2007 employment, will be average as strong new job creation is offset by low retirement rates. However, demand will be above average for civil, mechanical, electrical and chemical engineers (NOC 213), technical occupations in engineering (NOC 223 and NOC 224), and other technical inspectors and regulatory officers (NOC 226). These occupations will benefit from good job prospects in professional business services and computer systems design services. Strong job growth in these industries will be supported by solid domestic demand, particularly in capital expenditures, which generally lead to increased demand for services associated with this skill type, such as engineering and architectural services. Moreover, the relative number of retirements among technical occupations in civil, mechanical and industrial engineering (NOC 223) and other technical inspectors and regulatory officers (NOC 226) will be higher than average. Workers in these two occupational groups retire earlier and, especially in the case of other technical inspectors and regulatory officers, are on average much older than workers in other occupations.

Job seekers (ex post scenario)

The number of job seekers in this occupational group (577,000) is expected to be significantly above average over the next ten years. Those job seekers will come primarily (approximately 71%) from the school system. Fields of study related to the sciences are very popular and university and college leavers in these fields are generally highly prized and well paid, especially in fields of study related to computers and engineering. There will be a rise in the number of these school leavers in the coming decade after years of stagnation and even decline. It should be recalled that, in the early 2000s, after the technology bubble burst, enrolments in computer-related programs dropped considerably in response to more difficult labour market conditions.

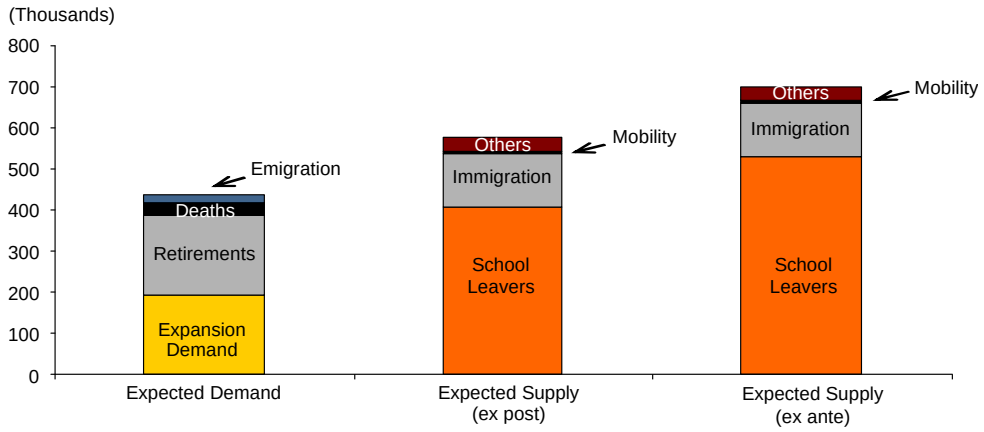
The immigrant contribution to job seekers is larger than in the other skill types, especially in engineering and computer-related occupations. This is due to two factors. First, the Canadian immigration policy favours educated immigrants, and all occupations in the natural and applied sciences require postsecondary education. Second, it seems that foreign education and experience related to these occupations are more readily recognized by Canadian business, possibly because the concepts, theories and practices involved are relatively similar from one country to the next.

Mobility and labour market re-entry will remain negligible sources of overall job seekers in the coming years. The fact that these occupations require very specific skills and relatively lengthy studies limits supply from other skill types or from outside the labour force.

Balance between job openings and job seekers

Labour supply is expected to exceed demand in natural and applied science occupations over the next ten years. In fact, over the 2008-2017 period, there should be 438,000 job openings and 577,000 job seekers in these occupations. There will consequently be relatively high excess supply. In 2007, the unemployment rate for occupations in the natural and applied sciences was 2.8%.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Natural and Applied Sciences



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

The excess supply is expected to be higher in some occupations, such as professional occupations in natural and applied sciences (NOC 21). More specifically, computer and information systems professionals (NOC 217) and physical science professionals (NOC 211) will be the occupations most affected by excess supply, due primarily to the large number of school leavers in these occupations. There will also be excess labour supply for civil, mechanical, electrical and chemical engineers (NOC 213) and other engineers (NOC 214) despite the fact that the number of job openings will be above average. It is expected that there will also be some excess supply among technical occupations related to natural and applied sciences (NOC 22), technical occupations in computer and information systems (NOC 228), technical occupations in architecture, drafting, surveying and mapping (NOC 225), and technical occupations in physical sciences (NOC 221). There will be a balance or near-balance between job openings and job seekers for the remaining occupations in natural and applied sciences.

When school leavers are limited to occupations related to their chosen field of study (ex ante scenario), the gap between job seekers and job openings widens. The situation is of particular concern for physical and life science professionals (NOC 211 and NOC 212) and technical occupations related to natural and applied sciences (NOC 221 and NOC 222).

This means that a significant number of school leavers specializing in sciences will have to turn to occupations unrelated to their chosen fields of study. According to our estimates for 2008 to 2017, just over 120,000 science graduates will take jobs in occupations outside the natural and applied sciences—for example, in the health sector for biologists and in the primary sector for university and college graduates in agriculture (e.g. agronomists). Moreover, a number of workers with bachelor of science degrees will have to take jobs as technicians, while other graduates in chemistry, forestry and biology will be forced to turn to fields completely unrelated to their specializations and at times requiring much lower skill levels.

Labour market conditions for computer science graduates have changed dramatically since the start of the new millennium and the Y2K bug. At that time, nearly half of workers who became computer and information systems professionals (NOC 217) had only a college diploma. Today, a higher proportion of workers in this occupation have a university degree. Moreover, more and more university graduates in computer science are offering their services in technical occupations in computer and information systems (NOC 228). A number of college graduates in computer science will move into other occupations, such as sales representatives in the wholesale or retail trade (NOC 641 and 642).

Finally, a major difference is observed between the two scenarios for technical occupations in electronics and electrical engineering (NOC 224). Only a third of college graduates in computer science and electronic engineering will find work in this occupation, in contrast to the situation that prevailed before the technology bubble burst in the early 2000s. Many graduates in these two fields will consequently have to find employment in other occupations.

In summary, our projections show excess labour supply (more job seekers than job openings) in occupations in the natural and applied sciences over the medium term. The highest labour surpluses over the next ten years would be among computer and information systems professionals (NOC 217), physical and life science professionals (NOC 211 and NOC 212) and in technical occupations related to natural and applied sciences (NOC 221 and 222).

4.4.3 Health

The health sector accounted for 6.7% of non-student employment in 2007, or just over 1 million workers. This sector includes physicians, dentists and veterinarians (NOC 311), nurses (NOC 315) and technologists and technicians in health services (NOC 321 and NOC 323). Not surprisingly, workers in this sector are concentrated in the health and social services industry.

Job openings

Occupations in health will see about 615,000 job openings over the next ten years. As a share of 2007 employment, this represents a rate of growth higher than the all-occupation average. This high number of job openings will come from both expansion demand and retirements. However, replacement needs will gradually increase, from an average of 40% of job openings between 2003 and 2007, to 47% between 2013 and 2017.

Health sector occupations are expected to have, by far, the highest employment growth (expansion demand) of all occupational groups over the next ten years, with an average annual growth rate of 2.5%. The resulting 280,000 new jobs will account for over 20% of all new jobs whereas, in 2007, occupations in the health sector accounted for only 6.7% of total employment. This solid job gain will derive from higher health care needs associated with an ageing population and higher government spending on health care, made possible by governments' better fiscal positions. While this is the strongest job growth among all skill types, it remains below that observed over the past ten years (2.9%).

In addition to these 280,000 new jobs, some 278,000 job vacancies are projected to occur as a result of retirements. Over the 2008-2017 period, health care occupations will face greater retirement pressures than average due to a combination of an older than average workforce (42 years) and a lower than average median retirement age (60 years). Finally, death and emigration will account for a negligible share of job openings in the health sector. In fact, demand created by the need to replace workers who die or leave the country is expected to increase by only about 50,000 jobs over the next ten years.

Looking more closely at the three-digit occupations, higher than average job openings, as a percentage of 2007 employment, are expected for all occupations in the health sector as the ageing population continues to stimulate employment growth in these occupations. The only exception will be pharmacists, dieticians and nutritionists (NOC 313), for which the proportion of job openings is expected to be average. The larger numbers of pharmacies opened in recent years and, particularly, the introduction of department store pharmacies will dampen job creation in the next decade. Moreover, pharmacists are able to serve a much larger number of people than occupations directly related to the health care system, which provide more "personalized" service. This means that the number of pharmacists required to handle rising demand for health care is lower than the number of physicians or nurses needed.

Among occupations for which demand will be strong, nurses (NOC 315), physicians, dentists and veterinarians (NOC 311), and managers in health services (NOC 031) will have the highest level of job openings, with employment growth and replacement needs far above average. These occupations are the key players in the health care system and will accordingly be the ones to benefit most from reinvestment in health care. In addition, the fact that workers in these occupations are much older than average will cause significant retirement pressure. Job growth will also be high for technologists and technicians in health services (NOC 321), as new health care technologies and procedures as well as the introduction of more sophisticated equipment result in higher demand for workers in these occupations. However, since the average age of workers in these occupations is near the economy-wide average and the retirement age is about average, replacement needs for this occupation will be about average. Finally, there will also be strong employment growth for therapy and assessment professionals (NOC 314), but retirements will be far below average, given that workers are younger and retire somewhat later.

Job seekers (ex post scenario)

The number of job seekers in this occupational group (360,000) is expected to be about average over the next ten years. The vast majority of these job seekers (about 76%) will be emerging from the school system. It is expected that, between 2008 and 2017, the number of job seekers coming from the education system will be slightly below average, possibly as a result of the strict quota systems in many health fields and the extensive length and very high costs of education in these fields. Since several years are needed to educate health care professionals, higher enrolment will not resolve shortages in the short or medium term.

Although more and more immigrants will work in the health sector, they are expected to continue to account for only a minor share of overall job seekers. The immigrant contribution to job seekers in health services should be especially small within occupations requiring high

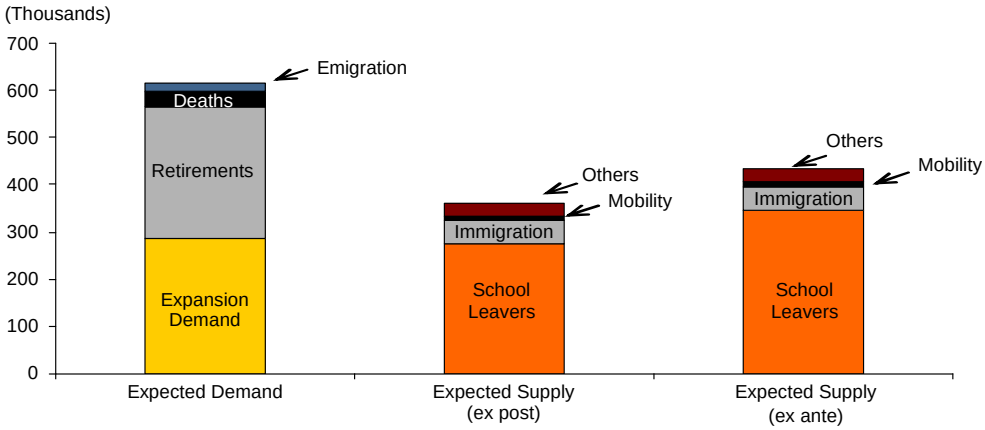
skill levels, such as physicians. The main issue in this regard is the fact that foreign academic credentials are not easily recognized in Canada. Moreover, international competition for health care workers is fierce, with a number of countries facing labour shortages in the health sector.

Mobility and labour market re-entry are expected to continue to be negligible sources of job seekers in the coming years. The fact that these occupations require very specific skills and extensive education limits supply from other skill types and from outside the labour force.

Balance between job openings and job seekers

The 360,000 job seekers looking for work in health occupations will be insufficient to meet the demand stemming from 615,000 job openings over the next ten years. Moreover, the health sector has the lowest unemployment rate of all occupations, at 1.2% in 2007, suggesting that very few potentially qualified persons are unemployed and thus available to fill the excess demand.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Health



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Labour availability issues will be more serious for some occupations. Excess demand over the next ten years will be highest for managers in health and education services (NOC 031), physicians (NOC 311) and nurses (NOC 315). These imbalances will result from strong labour demand combined with weak supply, leaving a substantial gap for these occupations. For instance, the number of job seekers would have to double to meet projected demand for physicians (NOC 311). Excess demand, although to a lesser degree, is also expected for technical occupations in health care (except dental) (NOC 323) and assisting occupations in health services (NOC 341). Occupations for which a supply-demand balance is expected include therapy and assessment professionals (NOC 314), pharmacists, dietitians and nutritionists (NOC 313), and technical occupations in dental health care (NOC 322). The proportion of school leavers in these occupations is higher than average.

When school leavers are limited to occupations related to their chosen field of study (ex ante scenario), the number of job openings continues to far exceed the number of job seekers, though the gap is smaller. The difference between the two scenarios pertains mainly to nurses, suggesting that a significant number of school leavers in the nursing field will not work as nurses despite the excess demand in this occupation.

An analysis of both scenarios reveals that university graduates in nursing will almost all become registered nurses (NOC 315). However, significantly fewer college graduates in nursing, who in the 1990s comprised the bulk of school leavers in the nursing field, will become registered nurses. In fact, compared to what prevailed a few years ago, only half as many college graduates will take up nursing in the coming years. A significant proportion of those graduates will even take up occupations outside the health sector. Several reasons may be advanced to explain this phenomenon, such as higher academic requirements to become registered nurses and difficult working conditions (night shifts, overtime, etc.), which discourage some graduates from entering the occupation. The similarity of the two supply scenarios for other occupations indicates that it is unlikely that the excess demand will be filled by school leavers from different fields of study (which is quite logical, given the qualifications required to work in health care).

In summary, the number of job openings is projected to far exceed the number of job seekers in occupations in the health sector over the medium term. The highest excess demand is projected for managers in health and education services (NOC 031), physicians (NOC 311), and nurses (NOC 315).

4.4.4 Social Science, Education, Government Service and Religion

In 2007, occupations in social science, education, government service and religion were comprised of more than 1.3 million workers, representing 8.6% of the total non-student employment. These occupations include secondary and elementary school teachers and educational counsellors (NOC 414), paralegals, social services workers and occupations in education and religion (NOC 421), policy and program officers, researchers and consultants (NOC 416) as well as psychologists, social workers, counsellors, clergy and probation officers (NOC 415).

Job openings

Over the next ten years, job openings, as a share of 2007 employment, are expected to be above average for this occupational grouping. About 600,000 job openings are expected in this occupational grouping, mainly triggered by the rising need to replace workers.

Employment growth (expansion demand) should represent about 30% of all job openings, totalling 178,000 new jobs over the coming decade. Employment is expected to grow faster than the total economy at an average annual rate of 1.3%. Hence, while these occupations accounted for only 8.6% of employment in 2007, they will represent 12.9% of all new jobs over the coming decade. The majority of employment in these occupations is tied to education,

health care and social assistance or to public administration. As such, the movement towards a more knowledge-based economy and corresponding increase in postsecondary attendance will also add to employment in these occupations. Furthermore, the ageing of the population and associated increases in public expenditures will continue to support employment growth in this occupational grouping, particularly for social service workers.

Retirements will free up about 356,000 jobs, representing 60% of all job openings. The importance of retirements will rise over time, from 43.5% of all job openings in 2007 to about two-thirds in 2017. This occupational grouping will face strong retirement pressures as the workforce is older (average employment age of 41 compared to an economy-wide average of 40) and workers tend to retire earlier (at 60 years old compared to an all-occupation average of 61). Deaths and emigration will contribute the remaining job openings (10% or about 63,000 jobs) in the coming decade.

Looking more closely at the three-digit occupations, all occupations in this grouping will experience a high level of demand over the next ten years. However, the sources of the increase vary across occupations depending on whether they are more closely tied to the education sector, social science or government services.

Increasing university attendance and the ageing of university professors and assistants (NOC 412) will drive up both expansion and replacement demand in this occupation. Meanwhile, as the number of people in younger age cohorts decreases, it is expected that pressures on secondary and elementary school teachers and educational counsellors (NOC 414) and on college and other vocational instructors (NOC 413) will diminish. However, these two occupations are expected to face above-average retirement pressures due to an older workforce typically retiring early.

Expansion demand for psychologists, social workers, counsellors, clergy and probation officers (NOC 415) will rise in tandem with the increased government expenditures in the health care and social assistance sector. Paralegals, social services workers and other occupations in education and religion (NOC 421) will be the only occupation with an average share of job openings compared to the 2007 level, mainly because of a below-average retirement pressures, due to a combination of a younger employment age (38 years old) and a higher median retirement age (62 years old).

Job seekers (ex post scenario)

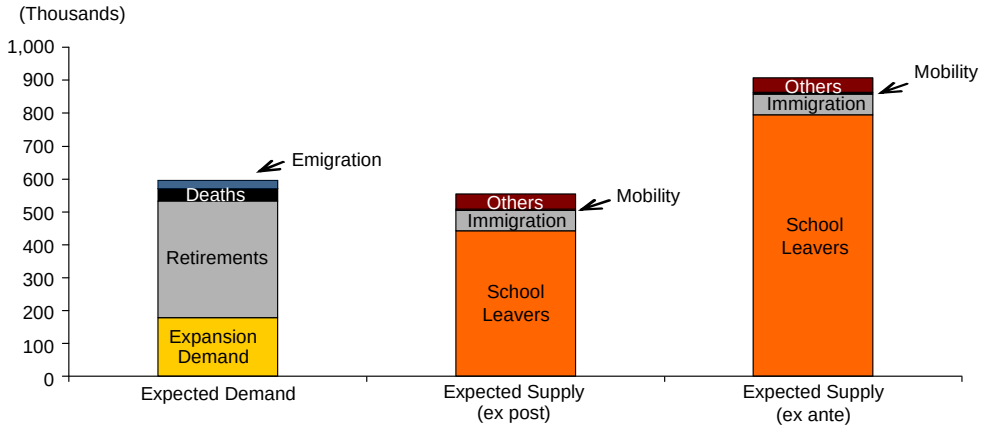
In the coming decade, this occupational grouping is expected to draw in about 556,000 job seekers. School leavers are expected to be the largest source, comprising about 80% of supply, while recent immigrants should represent about 10% of future job seekers. As most of these occupations require specific skills and long-term accumulation of knowledge and experience, mobility contributes a negligible part to the sources of future job seekers.

Balance between job openings and job seekers

Over the next ten years, a slight excess demand is expected in this occupational grouping. The 556,000 job seekers will fall short of the 597,000 job openings. In 2007, the

unemployment rate stood at 2.7%. Although this pool of unemployed workers is small, there should be enough unemployed individuals to fill the small gap between the number of job seekers and job openings.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Social Science, Education, Government Service and Religion



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

All the occupations in this occupational grouping will face an above-average number of job openings as a share of 2007 employment. The number of job seekers is expected to be high enough in all the occupations except for psychologists, social workers, counsellors, clergy and probation officers (NOC 415) and college and other vocational instructors (NOC 413), which should register a slight excess demand.

However, when school leavers are limited to seek work in occupations related to their chosen field of study (the ex ante scenario), the situation changes dramatically with a large excess supply being recorded. This stark difference between scenarios means that several individuals who studied in fields of study related to this occupational grouping end up offering their services in other occupations.

This is the case for secondary and elementary school teachers and educational counsellors (NOC 414). Observations over recent years have shown that there is a balance between the number of job seekers and job openings in this occupation when school leavers are distributed by occupation. However, when all graduates from secondary and primary education programs and some graduates from related fields, such as music, the arts, English or French and geography, are included in this occupation, the resulting supply adds an additional 90,000 school leavers over the next ten years causing excess supply in this occupation. There will obviously be far too many graduates in fields traditionally associated with primary and secondary education, forcing some to find employment in related occupations requiring a lower level of education, such as social services workers and occupations in education (NOC 421) and childcare and home support workers (NOC 647). A number of school leavers in these fields of study might also have to take employment in occupations completely unrelated to their specializations, such as in sales and service occupations.

Other occupations, such as university professors and assistants (NOC 412) and policy and program officers, researchers and consultants (NOC 416), require a certain level of education (university for NOC 416 and doctoral or master's degree for NOC 412) rather than a specific field of study. Consequently, supply is relatively elastic, in that all graduates with the required degree could theoretically work in one of these two occupations. However, most university graduates seek careers other than that of university professor or policy officer (often more closely related to their field of study). This same issue applies to college and other vocational instructors (NOC 413), but these occupations must also contend with the fact that they are open not only to graduates, but also to workers with relevant employment experience. As a result, historically, a significant proportion of college instructors have not held a university degree.

Psychologists, social workers, counsellors, clergy or probation officers (NOC 415) show signs of excess supply when all graduates in fields directly related to the occupations are included in school leavers. However, most graduates with a bachelor's degree in psychology or sociology actually find employment as paralegals or social services workers or in occupations in education and religion (NOC 421). Moreover, 30% of graduates with a degree in social work find employment as social services workers (NOC 421) rather than social workers (NOC 415). There are two explanations for this phenomenon. First, there are too many students in these fields for the demand in related occupations. Second, the occupations of psychologist and sociologist generally require an advanced degree (master's or doctoral degree).

Finally, the number of school leavers among paralegals, social services workers and occupations in education and religion (NOC 421) is also much higher when all graduates in this field are limited to offering their services in these occupations. In fact, this adds nearly 100,000 additional school leavers to the supply of paraprofessional staff. Most of these graduates will have to find employment in other occupations, including occupations requiring much lower skill levels, such as sales and service occupations. The impact on college graduates in social work, education and school counselling will be even greater because of the large number of university graduates in psychology, sociology and social work who will turn to these occupations when they fail to find employment directly in their chosen fields.

In summary, there is a broad balance between projected job seekers and job openings in occupations in social science, education, government services and religion over the medium term. All the occupations in this grouping would face an above-average number of job openings (as a percentage of 2007 employment). However, the number of job seekers is projected to be high enough. This hides the fact that several individuals do not find work in occupations they studied for and end up working in other occupational groupings.

4.4.5 Art, Culture, Recreation and Sport

In 2007, occupations in art, culture, recreation and sport were comprised of more than 464,000 workers, representing 3% of the total non-student employment. The largest occupations in this occupational grouping are writing, translating and public relations professionals (NOC 512), creative designers and craftspersons (NOC 524), creative and performing artists (NOC 513) and athletes, coaches, referees and related occupations (NOC 525).

Job openings

Occupations in art, culture, recreation and sport will see about 170,000 job openings over the next ten years. About 35% of these openings will come from expansion demand, while 65% will be the result of replacement demand.

About 60,000 new jobs will open up as a result of the economic expansion, representing an average annual growth rate of 1.2%. The majority of employment in these occupations is tied to information, culture and tourism, education or to public administration. The above-average employment growth is attributed mostly to the need for design technological products such as those for the web, computer games and other multimedia. Additionally, there are expectations of increasing consumption of art and culture associated with an ageing population, and of sport, with the increased government promotion of sports (e.g. recent tax breaks for the purchase of children's sports equipment).

Retirements are projected to free up 88,600 jobs as older workers leave the labour force. Over the projection period, this occupational grouping will experience a relatively low retirement rate of 1.9% annually, as the workers are younger (38 years old compared to an average of 40) and tend to retire later (at 62 years old compared to an average of 61). Deaths and emigration will create about 21,400 openings, or 13% of new job openings over the coming decade.

Looking more closely at the three-digit occupations, employment growth (expansion demand) is expected to be robust for creative designers and craftspersons (NOC 524), mainly boosted by the emergence of Internet and e-commerce as a new media to commercialize goods and services (Web design and graphics). On the other hand, employment growth will be somewhat lower due to the emergence of advanced technological tools, such as digital devices and online search engines, for professionals in writing, translating and public relations (NOC 512), technical occupations in libraries, archives, museums and art galleries (NOC 521), and photographers, announcers, and other performers (NOC 522 and 523).

Pressures arising from retirement will be different across occupations. Librarians, archivists, conservators and curators (NOC 511) are typically older while other occupations such as photographers, graphic arts technicians and technical and co-ordinating occupations in motion pictures, broadcasting and the performing arts (NOC 522), announcers, and other performers (NOC 523) and athletes, coaches, referees and related occupations (NOC 525) are typically composed of younger workers.

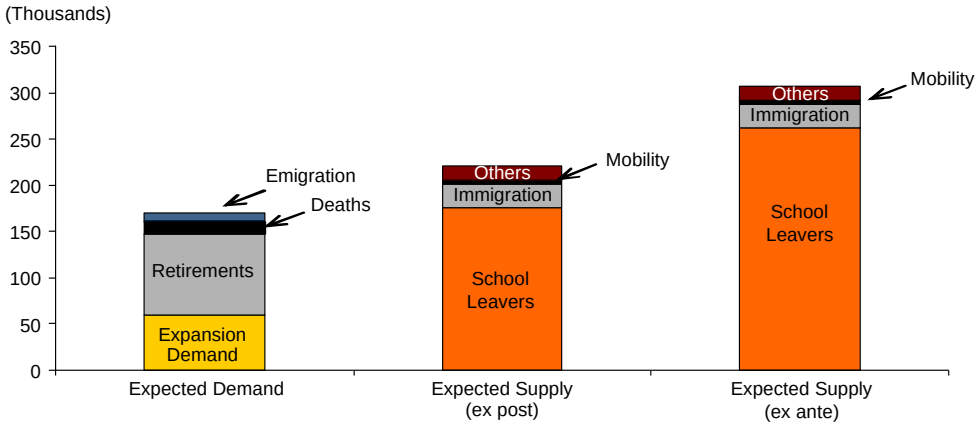
Job seekers (ex post scenario)

The number of job seekers in this occupational group (221,000) is expected to be above average over the next ten years. School leavers will be the largest source, comprising about 80% of the total projected job seekers. Immigration will contribute 11% of job seekers while the remaining 9% will come from other sources, namely mobility and re-entrants.

Balance between job openings and job seekers

Over the next ten years, occupations in art, culture, recreation and sport are expected to face an excess supply of labour with 169,400 job openings compared to 221,100 job seekers. In 2007, the unemployment rate for this occupational grouping was 3.5%.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Art, Culture, Recreation and Sport



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Most of the occupations in this grouping will be characterised by labour surpluses. The occupations with the largest excess supply are those that have below-average job openings (as a percentage of 2007 employment) combined with a large number of job seekers. Among these occupations are photographers, graphic arts technicians and technical and co-ordinating occupations in motion pictures, broadcasting and the performing arts (NOC 522) and announcers, and other performers (NOC 523). Athletes, coaches, referees and related occupations (NOC 525) also face strong supply growth. These occupations currently have high unemployment rates.

When school leavers are limited to providing services within occupations related to their chosen field of study (the ex ante scenario), the magnitude of excess labour supply becomes larger. This means that a large number of graduates end up in occupations not necessarily related to their chosen field of study. The analysis of the two scenarios reveal that a large number of graduates from fields of study related to jobs for creative designers and craftspersons (NOC 524), librarians, archivists, conservators and curators (NOC 511), technical occupations in libraries, archives, museums and art galleries (NOC 521) and writing, translating and public relations professionals (NOC 512) will take jobs in other unrelated occupations. The fields of study in which the graduates are more likely to work in unrelated occupations are: other fine and performing arts; applied arts; mass communication; and creative and design arts. Also, these occupations include many graduates in fields of study that do not correspond to any specific occupations, such as political science, humanities, English and French. Finally, college educated individuals in fields of study related to creative designer and craftspersons (NOC 524) will be particularly affected because of the large number of other university graduates that will seek work in these occupations.

In summary, occupations in art, culture, recreation and sport are projected to face an excess supply of labour (more job seekers than job openings) over the next ten years. Most of the occupations in this grouping will be characterised by labour surpluses.

4.4.6 Sales and Service

Sales and service occupations contained over 4 million workers in 2007, representing 26% of non-student employment. The occupations in this group are held by workers in retail, wholesale, insurance, real estate, travel and accommodation industries. The largest occupations are retail salespersons and sales clerks (NOC 642), cleaners (NOC 666), managers in retail trade (NOC 062) and sales representatives - wholesale trade (NOC 641).

Job openings

Occupations in sales and service will see about 1.2 million job openings over the next ten years. As a share of 2007 employment, this represents a rate of growth similar to the all-occupation average. Replacement demand is expected to constitute just under four-fifths of job openings, leaving just over 20% of job openings as a result of economic expansion.

In the coming decade, this group will see about 260,000 new jobs created (expansion demand), for a below-average annual growth rate of 0.6%. While these occupations comprised 26% of employment in 2007, they will only account for 21% of employment growth over the coming decade. Just above 50% of employment in these occupations is tied to retail trade, accommodation and food services and to other services (such as repair and maintenance; personal and laundry services; religious, grant-making, civic, professional organizations; and private households). The remainder of workers are spread quite broadly across many service industries.

The changing consumption behaviour of an ageing population will slow employment growth as retail trade drops off. This is because seniors tend to consume fewer goods and certain types of services than do younger people. Additionally, the increased use of the Internet (e-commerce) will decrease the need for additional workers. However, with the Vancouver 2010 Olympic Winter Games approaching and increased tourism due to retiring baby boomers, employment in occupations associated with the accommodation and food services industry is expected to face increased demand.

Retirements are expected to free up about 790,000 jobs. With an annual retirement rate of 1.9%, lower than the economy-wide average of 2.2%, this group will make up over 23% of total retirements in the economy. Furthermore, it is projected that some 184,000 jobs will be opened up due to death and emigration over the next ten years. Together, these last two components comprise about 15% of the total job openings in this group.

Looking more closely at the three-digit occupations, only tour and recreational guides and casino occupations (NOC 644) are expected to face above-average demand (as a share of 2007 employment). This occupation will benefit from the 2010 Winter Olympics in Vancouver, resumption in the number of foreigners traveling to Canada, and the rising number of retiring baby-boomers who will have more time to spend on travel and other pursuits. On the other

hand, occupations in travel and accommodation (NOC 643 - such as travel counsellors, pursers and flight attendants; tickets' sales and service agents; and hotel front desk clerks) and other attendants in travel, accommodation and recreation (NOC 667 – such as operators and attendants in amusement, recreation, sport, accommodation and travel), will be affected by technological tools such as Internet-based reservation system and automated check-ins at the airport.

Although expansion demand is expected to be about average in occupation related to the accommodation and food industry, replacement demand will be low as the workforce in these occupations is relatively young. These occupations include chefs and cooks (NOC 624), butchers and bakers (NOC 625), occupations in food and beverage service, (NOC 645 – such as maîtres d'hôtel, hosts/hostesses, bartenders, food and beverage servers), as well as and food counter attendants and kitchen helpers (NOC 664)

In occupations linked to retail and wholesale trade, employment growth will be slower as increased competition from e-commerce and other direct-to-customer operations by manufacturers are expected to impact low-skilled occupations such as sales representatives, wholesale trade (NOC 641), retail salespersons and sales clerks (NOC 642), cashiers (NOC 661) and other sales and related occupations (NOC 662 – such as service station attendants, grocery clerks, store shelf stockers, and other elemental sales occupations). This will be compounded by the fact that these occupations tend to have a younger workforce and accordingly a low replacement demand.

Finance, insurance, real estate and leasing is expected to grow at a slower pace, partially due to the slowdown in the real estate market. Employment growth in insurance and real estate sales occupations and buyers (NOC 623) will be about average.

Two occupations are expected to face strong replacement demand due to the older workforce in these occupations: cleaners (NOC 666) and childcare and home support workers (NOC 647). The strong need to replace workers will offset the slow expansion demand in these occupations. Demand for childcare and home support workers (NOC 647) is expected to be adversely affected by the decrease in the youths population.

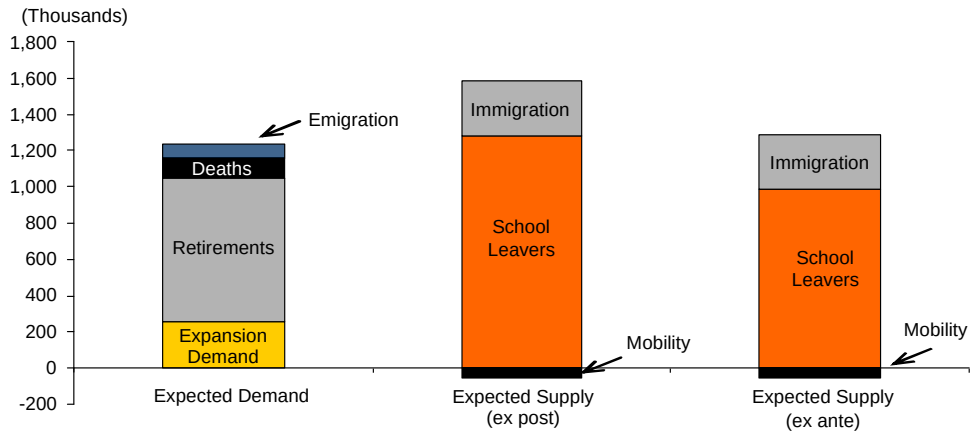
Job seekers (ex post scenario)

One and a half million job seekers will look for work in sales and service occupations over the next ten years. School leavers will be the largest source of job seekers, providing about 84% of supply (1.28 million) while immigration will account for the remainder (297,500). Seventy percent of immigrants will be looking for work in low-skilled occupations such as cleaners (NOC 666), food counter attendants, kitchen helpers or related occupations (NOC 664) and retail salespersons and sales clerks (NOC 642). The mobility of workers out of this occupational grouping will cause a decline of about 3% in job seekers. Workers in the sales and service group are among the most mobile due to low skill requirements (and hence ease of entry) in several of these occupations. Hence, a significant number of people are expected to move from low-skilled occupations within this skill type into management occupations after accumulating experience. Managers in retail trade (NOC 062) and managers in food service and accommodation (NOC 063) are the major recipients of this mobility.

Balance between job openings and job seekers

The sales and service occupational grouping is expected to face a significant excess supply in the coming decade. There will be over 1.5 million job seekers available to fill the 1.2 million job openings. In 2007, the unemployment rate was 4.4%, slightly higher than the average for all groups, indicating an additional source for job seekers.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Sales and Services



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Most occupations in sales and service will experience an excess supply of labour in the coming decade. The only occupation expected to face a high level of job openings, tour and recreational guides and casino occupations (NOC 644), is expected to have enough job seekers over the next ten years. Occupations with the largest excess supply include those related to the accommodation and food industries such as chefs and cooks (NOC 624), occupations in food and beverage services, (NOC 645 – such as maîtres d'hôtel, hosts/hostesses, bartenders, food and beverage servers) and food counter attendants, kitchen helpers or related occupations (NOC 664) as well as two occupations in retail and wholesale trade, retail salespersons and sales clerks (NOC 642) and cashiers (NOC 661).

When school leavers are limited to providing labour services within occupations related to their chosen field of study (the ex ante scenario), the magnitude of excess labour supply becomes smaller. This means that a significant number of school leavers from fields of study not linked to sales and service occupations will take these jobs owing to its low barriers for entry. Only two occupations, butchers and bakers (NOC 625) and police officers and firefighters (NOC 626) will see school leavers in fields of study related to these occupations moving into other occupations.

In summary, sales and service occupations are projected to face an excess supply of labour over the next ten years. Most of the occupations in this grouping would be characterised by the number job seekers exceeding the number of job openings.

4.4.7 Trades, Transport and Equipment Operators

The trades, transport and equipment operators group accounted for 17% of non-student employment in 2007, or slightly fewer than 2.7 million workers. This occupational group is primarily comprised of trades and occupations related to the construction and transport industries. Included are construction contractors (NOC 721), construction trades (NOC 724 to NOC 729), machinery and transportation equipment operators (NOC 731), and motor vehicle and transit drivers (NOC 741).

Job openings

Trades, transport and equipment operators and related occupations will see about 850,000 job openings over the next ten years. As a share of 2007 employment, this represents a rate of growth slightly below the all-occupation average.

Approximately 545,000 positions will be freed up as a result of retirements. The need to replace retiring workers should account for nearly two-thirds of job openings. Despite this component's importance in terms of job openings, the retirement rate for the trades, transport and equipment operators group will be about average, at 2.1%; while workers in these occupations are slightly older than average, the retirement age is also slightly above average. New job creation in this occupational group is expected to be relatively lower than the average over the next ten years, with annual growth of 0.7% (compared with 0.9% for all occupations combined), for a total of some 184,000 new jobs. The weak employment growth in the short term will be the result of an economic slowdown which will negatively affect the transport industry and some manufacturing industries. In the medium term, a slowdown in construction, particularly residential construction as a result of lower demographic growth and an ageing population, will slow job creation in the trades. Finally, death and emigration will account for a relatively small proportion of future job openings in this group, increasing demand by about 120,000 workers over the next ten years.

Looking more closely at the three-digit occupations, job openings (as a share of 2007 employment) for contractors and supervisors of trades and related workers (NOC 721), electrical trades and telecommunication occupations (NOC 724), and managers in construction and transportation (NOC 071) are expected to be far above average over the next ten years. These occupations will benefit from major investment in non-residential construction, particularly projects in the energy sector. Moreover, there will be significant worker replacement needs as many workers retire. These pressures will derive from the fact that construction and transport managers and contractors and trade supervisors are much older than average. Moreover, electricians and power line workers tend to retire far earlier than other workers. Finally, despite a weak employment growth, there should be a relatively high number of job openings for upholsterers, tailors, shoe repairers and jewellers (NOC 734) and for supervisors of transportation occupations (NOC 722) owing to increasing retirements, as the average age of workers in these two occupations is far higher than among workers generally.

Conversely, the occupations that are expected to have the smallest proportion of job openings are other transport equipment operators and related workers, which include water transport deck crew, railway track maintenance workers and air transport ramp attendants (NOC 743),

automotive service technicians (NOC 732), and labourers (NOC 761). The number of job openings for other transport equipment operators will be affected mainly by job losses stemming from a slowdown in the U.S. economy. Automotive service technicians will be affected by slower automotive sales and a very low retirement rate (since workers are younger than average and retire later than average). Labourers in the construction trades will be the first and hardest hit by the slowdown in residential construction. They are also much younger than average (33 years), which means that their retirement rate is very low. The number of job openings is also expected to be low for manufacturing sector occupations, such as machinists (NOC 723) and metal forming, shaping and erecting trades (NOC 726), primarily as a result of the decline of the manufacturing sector in Canada.

Job seekers (ex post scenario)

The number of job seekers in this occupational group (800,000) is expected to be significantly below average over the next ten years.

Most of the new workers (about 81%) will be emerging from the school system. In fact, nearly 650,000 school leavers will seek jobs in one of these occupations over the next ten years. The immigrant contribution to job seekers in these occupations should be about average, with 130,000 new foreign workers expected to offer their services between 2008 and 2017. Mobility and labour market re-entry will remain a negligible source of job seekers. The fact that some experience and trade papers are needed for several of the occupations in this sector limits job seekers from other skill types or from outside the labour force.

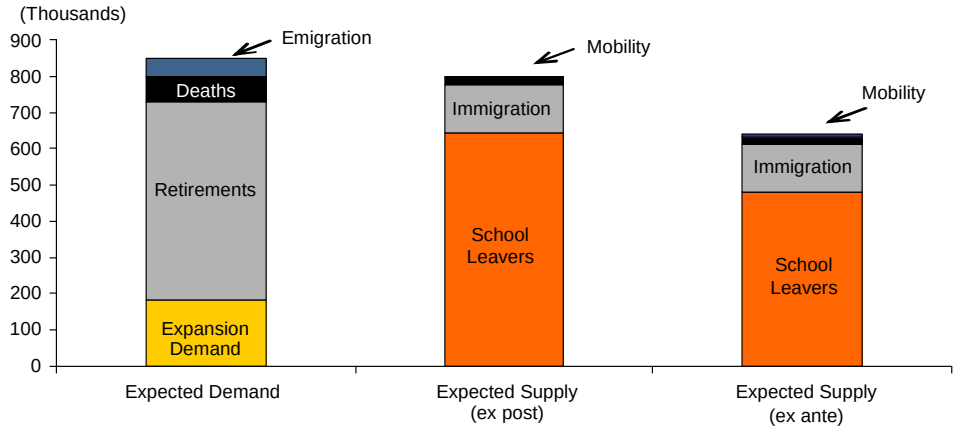
Balance between job openings and job seekers

The number of job openings and job seekers for this occupational group can be considered in balance over the next ten years despite the existence of a small gap. There will be almost 850,000 job openings over the 2008-2017 period and 800,000 job seekers available to fill them. In 2007, the unemployment rate for this sector was above average, at 5.6%, with more than 150,000 unemployed workers, which is enough to absorb the excess demand of 50,000 workers over ten years.

The situation for various three-digit occupations within the group differs, however. For instance, a combination of strong demand and low supply will lead to excess demand for contractors and supervisors of trades (NOC 721) and supervisors of railway and motor transportation occupations (NOC 722). Moreover, the small number of school leavers and immigrants who will seek employment as heavy equipment operators (NOC 742) will cause demand to exceed supply in this occupation. Conversely, there will be excess supply for the metal forming, shaping and erecting trades (NOC 726), automotive service technicians (NOC 732), other installers, repairers and servicers (NOC 744), and trades helpers and labourers (NOC 761) as a result of very low demand for workers in these occupations combined with average or above-average number of job seekers. There should be a near-balance between supply and demand for all the remaining occupations.

When school leavers are limited to occupations related to their chosen field of study (ex ante scenario), the result is significant excess labour demand. The difference between the two supply scenarios relates mainly to construction trades occupations and motor vehicle and transit drivers (NOC 741), the latter comprising mostly truck drivers. This means that a large proportion of the job seekers for these occupations comes from school leavers whose fields of study or levels of education are different from those required for these occupations.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Trades, Transport and Equipment Operators



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

This flow of school leavers from other fields into the construction trades is due in large part to the good labour market conditions for both residential and non-residential construction in recent years. In fact, numerous school leavers whose fields of study or levels of education are different from those generally required to work in the trades have been attracted to these occupations by the strong labour demand.

With regard to motor vehicle and transit driver occupations, the large proportion of school leavers with different skill levels from those required for the occupation is due in part to the fact that no specialization is required to become a truck driver other than the proper class of driver's licence. Thus, the lack of school leavers in fields directly related to the occupation (generally secondary school leavers) is made up for by school leavers from other levels, primarily college.

In summary, supply and demand in the medium term can be considered in broad balance for this occupational group despite the existence of a slight gap. Three occupations appear to show signs of excess demand over the next ten years: contractors and supervisors of trades (NOC 721), supervisors of railway and motor transportation occupations (NOC 722), and heavy equipment operators (NOC 742).

4.4.8 Primary Sector

The primary sector accounted for 3.6% of non-student employment in 2007, or just over 560,000 workers. This sector comprises mainly occupations related to agriculture, logging and forestry, and mining, oil and gas.

Job openings

Occupations in the primary sector will see a mere 178,000 job openings over the next ten years. Demand will be fuelled primarily by retirements, which will account for an average of 58% of job openings in this sector over the next ten years. Some 103,000 workers will retire between 2008 and 2017, for a retirement rate of 1.8%, which is below the all-occupation average. The primary sector is somewhat unique, however, in that workers are on average older than workers in other occupations, but retire later. Moreover, there are significant disparities between retirement rates among different occupations in the primary sector because many of the higher skilled occupations are held by older workers.

In addition to the 103,000 positions that will be freed up by retiring workers, some 31,000 new jobs will be created as a result of employment growth (expansion demand). This demand component will be one of the weakest among the different major occupational groups over the next ten years. While employment for all occupations combined will grow at an average rate of 0.9% per year, growth in the primary sector will only average 0.5% annually. Employment growth is expected to be very limited in some sectors (such as forestry and agriculture) and relatively high in others (especially oil and gas).

Replacement needs as a result of deaths will be more significant in primary sector occupations, than in other occupational groups. The death rate among the occupations is expected to be twice as high as in other occupations, resulting in 33,000 job openings. This high rate can be explained by the fact that workers in the primary sector are significantly older. The role played by emigration in future job openings in the primary sector will be negligible. In fact, demand to replace workers who leave the country will increase by only about 11,000 jobs over the next ten years.

Looking more closely at the three-digit occupations, major disparities exist across the various occupations. For instance, the number of job openings will be high for supervisors in mining, oil and gas (NOC 822) and for underground miners and oil and gas drillers (NOC 823) as a result of good prospects for the mining and oil and gas sector and a higher than average death rate. The number of job openings for other occupations usually requiring college education, such as contractors and supervisors in agriculture (NOC 825) and occupations in logging and forestry (NOC 821 and NOC 824), will be average despite meagre growth in their respective industries, as a result of high replacement needs (workers in these occupations are older than average). Finally, the number of job openings is expected to be lower than average for lower skilled occupations (NOC 84 and NOC 86) as a result of smaller replacement needs and slow employment growth.

Job seekers (ex post scenario)

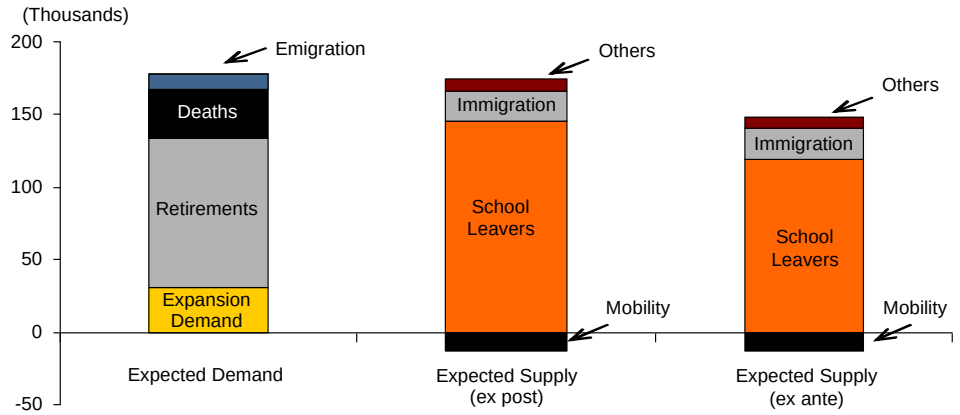
Job seekers (as a share of 2007 employment) in the primary sector are expected to be below the all occupation average in 2008-2017 totalling 161,000. The vast majority (about 90%) will be coming from the school system. The primary sector is the sector with the highest proportion of school leavers relative to total number of job seekers. From 2008 to 2017, some 145,000 school leavers and 21,000 immigrants will join the ranks of the job seekers. The immigrant contribution to job seekers in the primary sector occupations will be below average. Occupations generally requiring college education (NOC 82) will attract very few immigrants, while occupations not requiring any postsecondary education (NOC 84 and NOC 86, such as farm workers) will attract a slightly higher than average proportion of immigrants, possibly because such occupations do not require specialized skills or high education level.

However, it is expected that some workers in primary sector occupations will leave to take jobs in other occupations. Occupations with low skill levels, such as labourers, seem most affected by this phenomenon. Although some of those labourers will move to other primary sector occupations requiring higher skill levels, most will leave the primary sector completely.

Balance between job openings and job seekers

A balance is expected between labour supply and demand in the primary sector over the next ten years. There should be some 178,000 job openings in 2008-2017, with about 161,000 job seekers available to fill the demand. However, in 2007, the unemployment rate in this sector was 7.3%, a rate far above the all-occupation average. The pool of unemployed workers should be more than sufficient to absorb the small excess demand.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Primary Sector



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

While there will be a balance for this skill type at the aggregate level, there will be varying degrees of supply and demand imbalances in specific occupations. For instance, there will be excess demand for primary sector occupations generally requiring a college education (NOC 82), primarily due to a combination of numerous job openings and few job seekers. The

sources of these openings, however, will differ depending on the occupation. The strongest impetus for demand for supervisors in mining, oil and gas (NOC 822) and for underground miners and oil and gas drillers (NOC 823) is expected to be new job creation (expansion demand) as a result of strong growth in the mining and oil and gas industry. That number of job openings will far outweigh the number of job seekers for these occupations.

As for other occupations usually requiring college education, such as contractors and operators in agriculture (NOC 825), supervisors and occupations in logging and forestry (NOC 821 and NOC 824), and fishing vessel masters (NOC 826), demand will be very near average only because of the need to fill vacancies resulting from retirements and a relatively high number of deaths. However, since these occupations are in sectors considered to be in decline, the number of job seekers is expected to be very low. In fact, because of the poor public perception of these occupations, few school leavers have chosen to enter these occupations in recent years causing the supply projections to be significantly below-average (potentially underestimated).

Conversely, the number of job seekers for occupations not requiring any postsecondary education (NOC 84 and NOC 86) will exceed the low demand for such occupations. Logging and forestry workers (NOC 842), agriculture and horticulture workers (NOC 843) and labourers (NOC 861) will be particularly affected.

When school leavers are limited to occupations related to their chosen field of study (ex ante scenario), a slight excess demand results. This means that a number of school leavers in fields of study other than those related to this sector will seek work in primary sector occupations. This situation is significant for primary production labourers (NOC 861), an occupation where historically workers with diverse fields of study have offered their services as farm labourers while waiting to find employment more in line with their skill levels.

In summary, it is projected that there will be a broad balance between job seekers and job openings in the primary sector in the medium term. The projections point to excess demand conditions for two occupations over the next ten years: supervisors in mining, oil and gas (NOC 822) and underground miners and oil and gas drillers (NOC 823).

4.4.9 Processing, Manufacturing and Utilities

The processing, manufacturing and utilities sector accounted for about 6.7% of non-student employment in 2007, or just over 1 million workers. The sector comprises all occupations directly related to manufacturing industries (with the exception of engineers and machinists), such as supervisors of processing occupations (NOC 921), machine operators in metal products processing, chemical processing, and pulp and paper production (NOC 941 to NOC 943), and labourers (NOC 961).

Job openings

Occupations in processing, manufacturing and utilities sector will see about 272,000 job openings over the next ten years. As a share of 2007 employment, this represents a rate of growth lower than the all-occupation average. The main reason for the relatively low demand is

a decline in employment over the next few years in several manufacturing sectors owing to, among other things, the weak U.S. economy and intensified global competition.

Limited job losses are expected within this occupational group over the coming decade (about 10,000 fewer jobs, for an annual growth rate of -0.1%). This group will be the only occupational group with negative expansion demand over the 2008 to 2017 period. Job losses will be concentrated over the short term in response to the slowdown in the U.S. economy. The manufacturing sector should regain some strength over the medium term once the U.S. economy begins to recover.

Job openings will accordingly be fuelled almost exclusively by job vacancies resulting from retirements. In fact, 87% of job openings, or some 237,000 jobs, should stem from the need to replace retiring workers. The retirement rate in this sector is very close to the average rate for all occupations combined. Workers are slightly older than average, but tend to retire at the average age. Finally, death and emigration will account for 16% of future job openings or some 43,000 jobs over the next ten years.

Looking more closely at the three-digit occupations, it is expected that the number of job openings for low-skilled occupations, as a percentage of 2007 employment, will be below average. The lowest growth in demand will be for machining and metalworking machine operators and machine operators in textile processing (NOC 951 and NOC 944) and for labourers (NOC 961). The reason for the limited demand in these occupations will be the ongoing job losses in the automotive sector and in the apparel and textile industries. Machine operators in metal and mineral products processing (NOC 941), machine operators in pulp and paper production and wood processing (NOC 943), and other assemblers (NOC 949) will also have to contend with the difficulties in the manufacturing sector. These occupations are prevalent in export-oriented industries, such as furniture, wood products and pulp and paper. Conversely, job openings for occupations requiring higher skill levels, in particular supervisors in processing operations (NOC 921) and in assembly and fabrication (NOC 922), should be about average, although demand will be fuelled solely by replacement needs as a result of retirements. Workers in occupations usually requiring postsecondary education are older than average and also tend to retire sooner then average.

Job seekers (ex post scenario)

The number of job seekers in this occupational group (329,000) is expected to be significantly below average over the next ten years.

Some 230,000 school leavers are expected to seek work in these occupations (about 70% of all job seekers). This is the lowest relative proportion among skill types.

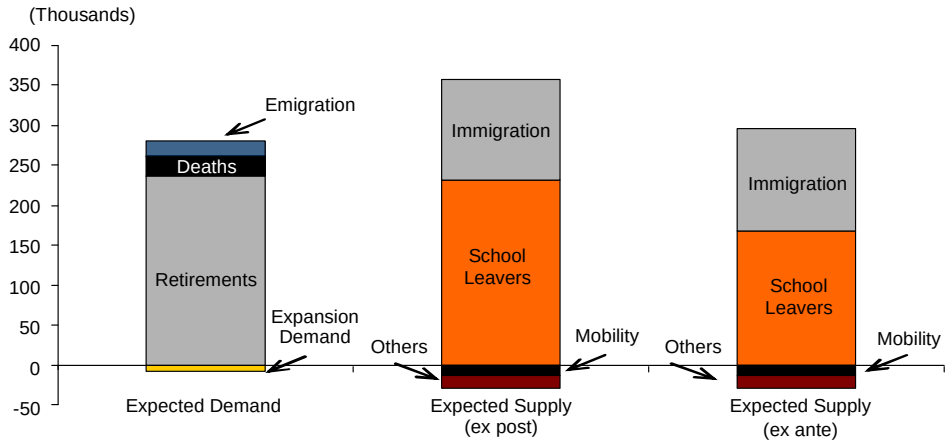
The contribution made by immigrants to job seekers will be especially high, particularly for occupations not usually requiring a college education. In fact, over 127,000 immigrants are expected to seek work in occupations within this skill type. Immigrant job seekers are especially high for labourers (NOC 961), mechanical, electrical and electronics assemblers (NOC 948), and machine operators in fabric products manufacturing (NOC 945). However, only 3% of immigrants are expected to enter occupations usually requiring a college education

(such occupations account for about 15% of employment in this skill type) because of the usual requisite of significant experience in the Canadian manufacturing sector.

Balance between job openings and job seekers

An excess supply is expected in the processing, manufacturing and utilities occupational group over the next ten years, with job openings totalling 272,000 jobs, and some 329,000 job seekers willing to fill those openings. In 2007, the unemployment rate was 7.1%.

Distribution of Job Seekers and Job Openings by Source, 2008-2017
Processing, Manufacturing and Utilities



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

There will be a labour surplus or a supply-demand balance for all occupations requiring a low level of specialization, such as labourers (NOC 961) and processing and manufacturing machine operators (NOC 942 to NOC 947). The largest degree of excess labour supply over the next ten years will be for machining and metalworking machine operators (NOC 951) and other assemblers (NOC 949), which are found mainly in sectors in difficulty, such as the automotive industry, wood products and furniture manufacturing. The imbalances will stem from a combination of low demand and relatively high supply. Conversely, specialized jobs, especially as supervisors of processing occupations (NOC 921), will be in excess demand. Although there are signs of excess demand for assembly and fabrication supervisors (NOC 922), supply could easily come from workers in occupations such as machining, metalworking, woodworking and related machine operators (NOC 951), other assemblers (NOC 949), and machine operators in textile processing (NOC 944), for which there will be a large excess supply.

When school leavers are allocated into occupations consistent with their chosen field of study (ex ante scenario) a balance between job openings and job seekers is expected. The difference between the two scenarios relates primarily to labourers (NOC 961), assemblers (NOC 949), machining, metalworking and woodworking machine operators (NOC 951), and machine operators in chemical, plastic and rubber processing (NOC 942). This difference means that these occupations attract large numbers of workers whose education is unrelated to the

manufacturing sector. The fact that no specific training is required to work in these occupations enables school leavers who fail to find work in their chosen field of study or those attracted by the good employment conditions in manufacturing to seek work in these occupations.

In summary, excess labour supply is projected in the processing, manufacturing and utilities occupational group over the next ten years. Only supervisors in processing industries (NOC 921) appear to show signs of excess demand in the coming decade.

4.5 Occupations Facing Shortage or Surplus Conditions

In this chapter, we will identify the occupations that are projected to face labour shortage or labour surplus conditions. Before identifying these occupations, it is important to provide a few cautionary statements.

First of all, the quantitative evaluation of the imbalance between job openings and job seekers by occupation over the next ten years is based on a set of assumptions. The purpose of the outlook by occupation is not to predict imbalances with as small a margin of error as possible, but rather to provide an indication of the possible size of imbalances if the projection trends hold true. For example, imbalances in some occupational sectors of the labour market may actually diminish and disappear over the medium term as firms, workers and future new entrants to the labour market respond to market signals (e.g. higher earnings in occupations facing excess demand) or to information about prospective imbalances. For example, young people may decide to enrol in fields of study that lead to occupations where the projection indicates excess demand or job holders may decide to move into occupations where demand is stronger. Firms may decide to use more machinery and equipment and less labour if the relative price of labour increases. Over time, such adjustments may contribute to lessening labour market pressures in occupations currently in an imbalance situation. These potential adjustments are not considered in our outlook. Instead, the purpose of the outlook is to measure the extent of the imbalances, as well as any necessary adjustments.

The identification of occupations showing signs of labour shortage or surplus in the medium term is also based on an evaluation of recent imbalances. In fact, an occupation for which the number of job openings slightly exceeds the number of job seekers over the next ten years will not be on the list of occupations facing shortage conditions if the situation in recent years shows a balance, or even excess supply. Since there is no specific and reliable data to identify supply and demand over the historical period and therefore to quantify the current imbalance in supply and demand by occupation,[44] a methodology involving labour market indicators is used.

Furthermore, in a diversified economy such as Canada's, with different regions having quite different industrial mixes and demographics, a national-level assessment of pressures in occupational labour markets could easily mask major differences across regions. Some parts of the country may be facing a labour shortfall in an occupation while other regions may have excess supply in that same occupation.

[44] Some elements of excess supply, such as unemployment, can be observed but the absence of reliable vacancy information makes it impossible to accurately quantify excess demand by occupation.

Lastly, it is also important to remember that the analysis is based on aggregate data. For example, although our projections do not show shortage conditions for all university professors, given the projected increase in the total number of people completing their doctorate degree, there may be a shortage for professors working in particular fields.

Several occupations have shown clear signs of shortage in recent years…

The identification of occupations showing signs of shortage is done in two stages.

First, we assess whether the occupations have shown signs of shortage in recent years with the help of labour market indicators. An occupation is considered to be in a shortage situation when employment and wages in that occupation are increasing substantially faster than in other occupations and when its unemployment rate is markedly lower than in previous years or relative to other occupations. This analysis is carried out for all three- and four-digit NOC occupations, using data from the Labour Force Survey for the last three years (2005 to 2007).

- More particularly, and using the U.S. Bureau of Labor Statistics (BLS) methodology,[45] an occupation is considered to be in a shortage situation if it meets the following three conditions: its employment growth rate is at least 50% faster than the average for all occupations, wage increases are at least 30% faster than average and the unemployment rate is at least 30% below average.[46]
- Since BLS criteria tend to limit the number of occupations showing indications of excess demand, we are also including occupations that meet two of the three aforementioned conditions and whose unemployment rates are close to their lowest historical levels (even if their unemployment rates were not 30% below the average). This was done to take into account the fact that similar unemployment rates do not necessarily indicate a similar tightening of the job market in each of those occupations. For example, an unemployment rate of 5% is high for nurses but low for occupations in construction.

Then, we identify occupations where the number of job openings due to expansion and replacement demand should greatly exceed the number of job seekers over the next ten years. The Table in Annex E presents the results for each three-digit NOC occupation (140 occupations).

An occupation is considered to be in a shortage situation if i) it has shown signs of shortage in recent years as well as an excess demand (job openings exceeding job seekers) over the next ten years or if ii) job openings substantially exceed job seekers over the next ten years even if this occupation has not shown signs of shortage in recent years. The size of the imbalance must also be significant compared with the size of the occupation.

[45] See Veneri, Carolyn M., "Can occupational labor shortages be identified using available data?", *Monthly Labor Review*, Vol. 122, March 1999.

[46] The BLS indicates that this somewhat arbitrary set of criteria was established to eliminate any occupation that could be considered a borderline case. That is how the BLS tends to eliminate occupations where wages cannot increase because of institutional constraints – e.g. a fixed compensation structure within an organization.

The following table lists the three- and four-digit NOC occupations[47] (with at least 10,000 workers) showing signs of shortage. These occupations represented 9.3% of total employment in 2007.

Occupational Group	Occupations Showing Signs of Shortages	Non-student Employment 2007 (000s)
Business, finance and administration	Legislators and senior management (NOC 001)	83.2
	Human resources managers (NOC 0112)	30.8
	Human resources and business service professionals (NOC 112)	154.2
Natural and applied sciences and related occupations	Managers in engineering, architecture, science and information systems (NOC 021)	69.5
	Inspectors in public and environmental health and occupational health and safety (NOC 2263)	22.7
Health	Managers in health care (NOC 0311)	23.7
	Physicians, dentists and veterinarians (NOC 311)	97.8
	Optometrists, chiropractors and other health diagnosing and treating professionals (NOC 312)	14.8
	Pharmacists (NOC 3131)	25.0
	Therapy and assessment professionals (NOC 314) such as Physiotherapists and Occupational therapists	48.9
	Nurse supervisors and registered nurses (NOC 315)	262.1
	Medical radiation technologists (NOC 3215)	18.0
	Technical occupations in dental health care (NOC 322)	31.2
	Other technical occupations in health care (except dental) (NOC 323), such as Registered nursing assistants and Ambulance attendants	122.9
Social science, education, government service and religion	Managers in public administration (NOC 041)	29.5
Trades, transport and equipment operators and related occupations	Facility operation and maintenance managers (NOC 072)	38.6
	Contractors and supervisors, trades and related workers (NOC 721) such as in Electrical trades and in Mechanic trades	217.9
	Industrial electricians (NOC 7242)	28.3
	Heavy-duty equipment mechanics (NOC 7312)	53.8
Occupations specific to primary industry	Supervisors, mining, oil and gas (NOC 822)	26.7
	Underground miners, oil and gas drillers and related workers (NOC 823)	42.7
	Total	**1,442.3**

[47] To derive which four-digit NOC occupations are showing signs of shortages, the projection of job openings and job seekers for its corresponding three-digit occupation is used, as projections are not produced for four-digit NOC occupations.

It is important to highlight two points. First, the list only includes occupations usually requiring postsecondary education or management occupations. Secondly, data on unemployment and wages from recent years suggest that all occupations on this list are already in a shortage situation. What our projection indicates is that these shortage conditions will continue over the next ten years.

Not surprisingly, a large number of occupations showing signs of shortage at the national level are found in the health sector. Pressures are particularly acute for physicians, pharmacists, nursing sciences professionals and health care directors. Other health occupations are also showing signs of shortage, such as therapy and assessment professionals, and medical radiation technologists. Growth in demand for those occupations has been strong, due to the rising needs associated with population aging and increases in government funding for health care. On the other hand, supply growth in many of these occupations has been relatively weak. In some areas, the lack of supply may reflect the effects of earlier deficit control decisions (including accelerated retirements) and foreign-credential recognition issues, limiting supply from immigration.

Management occupations (e.g. senior management, human resources managers and public service directors) are considered in shortage largely as a result of the demand associated with the high levels of retirement among workers who are usually at a more advanced stage in their career. For those occupations, supply comes mainly from career advancement (vertical mobility) – since school leavers and recent immigrants do not have enough experience in the Canadian labour market to fill these positions. Furthermore, employers are placing greater emphasis on recruiting and retaining quality employees to handle increasingly complex jobs in our economy, resulting in an excess demand for human resources professionals.

High energy prices, the associated boom in the number of wells drilled and the intensification of Alberta oil sands development have boosted employment in occupations related to oil and gas drilling and services. Pressures should persist for supervisors of oil and gas drilling and service and for oil and gas well drillers and servicers.

Lastly, strong growth in construction over the past several years and the continued strong performance in non-residential construction should favour occupations such as industrial electricians, heavy equipment mechanics, as well as contractors and supervisors in trades. Other occupations in residential construction have recently experienced shortages, but the projected slowdown should return these occupations to a more balanced situation.

The extent of shortages in some occupations is quite large. To meet the projected demand in these occupations, it is not simply a 10% or 20% increase in supply from school leavers and recent immigrants that is required. In some cases, it will be necessary to double or even triple the number of new workers arriving in these occupations each year. For several of these occupations, the educational system will unlikely be able to increase the supply of new graduates quickly enough.

…while other occupations, mostly lower-skilled, have been showing signs of excess supply

The following table presents the occupations showing signs of excess supply. To be on this list, an occupation must have shown signs of surplus in recent years, as well as excess supply (job seekers exceeding job openings) over the next ten years. This category includes occupations with an employment growth rate at least 50% slower than the average, wage increases at least 30% lower than the average and unemployment rates at least 30% above average. We are including occupations that meet two of the three conditions and with unemployment rates at historically high levels. As the following table shows, most of these occupations require a low skill level.

Occupational Group	Occupations Showing Signs of Surplus	Non-student Employment 2007 (000s)
Sales and services	Service station attendants (NOC 6621)	10.2
Primary sector	Logging machinery operators (NOC 8241)	9.5
	Fishing vessel skippers and fishermen/women (NOC 8262)	17.2
	Nursery and greenhouse workers (NOC 8432)	16.0
Occupations unique to processing, manufacturing and utilities	Rubber processing machine operators (NOC 9423)	8.5
	Machine operators and related workers in pulp and paper production and wood processing (NOC 943) such as Sawmill machine operators and Lumber graders	48.3
	Sewing machine operators (NOC 9451)	34.7
	Fish plant workers (NOC 9463)	5.2
	Mechanical, electrical and electronics assemblers (NOC 948) such as Motor vehicle assemblers, inspectors and testers and Mechanical assemblers and testers	43.2
	Other wood products assemblers and inspectors (NOC 9493)	14.2
	Machining, metalworking, woodworking and related machine operators (NOC 951)	115.4
	Labourers in processing, manufacturing and utilities (NOC 961)	185.1
	Total	**507.5**

There are various reasons that could explain the difficulties facing some of these occupations:

- The manufacturing sector has been hurt by the volatility of the Canadian dollar and intensified international competition, especially from Asian countries. Several occupations related to processing, manufacturing and assembly are affected, especially in the textile, wood, pulp and paper sectors and the automobile industry.
- Harvest quotas slow employment growth for fishing vessel skippers and fishermen/women.
- Lastly, the difficulties experienced in the forestry industry have a negative impact on some occupations in this sector.

These difficulties should continue in several industries, thereby negatively affecting employment growth in low-skilled occupations. Furthermore, several low-skilled occupations will face a modest replacement demand because their workers are younger than average.

5. Concluding Remarks

Although the Canadian economy has slowed recently, it is expected that about 5.5 million new non-student jobs will open up over the 2008-17 period, as a result of increasing economic activity creating new jobs and the far-greater need to replace workers in existing jobs. In total, replacement demand will account for over three-quarters of job openings. About two-thirds of all these job openings over the next ten years will be in occupations usually requiring postsecondary education or be in management occupations (the latter often, but not always, require postsecondary education). The projections suggest that growth in the labour force will not fall short of job creation by broad skill level over the medium term.

However, the projections show that several occupations could face shortage conditions over the medium term, often because of the large number of workers who will retire. The extent of the shortages in some occupations could be quite large. In some of the projected shortage occupations, very substantial increases in new supply, unlikely to materialize easily, would be needed to fully meet the projected demand. For instance, several occupations in the health sector are currently facing large excess demand, a situation that is expected to continue over the next decade.

A potential source is new supply from school leavers (those permanently leaving the Canadian school system, whether as high school drop outs, high school graduates or college and university graduates) or through immigration. The issue is whether this new supply has the right skills set and level of qualifications (educational level, field of study etc.). Another issue is the capacity of the school system to ramp up supply quickly enough to meet demand over the projection period. For immigrants, the problem is compounded with issues of credential and experience recognition.

On the other hand, excess supply conditions are projected in the medium term in occupations (mainly low-skilled) specific to the primary sector (such as in fishing and forestry) and in several manufacturing industries. Workers in these industries do not necessarily have the required skills set to instantaneously fill the job openings in shortage occupations.

The simultaneous existence of occupations where there are jobs without workers and occupations with workers without jobs suggests that there is a challenge for matching school leavers and worker skills to the needs of the job market. While matching can never be perfect due to the inherent uncertainties of job market prospects, it can be improved with better labour market information on projected shortages and surpluses by occupation, greater responsiveness of the postsecondary education system to the evolving skill needs of the labour market and by re-training workers to help re-allocate labour from occupations that will face surplus conditions towards occupations that will face shortage pressures.

Appendix

Notes on Projections: Methodology and Detailed Results

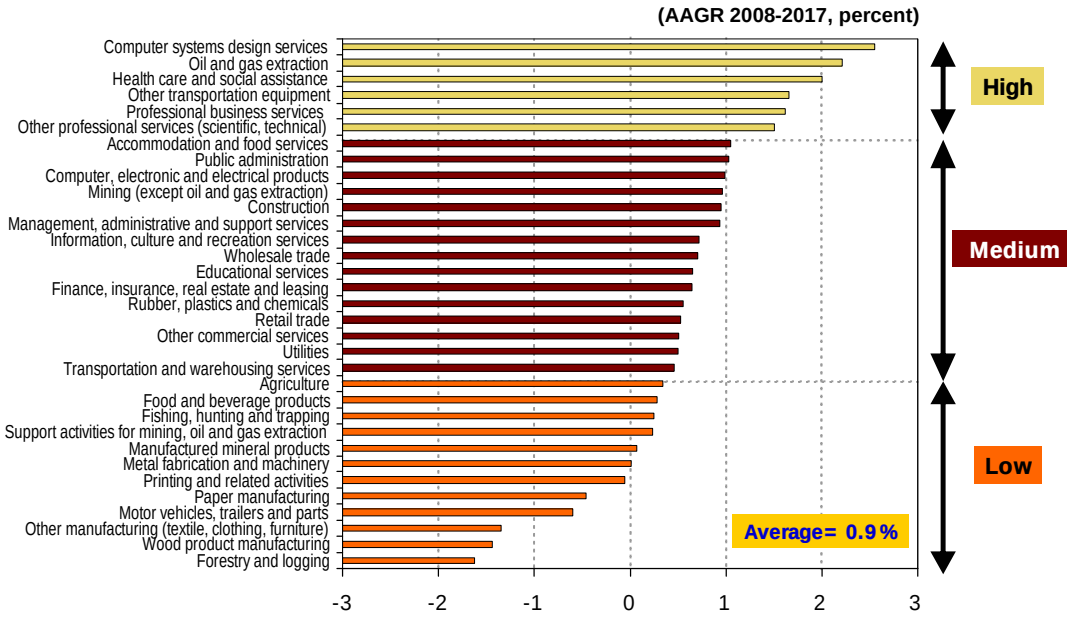
A - GDP and Employment Projections by Industry

The industrial scenario used in this projection was developed in cooperation with the Conference Board of Canada (CBoC) in the spring of 2008. First, GDP by industry is projected based on the outlook for final demand categories of spending in the CBoC macroeconomic model (Medium-Term Forecasting Model). Second, labour productivity by industry is estimated based on a projection of its historical trend over the last twenty years (obtained using a Hodrick-Prescott filter). The employment projection by industry is then derived based on the projected GDP and labour productivity by industry.

Results

The following graph presents the average annual employment growth outlook for each of the 33 industries over the next ten years.

10-Year Employment Growth Outlook for the 33 COPS Industries



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

AAGR: Average Annual Growth Rate.

The industries expected to post the strongest growth in employment are mainly those related to high technology (computer systems design and other transportation equipment, such as aerospace), petroleum resources, health care, and professional services. The strength of these

industries is largely attributable to the ongoing transition toward a knowledge based economy and the rise in R&D investments, to the substantial growth in world demand for energy and raw materials, as well as to the increase in public spending for health care.

The industries that should experience average growth are mostly those related to the domestic-oriented sector, i.e. oriented toward the internal market, such as construction, commercial services, public administration, educational services and utilities. The mining industry is also expected to post average growth in employment, along with the computer, electronic and electrical products, and rubber, plastics and chemicals manufacturing industries.

Finally, the industries that should experience the weakest growth in employment are mainly part of the manufacturing and primary sectors, excluding oil and gas extraction and mining. In addition to being hard hit by the economic slowdown in the short term, many of these industries will have to become more productive over the long term in order to face increased global competition, which will affect employment growth.

The following table presents GDP, employment and productivity growth for the previous and next decades. It also provides a projection of job openings over the next ten years stemming from expansion demand and retirements.

Gross Domestic Product (GDP), Employment and Productivity Growth and Job Openings by Industry

	Average Annual Growth (%) 1998-2007			Average Annual Growth (%) 2008-2017			Job Openings (in thousands) 2008-2017		
	GDP	Empl.*	Prod.**	GDP	Empl.	Prod.	ED***	Ret.****	Total
All Industries	**3.3**	**2.1**	**1.1**	**2.5**	**0.9**	**1.6**	**1,503.7**	**3,402.3**	**4,906.0**
Goods-Producing Sector	2.4	1.2	1.3	2.2	0.3	1.9	131.5	803.0	934.5
Agriculture	2.0	-2.1	4.2	2.2	0.3	1.8	11.8	64.8	76.6
Forestry and Logging	0.5	-3.0	3.6	-2.1	-1.6	-0.4	-9.2	13.2	4.0
Fishing, Hunting, Trapping	1.3	-2.3	3.7	1.0	0.2	0.7	0.6	3.5	4.1
Mining (except Oil and Gas)	2.3	-1.7	4.0	3.0	0.9	2.0	6.5	12.8	19.3
Oil and Gas Extraction	1.6	3.9	-2.2	3.1	2.2	0.8	20.2	18.2	38.4
Support Activities for Mining/Oil/Gas	2.2	7.6	-5.1	1.0	0.2	0.7	2.5	15.8	18.3
Construction	5.5	4.6	0.8	1.5	1.0	0.6	112.8	225.0	337.8
Utilities	0.7	1.8	1.1	2.8	0.5	2.2	7.4	31.4	38.8
Food and Beverage Products	1.4	1.4	-0.1	1.9	0.3	1.6	8.8	58.6	67.4
Wood Product Manufacturing	2.2	0.5	1.7	-0.1	-1.4	1.3	-19.7	27.3	7.6
Paper Manufacturing	-0.5	-2.8	2.4	0.9	-0.5	1.4	-3.9	18.6	14.71
Printing and Related Activities	0.7	-0.1	0.8	0.6	0.0	0.6	-0.5	19.1	18.6
Manufactured Mineral Products	2.9	-1.6	4.6	2.9	0.1	2.8	1.2	33.5	34.7
Rubber, Plastics and Chemicals	2.9	1.0	1.8	3.2	0.6	2.6	13.3	48.2	61.5
Metal Fabrication and Machinery	3.2	1.8	1.3	3.1	0.0	3.1	0.6	59.4	60.0
Computer, Electronic and Electrical Products	1.1	-0.1	1.2	4.1	1.0	3.1	15.8	32.0	47.8
Motor Vehicles, Trailers and Parts	2.1	0.7	1.4	1.7	-0.6	2.3	-11.5	39.7	28.2
Other Transportation Equipment	2.6	-0.7	3.4	3.6	1.6	1.9	13.5	17.8	31.3
Other Manufacturing	0.7	-1.0	1.7	1.7	-1.3	3.1	-38.5	64.2	25.7

Gross Domestic Product (GDP), Employment and Productivity Growth and Job Openings by Industry *(continued)*

	Average Annual Growth (%) 1998-2007			Average Annual Growth (%) 2008-2017			Job Openings (in thousands) 2008-2017		
	GDP	Empl.*	Prod.**	GDP	Empl.	Prod.	ED***	Ret.****	Total
Service-Producing Sector	**3.6**	**2.4**	**1.2**	**2.6**	**1.0**	**1.6**	**1,372.2**	**2,599.3**	**3,971.5**
Wholesale Trade	5.2	3.3	1.8	2.6	0.7	1.8	46.5	124.4	170.9
Retail Trade	5.1	2.2	2.8	2.6	0.5	2.1	115.0	329.0	444.0
Transportation and Warehousing Services	2.7	1.7	1.0	2.0	0.5	1.6	38.5	185.5	224.0
Finance, Insurance, Real Estate and Leasing	3.6	2.1	1.5	2.5	0.6	1.8	70.4	238.8	309.2
Professional Business Services	2.7	3.3	-0.6	2.9	1.6	1.3	98.8	116.7	215.5
Computer Systems Design Services	12.1	5.5	6.3	4.8	2.6	2.2	75.6	33.4	109.0
Other Professional Services	6.0	3.6	2.3	3.4	1.5	1.9	52.0	69.7	121.7
Management, Administrative and Other Support Services	6.1	4.7	1.3	2.6	1.0	1.7	69.7	144.1	213.8
Information, Culture and Recreation Services	4.8	2.6	2.1	2.6	0.8	1.8	63.4	137.0	200.4
Accommodation and Food Services	2.5	2.1	0.4	2.8	1.1	1.6	125.1	127.9	253.0
Other Commercial Services	3.8	0.6	3.2	2.2	0.5	1.7	39.0	151.5	190.5
Educational Services	1.7	2.6	-0.9	2.0	0.7	1.3	80.2	308.4	388.6
Health Care and Social Assistance	2.3	2.9	-0.6	3.3	2.0	1.3	404.3	429.2	833.5
Public Administration	2.3	0.8	1.4	2.4	1.0	1.3	93.7	203.8	297.5

Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

* Empl.: Employment
** Prod.: Productivity
*** ED: Expansion Demand
**** Ret.: Retirements

Detailed Industrial Analysis[48]

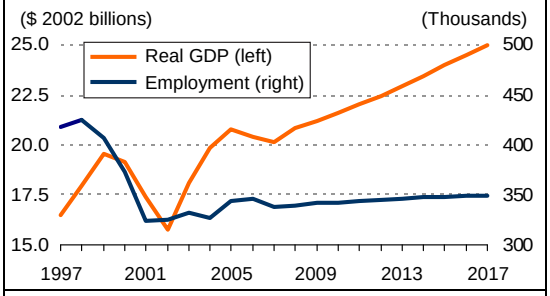
Agriculture

The agriculture sector is composed of two industries. The first industry, crop production, is primarily engaged in growing crops, such as oilseeds and grains, fruits and vegetables, plants and vines in establishments such as farms, orchards, groves, greenhouses and nurseries (excluding those engaged in forestry operations). The second industry, animal production, is primarily engaged in raising cattle, hog and poultry animals in ranches, farms and feedlots for generating meat, egg and dairy products. The two industries have the same importance in terms of revenues (about $18 billion each), but animal production accounts for a greater share of the sector employment (56%) because its production is less capital intensive. The agriculture workforce is characterized by the largest concentration of self-employed, accounting for 62% of the workers in this sector. While most of crop production is concentrated in Saskatchewan (34% of the farm income), Ontario (23%) and Alberta (19%), half of crop employment is concentrated in Ontario and Quebec since the production of fruits and vegetables is more labour intensive than grain production. In comparison, animal production (and employment) is

[48] For each industry, the first paragraph provides some key statistics which are based on the most recent annual figures available (i.e. 2007 or 2006).

relatively balanced between Ontario (25%), Alberta (24%) and Quebec (22%). The crop industry is highly export-oriented, with 71% of its revenues coming from sales on international markets, primarily in the United States (42%) and Japan (19%). In contrast, the animal production industry is domestic-oriented, as 82% of its revenues are generated from sales within the country.

Real GDP and Employment
Agriculture



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The agriculture sector went through very difficult times early in the decade primarily because of persistent weak world prices for agriculture products and the severe droughts in Western Canada. Real GDP of the sector fell continuously from 2000 to 2002, recording a cumulative drop of 20%. All the decrease was attributed to the crop industry, where output fell by near 40% during that three-year period. This decrease in production was accompanied by a reduction in total employment of 83,500 with half of the losses in the crop industry. The sector rebounded very strongly from 2003 to 2005, in spite of the mad cow disease and the embargo on Canadian cattle exports,[49] recording an average annual growth rate of almost 10% in production and creating a total of 21,300 new jobs during that period. However, in 2006 and 2007, output contracted and labour market conditions deteriorated. Real GDP fell slightly in both years partly due to dryer and warmer-than-normal growing conditions and a total of 3,800 jobs were lost. Overall, however, agriculture (with construction) has been one the strongest growing sector of the Canadian economy in the past five years with an average increase of 5.0% in real GDP, about twice the average of the entire economy. During that period, the sector was largely supported by higher demand for agricultural products from developing countries and emerging economies as well as substantial increases in world agriculture prices fuelled by the growing global demand for biofuels. The animal production industry should also benefit from an increased export market as meat products from Canadian cattle born after 1999 are allowed across the United States since November 2007.

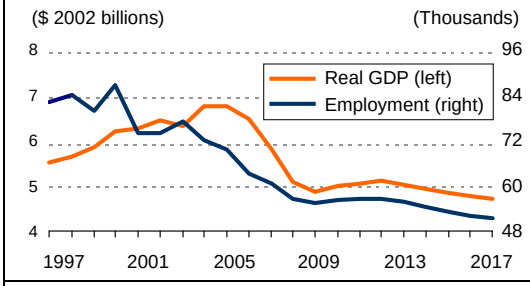
Over the longer term, the performance of the agriculture sector will most likely be influenced by changes in demand from emerging markets and world demand for biofuels. Climate change, however, represents a downside risk, as it could increase the volatility of agriculture output. For the full 2008-2017 period, real GDP growth is expected to average 2.2% per year, just above the 2.0% recorded in the previous decade. Employment growth is projected to be very modest at 0.3% annually, which represents however a significant improvement from the 2.1% annual decrease of the last ten years. While global competition will continue to force farmers to produce more with less labour, productivity is expected to increase at a slower pace over the projection period, as marginal gains from consolidation and industrialization will gradually weaken.

[49] In current dollars, cattle exports fell by 67% in 2003 from an all-time high of $1.8 billion in 2002.

Forestry and Logging

This sector comprises establishments primarily engaged in logging, timber tract operations, forest nurseries and related support activities such as transportation, reforestation, pest control and firefighting services. Logging is the most important industry of the sector, accounting for two thirds of employment. Forestry activities are strongly concentrated in British Columbia (40% of employment) and Quebec (27%). While exports account for only 4% of total revenues, the sector strongly relies on sales from the wood products and pulp and paper manufacturing industries which export about 60% of their production, mainly on the U.S. market. The sector is therefore indirectly export-oriented via its downstream industries.

Real GDP and Employment
Forestry and Logging



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The sector (and its downstream industries) has faced several challenges in the past decade, including the softwood lumber dispute with the United States which came to an end with the Agreement of 2006; the collapse in North American demand for newsprint; the intensification of foreign competition in the North American market, particularly from low-cost countries in South America and Asia; and the resulting downward pressure on prices as global harvest has shifted from foraging natural forest to a tree cropping mode of wood production, especially in subtropical regions where massive areas of forest plantation have been established. More recently, the rise in energy costs to all-time highs, the substantial appreciation of the Canadian dollar to around parity with the U.S. dollar, and the fallout of the U.S. housing market have amplified the challenges faced by the sector and will most likely continue to affect production and employment over the short-term horizon. As a result, real GDP decreased by 14% from its peak of 2004, while employment fell continuously since 2000, down by 30%. The declining trends in output and employment are expected to persist in 2008 and 2009. Numerous consolidations and realignments that took place in the sector in recent years will likely continue over the short term.

The longer-term outlook does not look more promising, as real GDP is projected to decline at an average annual rate of 0.5% from 2010 to 2017. Even after the U.S. housing market recovers, the sector will face supply- and demand-side issues. It is estimated that the current mountain pine beetle epidemic in British Columbia will have destroyed 80% of the lodge pole pine by 2013, the province's most commercially valuable timber. Although logging was increased in 2004 to maximize the recovery of the affected wood, the supply of affected pine that remains usable for conventional forest product manufacturing will end in 10 to 15 years. Supply pressures will follow and the effect will be felt for decades. In addition, environmental concerns and Native land claims will limit the availability of the resource. So will the reduction in cutting rights in several Canadian regions, including Quebec. On the demand side, slower demographic growth and population ageing will result in a deceleration of household formation rates. This will dampen the outlook for housing starts in North America, leading to weaker demand for lumber and wood products. Struggles in the pulp and paper industry will also

inhibit growth in the forestry sector. On a more positive note, the sector will receive some benefits from booming demand in China which has become the largest consumer of wood products in the world, as well as the largest importer of wood and wood fibre. The longer-term outlook for employment is just as grim as the outlook for output, with average annual decline of 1.0% between 2010 and 2017, and most of the decline occurring in the second half of the period.

Over the full 2008-2017 horizon, real GDP is projected to contract by 2.1% annually, after a modest growth of 0.5% per year in the previous decade. Employment will continue to fall but at a slower annual rate of 1.6%, compared to an average decrease of 3.0% in the last ten years.

Fishing, Hunting and Trapping

This sector comprises establishments primarily engaged in harvesting fish and other wild animals from their natural habitats. It is composed of commercial inland and salt water fishing, as well as commercial hunting and trapping, including the exploitation and management of game preserves. Fishing is by far the predominant economic activity, accounting for almost all of the sector's production and employment. The fishing industry is concentrated in Newfoundland and Labrador (33% of the sector employment), Nova Scotia (26%) and British Columbia (11%). The sector is highly exposed to changes in world demand and the value of the Canadian dollar, as about 80% of its production is shipped to international markets, largely to the United States which accounts for two-thirds of all exports. The workforce is also characterized by the highest unemployment rate across the economy, averaging 21.5% in the last five years.

Real GDP and Employment
Fishing, Hunting and Trapping

Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

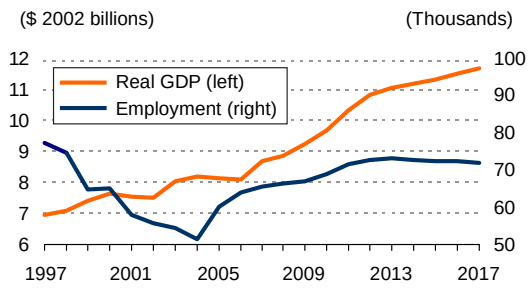
Years of struggle in the sector and newer technologies requiring fewer labour led to mitigated growth in production and a sharp decline of 20% in employment since 2000. The key challenge of the sector is associated with fish supply constraints due to the various quotas and moratorium imposed on the different species. The reason for those restrictions is that overfishing and environmental factors led to important decreases of several fish stocks, mainly groundfish. There is still uncertainty to how long it will take before the groundfish stocks go back to an acceptable level, but as long as they remain low, it will be difficult for the firms within the sector to expand. On the other hand, many shellfish species such as lobsters, shrimps and crabs have seen their numbers increase significantly in the last couple of years and will help support production and employment, at least over the short term. Following a surge in real GDP growth of 7.0% in 2007, the sector is projected to expand marginally in 2008 and 2009. The good news is that rising food prices will pull up the price of fish products, allowing the sector to improve its profit margin.

For the overall 2008-2017 period, real GDP is projected to increase at an annual rate of 1.0% – slightly down from the previous ten-year average of 1.3% - as fisheries on the east and west coasts will continue to face supply constraints. In addition, because consumer demand for fish products is increasingly satisfied by the aquaculture industry, which is part of the agriculture sector, job creation in the fishing industry is projected to be modest, averaging 0.2% per year, after an annual decline of 2.3% in the last ten years.

Mining

This sector comprises establishments primarily engaged in mining, beneficiating or otherwise preparing metallic and non-metallic minerals, including coal. Mining activities are largely concentrated in Ontario (28% of employment), Quebec (22%) and British Columbia (16%). The sector exports between 50% and 60% of its production and the most important international markets are the United States (27% of all exports), the United Kingdom (20%) and Japan (11%). Exports to China have tripled over the past ten years, particularly in metal ores, fuelled by the huge increase in industrial production in this country.

Real GDP and Employment
Mining



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The mining sector has recorded a substantial decrease in employment from the end of the world commodity boom of the late 1980s to 2004. Employment fell by 54% from an all-time high of 113,300 in 1989 to 51,700 in 2004. This change could be partly explained by the huge increase in investment in productivity-enhancing capital goods during that period. More recently, the sector also faced several challenges, including complying with environmental and regulatory requirements, such as tighter global environmental restrictions on new mine development, increases in operating expenses and exploration expenditures, and seeking new capital resources or more cost-effective mines to remain productive. Despite these challenges, the mining sector had its best production performance on record in 2007 with an increase in real GDP of 7.3%, owing to higher world demand, particularly from emerging countries such as China. With stronger world demand and production, employment grew by 1,400 in 2007 following a total gain of 12,400 in the previous two years.

The longer-term outlook for the mining sector looks promising. Several new metal mines are opening and Canada is expected to become the third-largest diamond producer in the world, with three major projects in Northwest Territories (Snap Lake and Gahcho Kué) and Northern Ontario (Victor). The increase in world demand for fertilizer is also promising for the production of potash in Saskatchewan and New Brunswick. As a result, annual growth in mining production is projected to average 3.0% from 2010 to 2017, with stronger growth coming in the first half of the period. Employment growth is projected to average 0.9% annually during the same period but the rate of change in the later half of the period is expected to be negative, as the rapid aging of the workforce, combined with the lack of graduates in

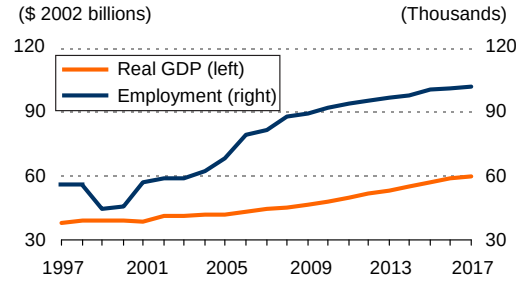
mining fields such as mining engineering and geology, are likely to put pressure on recruiting and retaining employees.[50]

For the overall 2008-2017 period, real GDP growth is projected to strengthen from the previous decade, up from 2.3% to 3.0% per year, while employment is projected to rebound at an annual rate of 0.9% after an average decline of 1.7% in the last ten years.

Oil and Gas Extraction

The oil and gas extraction sector comprises establishments primarily engaged in operating oil and gas field properties, such as exploration for crude petroleum and natural gas, drilling, completing and equipping wells, and other related activities in the preparation of oil and gas. It includes both the production from wells using normal pumping techniques and the production from surface shale or tar sands using non conventional techniques. While Alberta has always been the dominant oil producer in the country, its share has declined significantly in the past ten years (from 75% to 67%) because of the huge increase in production from Newfoundland and Labrador brought by the developments of Hibernia, Terra Nova and White Rose offshore oil fields. Alberta is also the most important producer of natural gas with 77% of the national output, followed by British Columbia (16%) and Nova Scotia (2.5%). Similar to the manufacturing activities (which are largely taking place in Ontario and Quebec), oil and gas activities are also concentrated in two provinces as Alberta and Newfoundland and Labrador account for 86% and 10% of all workers, respectively. For these two provinces, the sector accounts for about one third of their nominal GDP, between 25 and 30 percentage points more than in any other provinces.[51]

Real GDP and Employment
Oil and Gas Extraction



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The sector has been booming for several years now due to higher global demand and soaring prices for energy products. Substantial investments to upgrade existing projects and to develop new projects, particularly in the oil sands, contributed to an increase in labour demand in recent years. Employment increased at an average annual rate of 8.4% in the past four years to stand at an all-time high of 81,000 in 2007. Most of the increase in total employment (22,300) came from Alberta (20,000), likely reflecting the fact that these investments were largely related to oil sands projects. Real GDP, however, has increased at a much slower pace of 1.6% per year since 2003 as non-conventional production is slower to come online and because of the declining production of conventional oil due to the maturity of the basin. However, in the future, non-conventional share of total production will increase to become a dominant form of production. A few challenges faced by the sector in the past few years include Alberta Government's introduction of a new royalty regime, the elimination of the accelerated capital cost allowance,

[50] The Mining Association of Canada, Facts and Figures 2008: A Report on the State of the Canadian Mining Industry.
[51] Based on 2004 data (last data point available).

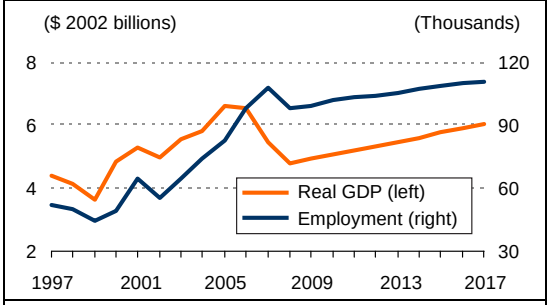
ever-increasing costs in capital, material and labour components, and steady decline in conventional production, especially the depletion of the Western Canadian Sedimentary Basin. Furthermore, government's climate change initiatives pose another challenge for oil sands production. Despite these challenges, the oil and gas extraction sector is projected to enjoy a solid performance over the short term due to elevated oil demand and prices.

In the longer term, as investments in the Alberta oil sands start to payoff and developments of the offshore oil fields in Newfoundland and Labrador take place, output is projected to grow at a faster pace. Over the full 2008-2017 horizon, real GDP growth is projected to be almost two times faster than the previous decade, up by 3.1 % annually. In contrast, employment growth is projected to slow from 3.9% to 2.2% per year, as ongoing technological improvements in extracting oil from the oil sands will likely result in positive, although modest, productivity growth and less demand for labour.

Support Activities for Mining and Oil and Gas Extraction

This sector comprises establishments primarily engaged in providing support services, on a contract or fee basis, required for the mining and quarrying of minerals and for the extraction of oil and gas, such as drilling activities. It also includes establishments engaged in the exploration for minerals, other than oil and gas, such as taking ore samples and making geological observations at prospective sites. Support activities for mining and oil and gas extraction are largely concentrated in Alberta (66% of workers), while Saskatchewan (10%), British Columbia (8%) and Ontario (6%) are distant followers.

Real GDP and Employment
Support Activities for Mining, Oil and Gas Extraction



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The performance of the sector is closely related to capital spending in the mining and oil and gas sectors, particularly in the latter industry as it is about four to five times larger. The investment boom in the energy sector since the late 1990s, and more recently in mining,[52] led to a burst in support activities, such as drilling, excavating, building and pumping wells for oil and gas field operations, allowing the sector to record a strong performance in terms of output and employment. Following a 5.4% decline in 2002, real GDP of the sector grew at a very strong pace from 2003 to 2006, recording an average annual growth of 7.0% and a total of 42,000 new jobs. In 2007, however, output fell by 16.2%, primary due to a substantial decrease in capital spending, particularly related to drilling activity in the conventional oil and gas industry, with the gradual depletion of reserves in the Western Canada Sedimentary Basin.

[52] Based on Statistics Canada's survey on private and public investment in Canada, capital expenditures in the mining sector increased to an all-time high of $6.4 billion in 2007.

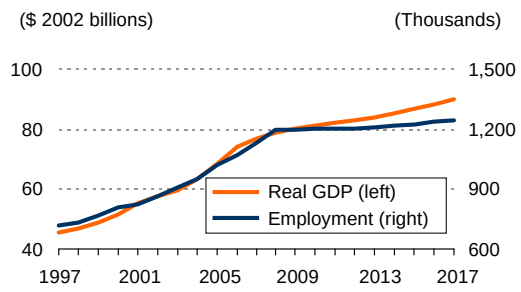
Over the short term, the sector will have to face a number of challenges, including increased labour, material and transportation costs, as well as Alberta government's new royalty regime coming into effect in 2009, which also has the potential to constrain growth. Output in the sector is projected to contract further in 2008. Similarly, after several years of impressive growth, employment is projected to fall in 2008, followed by a modest rebound in 2009.

For the overall 2008-2017 period, growth in output and employment is projected to slow significantly from the previous decade, partly because of the depletion of the conventional oil reserves.[53] Real GDP is projected to increase by 1.0% annually, down from an average rate of 2.2% in the last ten years. Employment growth is projected to slow even more severely, down from 7.6% to 0.2%, due to a slight rebound anticipated in productivity growth after several years of negative growth.

Construction

The construction sector comprises establishments primarily engaged in constructing, repairing and renovating buildings and engineering works, and in subdividing and developing land. It is composed of three industries: construction of building (residential, commercial and industrial); heavy and civil engineering construction (such as highways, bridges and dams); and specialty trade contractors (such as masonry, painting and electrical work). While one third of the workforce is self-employed, the specialty trade contractors industry is the largest employer, accounting for 64% of all workers in the sector, followed by the construction of building (25%) and heavy and civil engineering construction (11%). The sector is domestic-oriented and its expansion is particularly sensitive to business cycles, financial conditions and demographic trends.

Real GDP and Employment
Construction



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Construction has been an important driver of growth of national output and employment in this decade. Production increased at an annual average rate of 5.8% since 2000, while employment increased by 367,100. This impressive growth was propelled by new housing construction and major renovation projects and, more recently, by the substantial increase in capital spending in non residential structures, largely in the energy sector and particularly for the development of the oil sands in Alberta. However, production growth is projected to slow in 2008 and 2009, primarily reflecting weaker investment in residential and non-residential construction.

In the longer term, the construction sector will face lower housing requirements due to slower demographic growth and an ageing population. As a result, real GDP is projected to expand by 1.5% annually over the 2008-2017 period, substantially down from an average rate of 5.5% in the past ten years. Growth will be supported by non residential investment, particularly in the

[53] In its 2008 Canadian crude oil forecast and market outlook, the Canadian Association of Petroleum Producers forecasts conventional oil production to fall by about 25% between 2007 and 2017.

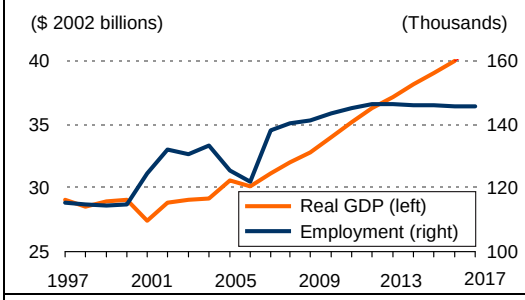
energy sector as growing energy needs have prompted the undertaking of numerous projects across the country. In Quebec, a large number of hydroelectric projects are set to take place over the projection period, while Ontario is planning to refurbish nuclear reactors, develop new natural gas-fired generating plants and generate power from wind. Alberta will also contribute significantly to construction investment, as some $37 billion will be invested in pipeline extensions between now and 2015 to meet export demand for mineral fuels. Nevertheless, as a result of much weaker growth in output and relatively stable growth in productivity, employment in the construction sector is projected to increase at an average rate of 1.0% per year from 2008 to 2017, down from 4.6% in the last ten years.

Utilities

This sector comprises establishments primarily engaged in operating electric, gas and water utilities. These establishments generate, transmit, control and distribute electric power; distribute natural gas; treat and distribute water; operate sewer systems and sewage treatment facilities. The electric power generation, transmission and distribution industry is by far the most important industry within the sector, accounting for 85% of total production and 75% of all workers. The utility sector is concentrated in Ontario (42% of employment), Quebec (23%) and Alberta (14%). Historically, the evolution of the sector has been largely dependent on growth in industrial production as well as population growth and changes in household formation.

The performance of the utility sector has been somewhat sluggish and quite volatile over the last few years, primarily reflecting the difficulties of the manufacturing sector. The expected slowdown in industrial production will continue to affect the performance of the utilities sector over the short term.

Real GDP and Employment
Utilities



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Future growth prospects will be stimulated by the increasing energy demand in both Canada and the United States and the ageing of some existing facilities in the energy sector and in municipal services (water services and sewage treatment). Furthermore, the sector should continue to benefit from the fact that most Canadian provinces have deregulated their electricity markets and are now able to export a greater amount of electricity to satisfy the rising demand in the United States. As a result, real GDP growth is projected to strengthen for the overall 2008-2017 period, recording an average annual rate of 2.8%. However, because this is a capital-intensive sector, new technologies are expected to improve productivity growth, limiting job creation to only 0.5% per year.

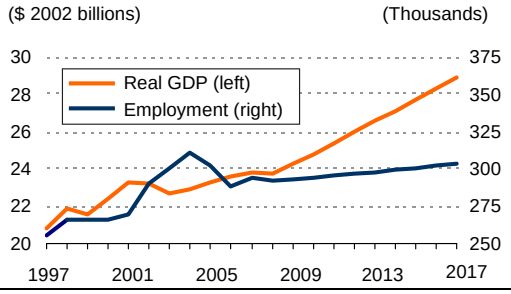
Food and Beverage Products

This sector comprises establishments primarily engaged in manufacturing food as well as beverage and tobacco products. With more than 295,000 workers, largely concentrated in

Ontario (39%) and Quebec (26%), it is the second largest manufacturing employer. Food manufacturing is the main industry, with 88% of the sector employment. Most of the sector's production (77%) is for domestic consumption and the share of production that is exported to foreign markets has not increased despite rising food demand from developing countries. However, intensifying import competition in the Canadian market has been an important development in this decade, particularly for the beverage and tobacco industry.

Following the difficult years of 2002 and 2003, the production performance of the food and beverage sector improved in the last four years, with all the gains coming from the food industry as the beverage and tobacco industry continued to struggle, partly affected by increased import penetration. After peaking in 2004, employment in the sector declined sharply in subsequent years, reflecting important adjustments to improve productivity and competitiveness in the sector.

Real GDP and Employment
Food and Beverage Products



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Over the short term, increased competition from foreign producers will remain one of the key challenges the sector will face, in addition to elevated energy and grain input costs which are reducing cost-competitiveness on domestic and export markets. After a slight recovery in 2007, employment should remain relatively stable over the next ten years, suggesting that restructuring has been mostly completed. An additional challenge that the food and beverage sector will have to face over the long term is the projected slowing growth in domestic demand emanating from a slower rate of increase in population. However, the sector will benefit from the strong growth of the emerging economies, such as China and India. The rising middle class in these countries is boosting world demand for food and Canada will benefit from this surge.

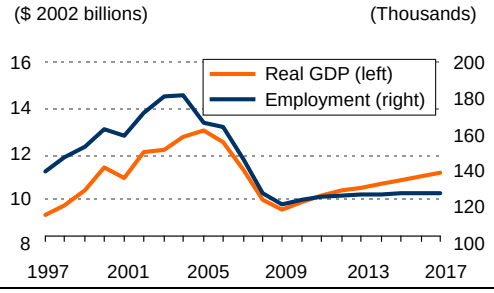
For the overall 2008-2017 horizon, real GDP is projected to grow by 1.9% per year, up from the previous ten-year average of 1.4%. In contrast, the rate of increase in employment is projected to slow, averaging 0.3% annually, as competitive pressures are projected to boost productivity growth.

Wood Product Manufacturing

This sector comprises establishments primarily engaged in manufacturing different products from wood. It is composed of three distinctive industries: sawmills and wood preservation; veneer, plywood and engineered wood products; and other wood products (from millwork activities such as doors, windows and frames). Sawmills and wood preservation accounts for 43% of total sector's employment, followed by other wood products (40%) and veneer, plywood and engineered wood products (17%). Activities are concentrated in three provinces: British Columbia (31% of employment), Quebec (28%) and Ontario (21%). The performance of the sector is significantly affected by demand and price developments in world markets as 55% of the production is shipped to foreign markets, mainly to the United States which accounts for 85% of all exports.

In spite of the Canada-U.S. softwood lumber dispute which came to an end in 2006, the sector recorded a strong economic performance early in this decade, boosted by the North American housing boom. However, production and employment fell markedly in the past few years. This substantial change was primarily the result of the lagged effect of the strong appreciation of the Canadian dollar, the intensification of import competition on domestic and foreign markets and, more importantly, the severe contraction in U.S. new housing demand. The housing recession south of the border will remain by far the most important factor affecting the performance of the Canadian wood products sector in the short term. As a result, both production and employment are projected to fall in 2008 and 2009.

Real GDP and Employment
Wood Product Manufacturing



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Over the longer term, the sector will also face additional challenges that will likely affect its performance in both the domestic and export markets. First, the increase activity in British Columbia brought by the mountain pine beetle infestation will be followed by a reduction in timber supply for a significant period of time. This could put in jeopardy the financial viability of a number of firms in the province and lead to further job losses. Second, the transportation costs of trees are rising in line with oil prices and the increasing distance from cutting sites to mills. This factor will likely reduce the cost-competitiveness of the sector. Third, China is quickly becoming a major producer of several low-value added niche products such as hardwood flooring, prefabricated fencing and fiberboard. This will represent a greater competitive challenge for Canadian manufacturers. However, the anticipated recovery in U.S. demand for new houses in the medium term, along with the huge investments that were made to boost productivity and improve competitiveness, should bring the sector back to a period of expansion. Real GDP growth is projected to average 2.3% per year from 2010 to 2017, while employment is projected to increase at a more modest pace of 0.8% annually, constrained by the expected gains in productivity.

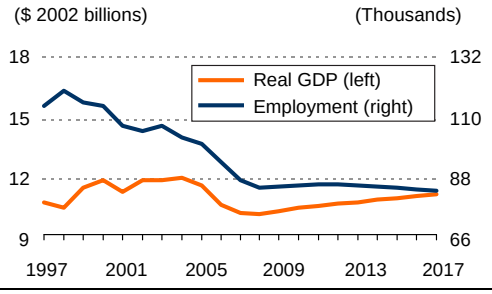
For the overall 2008-2017 period, production and employment are projected to decline as a result of the substantial drops anticipated in 2008 and 2009. Real GDP is projected to edge down by 0.1% per year, after an average increase of 2.2% in the previous decade, while employment is projected to fall by 1.4% annually, following an average growth of 0.5% in the last ten years.

Paper Manufacturing

This sector comprises establishments primarily engaged in manufacturing pulp and paper as well as converted paper products (such as paperboard boxes, corrugated boxes, fibre boxes, cans and drums, and sanitary food containers). Pulp and paper is the most important industry, accounting for 61% of total employment in the sector which is mainly concentrated in Ontario (31% of all workers), Quebec (31%) and British Columbia (18%). With 90% of its production shipped to foreign countries, the pulp and paper industry is strongly exposed to changes in

world market conditions, primarily in the United States which accounts for 80% of all exports. In contrast, 75% of the production of converted paper products is sold within the country, while the rest is exported south of the border.

Real GDP and Employment
Paper Manufacturing



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The years 2005 to 2007 have been very difficult for the paper manufacturing sector, as real GDP fell continuously, recording a cumulative decline of 15%. The last time the sector experienced three consecutive years of drop in production was during the early 1990s recession. This recent deterioration in the economic performance of the sector primarily reflects lower U.S. demand, the lagged effect of the sharp appreciation of the Canadian dollar, and the intensification of foreign competition. These factors have forced firms to restructure further by consolidating, upgrading facilities, and closing less efficient plants. As a result, employment declined at a faster pace in the last few years, down by 14,100 since 2005 for a total loss of 30,000 in the last ten years. The slowdown in the U.S. economy is expected to lead to additional decreases in real GDP and employment, at least in 2008.

The longer-term outlook will remain challenging for the sector. First, available trees have become smaller and farther from manufacturing plants, while the cost of transport is also rising in line with increasing oil prices. Second, the entrance in the world market of low-cost producers will likely threatened Canadian pulp production growth, as new super-sized pulp mills in South America use fibre from fast-growing eucalyptus trees, a resource not available in Canada. Third, pulp production will be further constrained by limited additional capacity at pulp mills, and there are no plans for any major capacity expansions. Furthermore, the growing use of e-mail and various memory supports is expected to reduce demand for paper, while the intensive use of electronic media will also mean lower demand for magazines and newspapers, limiting future production and employment expansion in the sector.

Over the full 2008-2017 horizon, real GDP is projected to increase at an annual rate of 0.9%, after an average decline of 0.5% in the previous decade. Employment should continue to decline but at a slower rate of 0.5% annually, compared to 2.8% in the last ten years, as a result of the anticipated rebound in output growth and a slight deceleration in productivity growth due to the ageing of machinery and equipment.

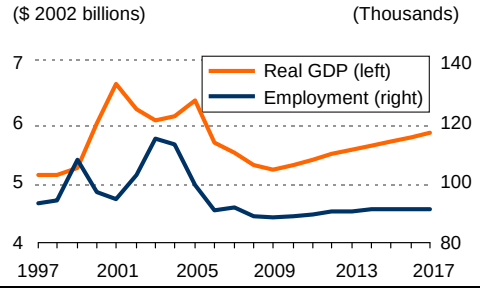
Printing and Related Activities

This sector comprises establishments primarily engaged in printing and providing related support activities such as pre-press and bindery work. It is largely concentrated in Central Canada, with 44% of workers in Ontario and 31% in Quebec. Printing is among the few manufacturing activities in Canada that is not significantly exposed to changes in world economic conditions and in the value of the Canadian dollar. Only 13% of the production of the sector is shipped to foreign countries, largely to the United States which represents 82%

of all exports. Similarly, import penetration accounts for only 13% of the domestic market, substantially less than the overall manufacturing average.

The last few years have been particularly difficult for the printing sector. Real GDP fell for two consecutive years in 2006 and 2007, recording an annual average decline of 7%. Output in that sector now stands close to 18% below its all-time high of 2001. This deterioration in the economic performance of the sector primarily reflects the growing use of communication technologies (such as e-mails and the Internet), coupled with higher production costs and greater environmental concerns. With lower domestic demand for its products, the sector reduced its workforce by 23,000 since the peak of 2003.

Real GDP and Employment
Printing and Related Activities



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The short-term outlook is not looking much better. The increasing use of e-mail and electronic documents will continue to limit the demand for printed material. Furthermore, consumers and businesses are becoming more environmentally conscious, increasing their effort to reduce their use of paper such as printed bills and promotional brochures. This very challenging market environment is expected to lead to further declines in real GDP in the short term, while lower production will also be accompanied by job losses.

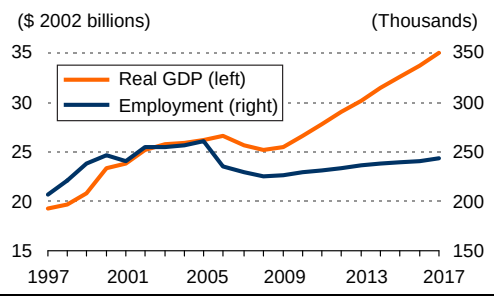
The longer-term outlook is more optimistic as growth in the sector should improve with the anticipated strengthening in domestic activity. The growing demand for print products from emerging markets, such as China and India, could also lead to an expansion of exports over the coming years. For the overall 2008-2017 period, real GDP growth is projected to average 0.6% per year, which is very close to the 0.7% recorded during the last ten years. Employment growth is projected to be anemic (0.0% annually), following a slight decline of 0.1% per year in the previous decade, while productivity growth is projected to edge down marginally.

Rubber, Plastics and Chemicals

This sector comprises establishments engaged in making goods by processing raw rubber and plastics materials (such as tires, hoses, polystyrene foam and various plastic products) as well as establishments manufacturing chemical products from organic and inorganic raw materials (including petrochemicals, fertilizers and pesticides, pharmaceutical and medicine products, paint, ink, soap and cleaning products). While the chemical industry accounts for 62% of production, the rubber and plastic industry accounts for a larger share (53%) of employment as it is more labour intensive. The sector is strongly concentrated in Ontario (52% of total employment) and Quebec (26%). More than 50% of the production is shipped to foreign markets, mainly to the United States which accounts for 82% of all exports, making the sector highly dependent on U.S demand. Furthermore, about 60% of the domestic demand is met by imports, reflecting a high degree of import penetration on the Canadian market.

After solid growth in the 1990s, output in the sector has increased at a much slower pace in the current decade and actually fell in 2007, the first drop since the recession of 1991. In line with production, employment growth slowed markedly from 2000 to 2005 and the sector lost a total of 31,000 jobs in 2006 and 2007. The deterioration in the performance of the sector is primarily attributable to the contraction in the U.S. demand for new houses and automotive products, increased production costs resulting from the substantial rise in the prices of petroleum products, increased import penetration and lower export revenues due to the strong appreciation of the Canadian dollar. In the short term, the sector will continue to be affected by difficult economic conditions in the United States.

Real GDP and Employment
Rubber, Plastics and Chemicals



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The sector is projected to strengthen over the longer term, with real GDP growth averaging a solid 4.0% from 2010 to 2017. Recent restructuring should put the sector in a position to become a significant player in the world economy, particularly in chemicals, pharmaceutical and biotechnology products. Economic growth in emerging markets such as China and India should translate into stronger opportunities for the sector.

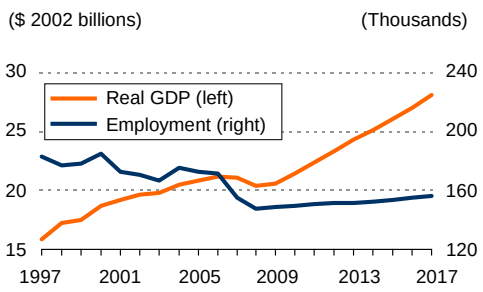
Over the full 2008-2017 horizon, real GDP is projected to increase by 3.2% annually, up from an average of 2.9% in the previous decade. However, continued restructuring and higher investment in machinery and equipment are expected to lead to stronger productivity growth, limiting employment growth to an average of 0.6% per year over the next decade, a slowdown from the 1.0% annual rate recorded in the previous ten years.

Manufactured Mineral Products

The manufactured mineral product sector is a combination of three industries. The first industry is primarily engaged in transforming crude petroleum and coal into intermediate and final products, such as fuels, hydraulic fluids and asphalt. The second industry manufactures non-metallic mineral products such as bricks, ceramic products, cement and glass. The third industry is engaged in smelting and refining primary metals, such as iron, steel, copper or aluminum, for the production of bars, sheets, pipes, tubes or wires. The primary metals industry accounts for more than half of total sector's employment, followed by non-metallic mineral products (37%) and petroleum and coal products (12%). Overall, activities are mainly concentrated in Ontario (41% of employment) and Quebec (29%). The sector exports about 40% of its production, but the primary metals industry is the most exposed to changes in world market conditions as 62% of its output is shipped to foreign countries, largely to the United States which accounts for 66% of all exports. This industry has also faced increasing import competition over the past years, with imports accounting for about 60% of domestic demand.

Growth in real GDP in manufactured mineral products averaged 1.7% annually since 2002, which is well above the overall manufacturing average of 0.3%. This robust growth was largely driven by the increase in demand for energy products and the booming construction sector. Despite the strength in production, employment declined by an average of 1.8% per year over the same period, primarily due to substantial losses in primary metals. In order to improve competitiveness in both foreign and domestic markets, the sector has made substantial investment in productivity-enhancing machinery and equipment since 2002 (average growth of 20%), which has likely constrained job creation during that period. The challenges faced by the sector include: managing output to meet changes in demand for energy products, dealing with the contraction in U.S. demand for building materials in the short term, and coping with intensified import competition from low-cost producers, particularly in the primary metal industry. After contracting in 2007 (for the first time since the 1991 recession), real GDP is projected to decline again in 2008.

Real GDP and Employment
Manufactured Mineral Products



Sources: Statistics Canada and HRSDC 2008 Reference Scenario

Over the longer term, production is projected to strengthen as North American construction activity picks up. Between 2010 and 2017, real GDP growth in this sector is projected to average 3.9% per year. In comparison, employment is projected to increase at an annual rate of 0.6% only, as it is a capital-intensive sector, currently undergoing consolidation, with very high productivity.

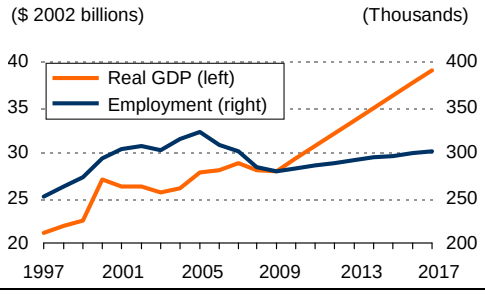
For the overall 2008-2017 period, real GDP is projected to maintain the same pace of growth as in the previous decade, averaging 2.9% annually, while employment is projected to increase by a very modest 0.1% after an average decline of 1.6% in the last ten years. Although productivity growth is projected to decelerate, it will remain among the highest rates of the Canadian economy.

Metal Fabrication and Machinery

This sector comprises establishments engaged in manufacturing ferrous and non-ferrous metal products (such as hand tools, architectural and structural products, boilers, tanks and shipping containers, springs, wires, bolts and screws) and establishments producing industrial and commercial machinery (used in the production process of various primary, construction, manufacturing and services industries). While total output is balanced between the two industries, fabricated metals account for 60% of total employment. The sector is the largest manufacturing employer, with more than 300,000 workers mainly concentrated in Ontario (49%), Quebec (22%) and Alberta (12%). Overall, the sector is export intensive, with 56% of its production shipped to foreign markets. The two industries, however, do not face the same degree of exposure to foreign and domestic economic conditions. The metal fabrication industry is highly dependent on the performance of the domestic economy, with 76% of its production sold within the country. In contrast, the machinery industry is more

sensitive to foreign economic conditions, with exports accounting for 70% of its production, of which 85% are shipped to the United States.

Real GDP and Employment
Metal Fabrication and Machinery



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

After solid growth in the 1990s, real GDP in the sector contracted between 2000 and 2003, primarily due to the substantial decrease in non-residential investment in the United States. Afterwards, growth in non-residential investment picked up both in Canada and the United States, which led to a recovery of the activity in the metal fabrication and machinery sector. As a result, output growth averaged a solid 3.1% per year from 2003 to 2007. With rising production, employment increased by 20,000 in 2004 and 2005, but all the gains were erased over the two subsequent years. The recent declines in employment could be partly attributable to increased investment in productivity-enhancing capital goods within the sector to improve cost-competitiveness on foreign markets and maintain market shares. The sector will have to adjust to the sharp slowdown in the Canadian and U.S. economic activity over the short-term horizon. Consequently, real GDP and employment are projected to contract in both 2008 and 2009.

The longer-term outlook for the sector is more optimistic as activity will be fuelled by the anticipated recovery of the U.S. economy and abundant construction projects in the energy sector. Furthermore, capital spending in industrial machinery will continue to expand in emerging markets, such as China, and Canadian manufacturers will be in a position to boost production to meet this ongoing surge in demand.

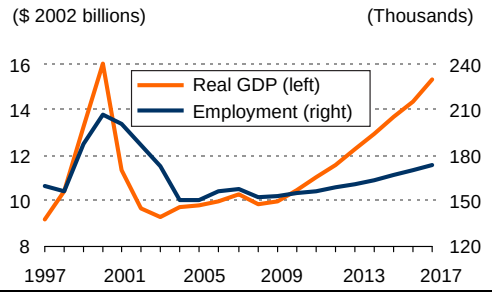
Over the full 2008-2017 horizon, real GDP is projected to maintain a similar pace of growth than the previous decade, averaging 3.1% annually. In comparison, employment is projected to stall after an annual average growth of 1.8% in the previous ten years, as productivity is projected to increase at an accelerated pace, driven by the substantial investments made in productivity-enhancing capital goods over the last few years.

Computer, Electronic and Electrical Products

This sector comprises establishments primarily engaged in manufacturing information and communication technology (ICT) devices, such as computers and peripherals, telecommunication and audio-video equipment, measuring and guidance instruments, as well as electronic components for such products. It also comprises establishments involved in manufacturing products that generate, distribute and use electrical power, such as generators, transformers, switchgears, batteries, wires, electrical motors and household appliances. The ICT industry accounts for 70% of total employment, which is mainly concentrated in the large urban centers of Ontario, Quebec and British Columbia. Overall, the sector is strongly export-oriented, with more than three quarters of its revenues coming from abroad, mostly from the United States which accounts for 70% of

all exports. The sector is also largely exposed to import penetration with a substantial share of domestic demand met by imports.

Real GDP and Employment
Computer, Electronic and Electrical Products



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The ICT manufacturing industry was characterized by impressive growth in the late 1990s, followed by a substantial downturn in the early 2000s. The significant growth recorded in real GDP and employment from 1997 to 2000 was due to massive ICT spending, especially in telecommunications infrastructure, driven by factors such as the liberalization of telecom markets and the emergence of Internet and dot-com companies. However, after the dot-com bubble burst of 2001, this excessive spending resulted in an over capacity of the telecom infrastructure and a saturation of the market. In addition to the end of the Y2K conversion and the slower rate of Internet adoption, this had an immediate impact on ICT spending, resulting in huge drops in ICT production and employment in the early 2000s. The industry strengthened in subsequent years, due to a stronger U.S. and Canadian economy and an increase in corporate profits which pushed up capital expenditures in ICTs. The recovery in ICT spending was also driven by the equipment obsolescence following several years of underinvestment. As a result, the industry recorded growth rates well above the manufacturing average in real output (5.4%) and employment (4.8%) since 2004. However, the bad performance of the electrical equipment industry did slightly offset the performance of the whole computer, electronic and electrical products sector.

More recently, the surge in the value of the Canadian dollar during the second half of 2007 severely hurt this trade dependent sector. Real production is projected to fall further in 2008 but a weakening Canadian dollar will help the sector recover in 2009. Although investment spending in ICTs has moderated due to weaker economic growth in Canada and the United States, it is projected to remain healthy.

Over the longer term, production will continue to be supported by solid increases in business and consumer spending on ICT equipment both in Canada and the United States. The combination of healthy profitability at telecom carriers, rapid growth in wireless penetration rates, and increasing demand for bandwidth intensive wireless services is expected to boost demand for telecommunication equipment. In Canada, the auction of new wireless spectrum by the federal government will lead to the establishments of new competitors who will need to set up their networks. Smart phones, with increased data capabilities and bandwidth requirements, are also rising as a share of mobile subscriptions. In addition, intensive production of aerospace equipment and large increases in provincial health spending are driving demand for measuring and guidance instruments. Finally, the market in emerging economies will continue to soar as these countries develop a larger middle class. Given its expertise and abundant supply of world class ICT manufacturers, Canada will remain in an excellent position to benefit from the renewed growth and will most likely continue to diversify its export market outside the United States. Falling prices will keep challenging the ICT industry's profitability throughout the

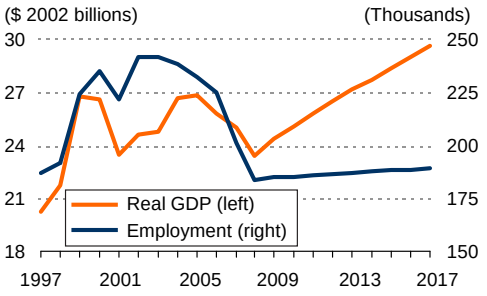
projection period, with most of the improvement in revenue growth coming from stronger production growth.

For the overall 2008-2017 period, real GDP growth is projected to be almost four times faster than the last ten years, up from 1.1% to 4.1% annually. This is the second largest growth in output over the projection horizon, behind computer system design services. This stronger growth will be mostly supported by an improvement in productivity growth. Employment is projected to rebound at annual rate of 1.0%, after a small decline averaging 0.1% per year in the previous decade.

Motor Vehicles, Trailers and Parts

This sector comprises establishments primarily engaged in assembling motor vehicles (cars, trucks, bus), motor vehicles bodies and trailers, and motor vehicle parts. Assembling motor vehicles and motor vehicle parts are the most important industries, accounting for 57% and 37% of production, respectively. However, the motor vehicle parts industry accounts for a greater share (53%) of employment, because its uses less capital per unit of output. The distribution of the remaining jobs in the sector is 37% in the assembling motor vehicle industry and 10% in the motor vehicles bodies and trailers industry. Ontario accounts for 85% of total employment and this share has remained fairly stable over the past twenty years. The United States has always been the main export market of the sector with about 75% of production shipped south of the border.

Real GDP and Employment
Motor Vehicles, Trailers and Parts



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The motor vehicles, trailers and parts sector has been the second fastest[54] growing sector of the Canadian economy during the expansion of the 1990s. The sector real GDP increased at an annual average rate of 9.7% and it created 70,000 new jobs. Industries in the sector, however, has been challenged by new market developments during this decade, particularly growing import competition in the Canadian and U.S. markets, both in the passenger cars and parts markets. Other major developments include the substantial appreciation of the Canadian dollar since 2002, and the continuous increase in gasoline prices to record levels, which led to a shift in consumer preferences toward more fuel-efficient Asian-made passenger cars. In Canada, federal and provincial incentives promoting the adoption of fuel-efficient cars are another development that has shifted the demand toward those vehicles at the expenses of Big Three gas guzzlers. Furthermore, Big-Three unionized workers with generous health care benefits and pension plans, which represented high fixed labour costs, limited the adaptation capacity of the Detroit-based auto manufacturers to the challenges they were facing. As a result, the Detroit Big-Three underwent substantial restructuring programs, closing several

[54] The fastest growing sector was computer and electronics products with an average increase in real GDP of 13.2% per year between 1991 and 1999.

plants and cutting jobs, to improve cost-competitiveness and regain market shares. These developments, along with the absence of growth in the North American demand, had a substantial adverse impact on production and employment in the Canadian motor vehicles, trailers and parts sector. In 2007, real GDP was 6.6% below the historical peak of 1999 and 23,300 jobs had been lost. The short-term outlook is also expected to be very challenging for the sector, as it will have to face weak demand in the current context of economic uncertainty. Real GDP is projected to decrease for the fourth straight year in 2008.

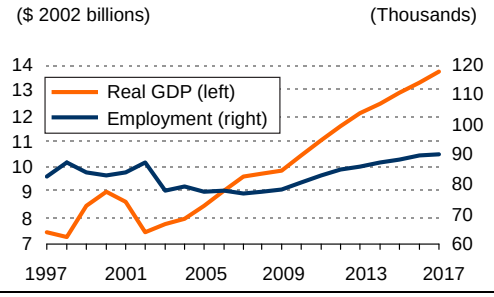
The longer-term outlook for the sector is more optimistic as North American motor vehicle demand should gradually recover, but at a pace well below that of the 1990s, while Detroit Big Three will begin to see the dividend of their restructuring programs. However, intensifying import competition and changes in buyer preferences amplified by high gasoline prices will likely constrain the growth performance of the sector.

Over the full 2008-2017 horizon, real GDP is projected to expand at a slower rate of 1.7% annually, down from 2.1% in the previous decade. The employment performance is also projected to deteriorate, with annual declines of 0.6%, compared to average increases of 0.7% in the last ten years, as a result of the anticipated slowdown in output growth and a significant acceleration in productivity growth resulting from the need to be more competitive.

Other Transportation Equipment (aerospace, railroad and boats)

This sector comprises establishments primarily engaged in manufacturing or building aerospace products and parts, railroad rolling stock, ships and boats, and other types of transportation devices (such as motorcycles, golf carts and bicycles). Aerospace is the largest industry, accounting for two-thirds of employment in the sector, followed by the ship and boat (15%) and railroad (8%) industries. Employment in the aerospace industry is strongly concentrated in Quebec (49%) and Ontario (30%). The sector is highly export oriented as 60% of its production is shipped to foreign countries, largely to the United States (75% of all exports). Within the sector, however, the aerospace industry is by far the most exposed to changes in world economic conditions as deliveries to foreign markets account for 74% of total production.[55]

Real GDP and Employment
Other Transportation Equipment



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

As most manufacturing activities, other transport equipment experienced strong economic performance during the 1990s, largely driven by robust growth in global demand for aircrafts and the low Canadian dollar. However, the aerospace industry has been affected by unfavourable market conditions faced by the airline industry in the early 2000s. New orders for aircrafts tumbled during the U.S. recession and after the events of September 11, leading to two consecutive drops in output accompanied subsequently by a significant decline of 10% in

[55] The degree of exposure is well above the overall manufacturing average of 50%.

employment. Production recovered thereafter, with five years of consecutive growth averaging 5.3% annually from 2003 to 2007.[56] This substantial growth in output was driven by a stronger world demand, particularly for civilian and defence aircrafts, in spite of the dollar appreciation and rising energy costs. However, after the drop of 2003, employment stalled as new hiring was constrained by the losses in cost-competitiveness brought by the strong appreciation of the Canadian dollar. The short-term outlook for the sector looks less promising in terms of production, as the projected slowdown in world demand and increased oil prices will most likely affect the profitability of world airline carriers and limit their capacity to invest in new aircrafts. As a result, growth in real GDP of the sector is projected to stall over the next two years.

The longer-term outlook for the sector is more optimistic. First, world demand for air transportation from households and businesses is projected to rise over the next decade, particularly in emerging markets like China and India. Chinese airlines are transporting twice as many passengers as they were five years ago and it has become the second largest aviation market in the world, trailing only the United States. India is expecting to buy U.S. $4 billion worth of small regional aircrafts over the next twenty years to meet its quickly growing number of travellers. These market developments will translate into higher demand for aerospace products and parts. Second, changing demographics, increased road competition, and environmental concerns should help to sustain world demand for transit systems, including rail. Despite these factors, the sector, and particularly the aerospace industry, will still have to face various challenges. For example, international competition has been intensifying recently as emerging economies plan to build their own aerospace industry to satisfy their market needs and to grab shares of world demand.

For the overall 2008-2017 period, real GDP is projected to grow at a faster pace than the previous decade, up from 2.6% to 3.6% annually. Employment growth is also projected to improve, averaging 1.6%, a sharp contrast with the annual decline of 0.7% recorded in the last ten years.

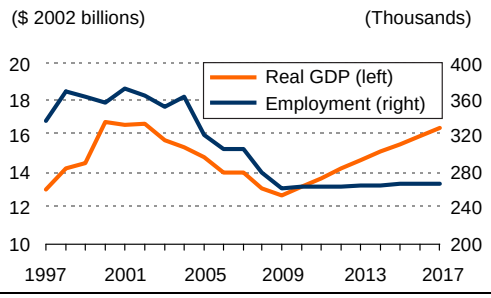
Other Manufacturing (textile, clothing and furniture)

Other manufacturing is an aggregation of the following six industries: textile mills; textile product mills; clothing; leather; furniture; and miscellaneous products such as medical equipment, jewellery, sporting goods, toys, and office supplies. The three largest industries are furniture, miscellaneous products, and clothing, accounting for 36%, 33% and 18% of total employment in the sector, respectively. Activity is mainly concentrated in Ontario and Quebec, with 75% of all workers. The sector is export intensive, as 40% of its production is shipped to foreign countries, mostly to the United States which accounts for 95% of all exports. Within the sector, textile mills, leather, and furniture are the most exposed to changes in world economic conditions as export intensity ranges from 45% to 50% which is around the overall manufacturing average. Furthermore, the furniture industry, along with textile product mills and clothing industries, have been facing a substantial increase in import penetration in both the Canadian and U.S. markets from low-cost producers in this decade, particularly from China.

[56] This was the best performance of all manufacturing industries and well above the overall manufacturing average growth of 0.2% per year from 2003 to 2007.

The sector experienced strong growth during the 1990s, fuelled by the North American free trade agreement, the booming recovery in U.S. demand and the low Canadian dollar. However, production and employment fell drastically in the current decade as a result of major economic developments. The sector has been particularly affected by the intensified import competition from low-cost producers, the reduction of trade barriers (including the lifting of import quotas on textile, clothing and leather products in 2005), and the substantial appreciation of the Canadian dollar. As a result, real GDP fell for five consecutive years since 2002, down by 16%. To improve competitiveness on both domestic and international markets, the decline in output was accompanied by a similar reduction (16%) in the workforce over the same period, with employment back to its level of the early 1990s recession. Clothing, textiles and leather industries posted the largest reductions in production and employment.

Real GDP and Employment
Other Manufacturing



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The short-term outlook will remain very challenging for the sector as it will have to face the economic slowdown in the United States, in addition to further adjustments to foreign competition. With imports of Chinese apparel on the rise, labour-intensive textiles and apparel industries will continue to outsource part or most of their production abroad, while the furniture industry will be affected by the contraction of residential construction in the United States. As a result, GDP is projected to continue to decline in 2008 and 2009. Again, the decrease in the sector activities will be accompanied by further adjustments in the workforce, as employment is projected to drop.

Over the longer term, production is projected to rebound as the sector is expected to adapt to the more competitive environment by, for example, becoming more capital intensive through higher investment in productivity-enhancing goods such as machinery and equipment. While the miscellaneous product industry should continue to support output growth, the anticipated recovery in North American demand will also contribute to boost production in the sector. For the full 2008-2017 horizon, real GDP is projected to expand at a faster rate than the previous decade, up from 0.7% to 1.7%. Employment will continue to decline, but at a faster pace of 1.3% per year, compared to 1.0% in the last ten years. Improvement in productivity growth is expected to contribute to this larger decline in employment.

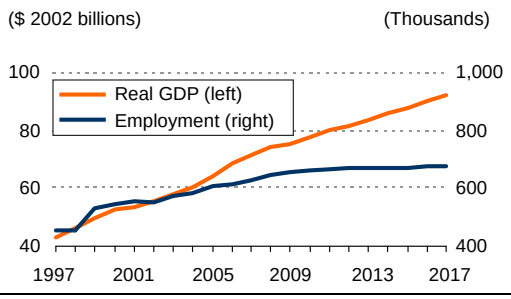
Wholesale Trade

This sector comprises establishments primarily engaged in wholesaling merchandise, and providing related logistic, marketing and support services. The wholesaling process is generally an intermediate step in the distribution of merchandise in large quantities to retailers, businesses and institutions. With 30% of wholesale workers, the machinery, equipment and supplies industry is the largest employer, followed distantly by building material and supplies (14%), food and beverages (13%), and personal and household goods (12%). Activities are concentrated in Central Canada, with Ontario and Quebec accounting for 40% and 23% of total

employment, respectively. Growth in the sector is driven by household consumption and business investment.

The wholesale sector has been one of the healthiest in the country since the beginning of the current decade, driven by favourable economic conditions, a robust housing market, and a strong recovery in sales of machinery and equipment. Production and employment increased at an annual average rate of 4.7% and 2.1%, respectively, since 2000. However, the sector is also facing various challenges such as managing inventories to balance responsiveness to changes in demand and avoiding excess stock, and dealing with more complex supply chain and logistics as globalization intensifies. The increase in energy prices to historically high levels and the consequent rise in freight cost is another challenge for the sector.

Real GDP and Employment
Wholesale Trade



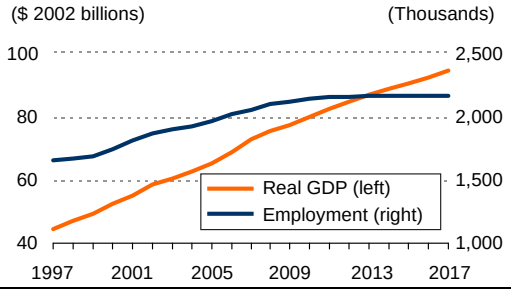
Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Growth in both output and employment is projected to weaken over the longer term. This slower growth will be attributable to increased competition from e-commerce and other direct-to-customer operations by manufacturers that bypass the middleman. In addition, the aging of the population may shift spending from semi-durable household and personal goods toward services, which would result in decreased demand from retailers for wholesale goods. For the overall 2008-2017 period, real GDP growth is projected to slow considerably from the previous decade, down from an annual rate of 5.2% to 2.6%. Employment growth is also projected to be lower, down from 3.3% to 0.7% per year.

Retail Trade

This sector comprises establishments primarily engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The retailing process is the final step in the distribution of merchandise in small quantities to the general public. The retail trade sector has become the largest employer in Canada in 2007 with two million workers, surpassing the manufacturing sector which saw its workforce falling for the third straight year. However, about one third of these workers are part-time employees, representing the second largest share after accommodation and food services. Retail of food and beverage is the most important industry within the sector, accounting for 26% of all employment. Other key industries include general merchandise stores (14% of employment), motor vehicle and parts

Real GDP and Employment
Retail Trade



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

dealers (10%), and clothing stores (10%). The sector is closely linked to the wholesale trade sector and is essentially driven by consumer spending in Canada.

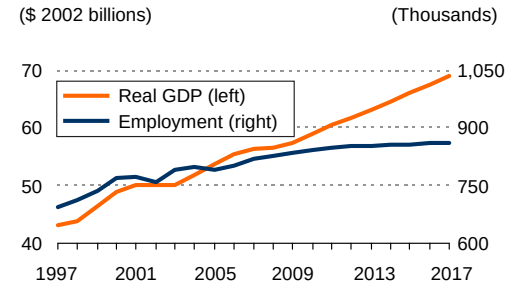
Retail trade has been one of the fastest growing sectors in Canada since the beginning of the current decade, along with construction and computer system design services. During that period, the retail trade sector increased its output at an average rate of 5.0% per year and created a total of 368,000 new jobs, driven by solid growth in disposable income and favourable labour market conditions. The most important challenge for the sector over the past few years was the rise in cross-border shopping to the United States, amplified by the strong appreciation of the Canadian dollar. However, major retail stores, such as Wal-Mart and Future Shop, responded to this change in consumers' preferences by bringing prices of many goods closer to parity with U.S. prices. Consequently, the short-term outlook for the sector looks healthy as lower prices, combined with some modest personal income tax relief and the recent GST reduction, should help spur disposable income, supporting the expansion of domestic demand, albeit at a slower pace. After impressive growth averaging 5.8% in 2006 and 2007, real GDP in the retail trade sector should increase at a rate more in line with long-term potential growth over the coming years.

In the longer term, slower demographic growth will affect consumption demand and population ageing will shift spending from goods toward services. Output growth in retail trade is projected to weaken, averaging 2.6% annually from 2008 to 2017, compared to 5.1% in the previous decade. Employment growth is also projected to be lower, down from 2.2% to 0.5% per year, as e-commerce will most likely reduce new hirings.

Transportation and Warehousing Services

This sector comprises establishments primarily engaged in transporting passengers and goods, warehousing and storing goods, and providing services to those establishments. The modes of transportation are road (trucking, transit and ground passenger), rail, water, air and pipeline. National post office and courier establishments are also included in this sector. With 35% of total employment, truck transportation is the largest industry, followed by transit and ground passenger transportation (17%) and air transportation (13%). Activities of the sector are concentrated in Ontario (33%), Quebec (19%), British Columbia (15%) and Alberta (13%). Key drivers of the sector are national and international trade of goods and tourism.

Real GDP and Employment
Transportation and Warehousing



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Trade and warehousing has been performing strongly in the 1990s, partly due to the strong increase in exports, which were stimulated by higher foreign demand and the depreciation of the Canadian dollar. However, activity in the sector stalled early in this decade because of the U.S. recession, the terrorist attacks of September 11th, and the financial difficulties faced by the airline industry. With the recovery of the North American economy and the renewed

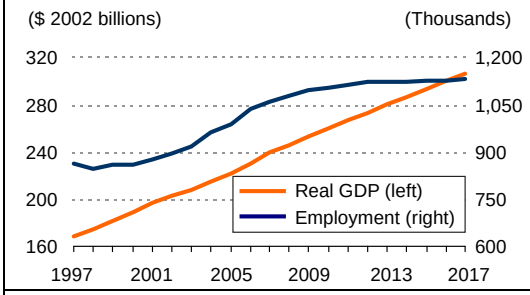
confidence in air travel, output in the sector rebounded firmly from 2004 to 2006 despite the appreciation of the Canadian dollar and rising oil prices that have resulted in higher transportation costs. During that three-year period, real GDP grew at an average rate of 3.4% per year, while employment increased marginally. The year 2007 was difficult for the sector, as exports of goods began to decline in the third quarter partly due to the contraction in U.S. spending on building materials and motor vehicles, reducing output growth by half in the sector to 1.7%. However, employment jumped by 20,700 with all the increase in truck transportation and transit and ground passenger industries. Over the short term, the anticipated slowdown in North American economic conditions is projected to reduce output growth further.

Output growth in the sector should strengthen over the longer-term horizon with the gradual recovery of both U.S. and Canadian economies. However, some industries will most likely continue to face challenges that may constrain future growth such as high energy prices and border security issues. For example, the air transportation industry could be hurt by the new passport requirement for American visitors travelling to Canada. For the overall 2008-2017 period, real GDP growth is projected to slow somewhat from the previous decade, down from an annual rate of 2.7% to 2.0%. Employment growth is projected to slow more severely, down from 1.7% to 0.5% per year, as a result of the anticipated improvement in productivity growth.

Finance, Insurance, Real Estate and Leasing Services

The finance, insurance, real estate and leasing services sector comprises establishments primarily engaged in financial transactions or in facilitating financial transactions. Within the sector, finance and insurance industry employs about 70% of workers and contributes to one-third of GDP. Real estate, rental and leasing makes up the rest. Employment is largely concentrated in Ontario (45%), Quebec (22%) and British Columbia (14%). While banks and insurance companies participate in international markets, the sector as a whole is heavily reliant on the performance of the domestic economy, because domestic-oriented real estate industry contributes to more than 60% of the sector's GDP.

Real GDP and Employment
Finance, Insurance, Real Estate and Leasing



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

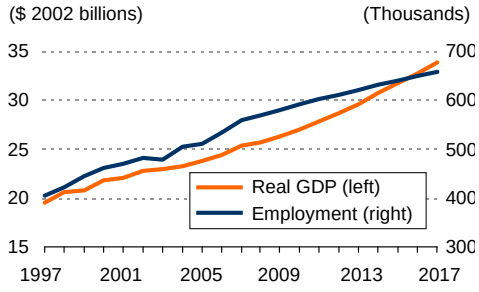
The sector has faced various challenges in the current decade, including growing regulatory requirements, development of new credit products which are often complex and make financial risk more easily tradable, outsourcing pressures to remain competitive, and emergence of untapped market for global banking such as China. In the finance and insurance industry, the changing nature of fraud has forced financial institutions to continuously evolve and adapt to the ever changing dangers posed by technological development to protect customer database. Despite these challenges, the sector had a remarkably consistent and solid growth in production (3.5% annually) and employment (2.7%) since the beginning of the decade, driven by the hot real estate market and robust growth in mortgage lending.

Over the full 2008-2017 horizon, growth in output and employment is projected to slow somewhat from the previous decade, partially due to the weakening of the real estate market. Real GDP is projected to increase by 2.5% annually, down from an average rate of 3.6% in the last ten years, while employment growth is projected to slow even more severely, from 2.1% to 0.6%, as a result of stronger productivity gains due to a more prevalent use of technology, such as e-banking and online listing of houses.

Professional Business Services

This sector comprises establishments that provide highly specialized business services such as legal, accounting and tax preparation, architectural and engineering, and specialized design services. Over the years, architectural and engineering gradually increased its employment share, accounting for 43% of all workers in this sector. The sector is characterized by a highly educated workforce and a large share of self-employed (34%). While 57% of total employment is concentrated in Central Canada, the booming provinces of Western Canada have seen their share increased quickly in recent years. The growth of this sector is sensitive to business cycles, both inside and outside the country, because the demand comes from other businesses that ride the tides of the economy, some of which are exposed to foreign economic conditions.

Real GDP and Employment
Professional Business Services



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

During the second half of the 1990, the sector has benefited from the growing trend among Canadian businesses toward outsourcing non-essential processes in order to increase operation efficiency. It encountered, however, several challenges since the beginning of the decade, as increased competition brought upon by technological change, which facilitates communication and collaboration with clients, has undermined previous locally-focused business model and increased offshoring of some services, particularly accounting services. The sector is also facing more demanding customer requests and standards as businesses look for one-stop-shop for their outsourced activities. Nevertheless, the demand for professional business services has been supported by the strong domestic economy, and the output growth of the sector matched that of the overall economy. Employment growth accelerated after 2002, particularly in architectural and engineering, driven by the residential and non-residential investment boom.

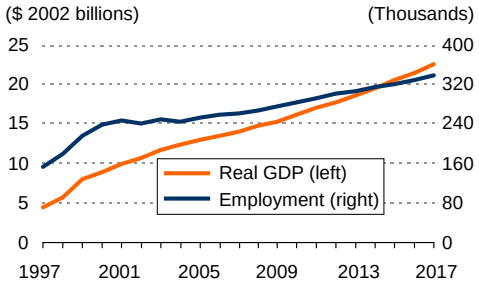
However, in the short term, business spending is expected to moderate from the strong pace recorded in the past few years due to the economic slowdown in the United States and Canada, while the weakening of residential and non-residential construction activities will adversely impact architectural and engineering services. As a result, real GDP and employment growth are projected to slow somewhat in 2008 and 2009.

The longer-term outlook for production in the professional business services sector is characterized by consistent robust growth, with real GDP increasing at a slightly faster rate of 2.9% per year from 2008 to 2017, up from 2.7% in the previous decade. This pace of growth will be supported by solid domestic demand, particularly in capital spending which generally leads to increased demand for associated services such as engineering and architecture. In contrast with GDP, employment growth is projected to slow at an average rate of 1.6% annually, down from 3.3% in the last ten years. An anticipated recovery from previously dismal productivity growth and increasing difficulties in finding and retaining qualified personnel are likely to constrain growth in employment.

Computer Systems Design Services

The computer systems design services sector comprises establishments primarily engaged in providing expertise in the field of information technologies, such as writing, modifying, testing and supporting software, planning and designing computer systems, and on-site management and operation of clients' computer. It excludes the development and retailing of computer hardware and packaged software. The sector employs highly-educated and young workers and its activities are highly concentrated in Ontario (48% of employment) and Quebec (26%). Self-employment accounts for about a quarter of workers in the sector. A major growth driver for computer systems design services is business and government investment in information and communications technology (ICT), making it sensitive to investment environment. In addition, the sector also has a relatively high exposure to trade for a service industry, with 19% of its production being exported, of which more than 70% is destined to the United States. As such, investment spending south of the border is also a determinant of the sector performance.

Real GDP and Employment
Computer Systems Design Services



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Driven by the rapid pace of computer technology adoption by businesses and governments, this sector grew drastically in the 1990s, with employment quadrupling in ten years and production recording double-digit growth. However, the sector was adversely affected by the dot-com bust of the early 2000s, during which several challenges clearly appeared. The challenges faced by the sector include its high dependency on business investment in technology which is often considered as discretionary spending; its increasing market saturation as computers have became widely spread to business practices; and its stronger exposure to offshoring from low-cost countries such as India. In the face of these headwinds, real GDP growth slowed in recent years. In spite of this slowdown, the sector has been fairly resilient to the movements of the Canadian dollar and the demand for computer services should remain healthy in Canada and the United States where the turmoil in economic conditions has yet to translate into a major downturn in business ICT investment.

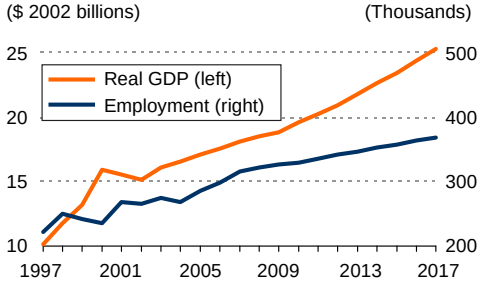
Over the longer term, while the double-digit rate of the 1990s is no longer to be seen, output growth in the sector is expected to outperform that of the overall economy. Despite the slower pace of growth in ICT investment, demand will still be strong enough to support a continued expansion as businesses turn to technology investment in order to expand given the continued tightness in the labour market. In addition, the sector is becoming increasingly geared to the export market and opportunities appear to be promising in the emerging economies.

For the overall 2008-2017 period, real GDP growth is projected to average a strong 4.8% per year, while employment is projected to increase by 2.6% annually. Despite slower growth relative to the previous decade, the sector is projected to lead all industry sectors in terms of production and employment growth over the next ten years. Employment growth will be constrained by a number of factors, including intensified consolidation (the sector has matured and firms must increase their market share through acquisitions), high productivity levels (as firms strive to remain competitive in the world market), and labour shortages (lower demand for workers after the dot-com bust led to decreased school enrolments in computer-related fields).

Other Professional Services (scientific, technical and advertising services)

This sector comprises establishments that provide professional services such as management, scientific and technical consulting; scientific research and development; advertising and public relations; and other professional and scientific services (including photographic, translation and veterinary services). With 40% of total employment, consulting is the largest industry, followed by advertising and public relations (26%). Relatively similar to professional business services, the sector is primarily engaged in activities in which human capital is the major input because the production process is almost exclusively dependent on worker skills and expertise. The workforce is characterized by a high level of education and a substantial share of self-employed (39%), while about two thirds of total employment is concentrated in Central Canada. The sector is highly dependent on business activities and very sensitive to the complexity of business practices, as most industries in the sector provide services to business clients.

Real GDP and Employment
Other Professional Services



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

In the late 1990s, the sector benefited from the growing trend in outsourcing, as many firms displaced non-essential processes in order to increase their efficiency. More complex business practices meant increased demand for advice in business planning, and resulted in strong growth in consulting services. However, when businesses started to reduce discretionary spending during the economic slowdown of the early 2000s, real GDP slightly contracted, affecting job creation in the sector. This was particularly true for the private funding of scientific research and development services which are closely scrutinized during economic downturns. Production and employment in the sector strongly recovered since 2003, supported by the solid performance of the domestic economy in the last five years. While business

spending is expected to moderate in the short term due to the economic slowdown in Canada and the United States, growth in real GDP and employment is projected to slow but to remain healthy in 2008 and 2009. Still, this represents a substantial slowdown from the average annual growth of 5.6% recorded in employment over the previous three years.

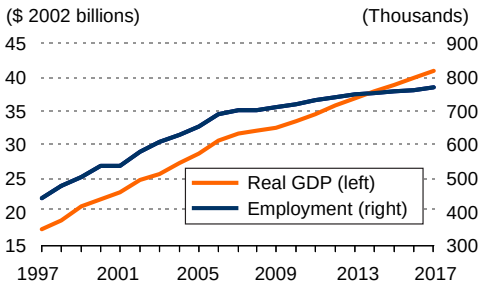
In the longer term, the sector will continue to face various challenges, including increased competition brought by technological changes, which facilitates communication and collaboration with clients. The emergence of Internet as a new media for advertising services will also require better planning, marketing and measurement of the impacts of online campaigns. Nevertheless, the longer-term outlook remains promising, fuelled by consulting services. Over the full 2008-2017 horizon, real GDP growth is projected to slow relative to the previous decade but to remain healthy, down from 6.0% to 3.4% annually. Employment growth is also projected to be lower, down from 3.6% to 1.5%.

Management, Administrative and Other Support Services

This sector is the aggregation of three services industries: management of companies and enterprises (including security holdings and head offices); administrative and support services (such as record keeping, employment placement, document preparation, call centres, collection agencies, travel arrangement, and security, janitorial and landscaping activities); and waste management and remediation services (such as the collection, treatment and disposal of waste material). Administrative and support services is by far the most important industry, accounting for 95% of total employment in the sector, which is mainly driven by business activities in Canada.

The management, administrative and other support sector has been the third fastest growing services sector so far in this decade, recording an average growth rate of 5.3% in real GDP and 4.2% in employment. All industries in the sector contributed to the increase in output and job creation, reflecting the strong performance of the Canadian economy during that period as most of the services are provided to a large range of clients like businesses and households. However, growth in output and employment slowed substantially in 2007 and is projected to weaken further over the next two years, as overall economic growth will slow significantly from the rapid pace of the previous years.

Real GDP and Employment
Management, Administrative and Other Support Services



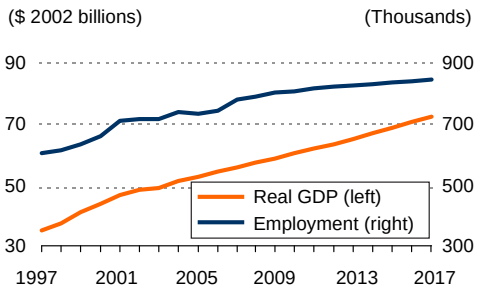
Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Over the longer term, as overall economic conditions improve, growth in real GDP and employment is projected to pick up within the sector, but to remain well below the previous decade. For the overall 2008-2017 period, real GDP is projected to increase by 2.6% annually, down from an average rate of 6.1% in the last ten years, while employment growth is projected to slow from 4.7% to 1.0%.

Information, Culture and Recreation Services

This sector consists of the information and cultural industry and the arts, entertainment and recreation industry. The establishments in the sector are primarily engaged in producing and distributing information and cultural products (such as book and newspaper publishing, motion picture and record production, software and Internet publishing, broadcasting, telecommunications and data processing) or in operating facilities or providing services to meet the cultural, entertainment and recreational interests of their patrons (such as cinemas, performing arts and spectator sports establishments, museums and historic sites, amusement parks and casinos). About 53% of workers are employed in the information and cultural industry and the remaining 47% are in the arts, entertainment and recreation industry.

Real GDP and Employment
Information, Culture and Recreation Services



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

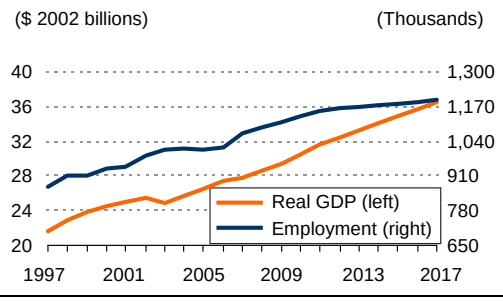
Technological development and household disposable income are the major drivers of the sector which grew quickly in the mid 1990s, as Internet, cable and satellite services became available. However, such digital revolution also presented challenges to the sector, including changing traditional practices in production, satellite reception and signal delivery, dealing with unknown and unexpected costs of new technology, and increasingly dynamic and rapidly evolving industry that is moving toward convergence of different media platforms. Not only that, availability of Internet has made electronic piracy more prevalent, adding pressure to software publishers as well as music and movie producers. By 2002, new services had matured and following the IT bust, the information and cultural industry saw a more subdued growth in production and employment. In the arts, entertainment and recreation industry, the substantial appreciation of the Canadian dollar decreased Canada's competitiveness in foreign location production, as it adversely affected the number of Hollywood productions being filmed in Canada. Pressures on the financing of the Canadian Television Fund also posed difficulties in renewing investment in Canadian content TV production. However, healthy gains in household disposable income helped to support the sector's growth, especially in amusement, gambling and recreation activities.

In the longer term, new technological advances will drive further changes in consumer behaviour and the sector, especially in information and cultural industry, which will be forced to adapt by consolidating operations, launching new services and exploring new platforms. Over the full 2008-2017 horizon, although growth in real GDP and employment is projected to be in line with the overall economy, it will slow significantly from the previous decade. Real output is projected to increase by 2.6% annually, down from an average rate of 4.8% in the last ten years, while job creation is projected to slow from 2.6% to 0.8%, constrained by a slight improvement in productivity growth.

Accommodation and Food Services

This sector comprises establishments primarily engaged in providing short-term lodging and complementary services to travellers and vacationers in facilities such as hotels, resorts, motels, bed and breakfast accommodations, housekeeping cottages and cabins. It also comprises establishments engaged in preparing meals, snacks and beverages, to customer order, for immediate consumption on and off the premises. The dominant industry is food services, with 64% of total employment. The sector is characterized by low wages and the largest concentration of part-time workers in the economy, accounting for 40% of its workforce. Accommodation and food services are closely linked to tourism activities, both from the domestic and foreign sides, as a source of growth and job creation. Consequently, the sector is particularly sensitive to changes in domestic and external economic conditions with respect to income, job security, and travelling costs.

Real GDP and Employment
Accommodation and Food Services



Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

After significant growth in the late 1990s, the sector faced various difficulties during the first few years of the new millenium, including the U.S. recession, the events of September 11, and the unexpected outbreak of the Severe Acute Respiratory Syndrome (SARS) that affected Toronto during the spring of 2003. These events had a depressing effect not only on foreign travel to Canada, but also on domestic travel within the country. As a result, real GDP increased at a much slower rate and even fell in 2003, the first drop since the recession of the early 1990s. The sector rebounded firmly from 2004 to 2006 with output growth averaging 3.2% per year, driven by higher domestic demand for tourism activities, which was supported by increased employment and personal income, and stronger growth in business activity and revenues. In 2007, although output growth weakened to 1.1%, employment improved markedly with the creation of 54,500 jobs, reflecting substantial gains in both the accommodation and food services industries after several years of mitigated growth.

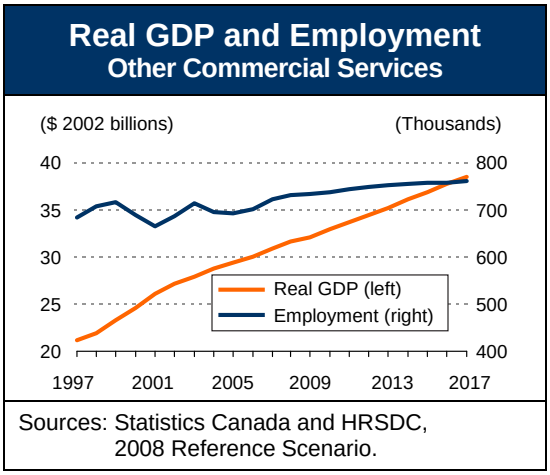
Over the short term, growth in the sector will continue to be driven by domestic travel as the deterioration of world economic conditions, particularly in the United States and Europe, is likely to constrain foreign travel due to higher uncertainty in job security and income. In addition, historically high levels of gasoline prices and the current implementation of the Western Hemisphere Travel Initiative, which requires all travelers between Canada and the United States to have a passport by June 2009, could lead to a change in tourism preferences toward a reduction in cross-border travel.

Over the longer term, the 2010 Winter Olympics in Vancouver, a projected lower Canadian dollar and resumption in the number of foreigners traveling to Canada, will help the sector post solid real GDP growth. Furthermore, consumption of accommodation and food services should increase with the rising number of retiring baby-boomers who will have more time to spend on travel and other pursuits. For the overall 2008-2017 period, real GDP is projected to increase by

2.8% annually, up from an average of 2.5% in the previous decade, while employment is projected to rise by 1.1% per year.

Other Commercial Services (repair, maintenance, personal and household services)

Other commercial services include the four following industries: repair and maintenance (such as on motor vehicles, electronic equipment, industrial machinery and household goods); personal and laundry services (such as hair care, photo finishing and dry cleaning); religious, civic and professional organizations (supporting religious, social and political causes); and private household services (employing individuals such as cooks, maids, gardeners and baby-sitters). Repair and maintenance along with personal and laundry services are the two largest industries within the sector, accounting for 37% and 31% of total employment, respectively.



Production in other services has grown at a healthy pace in the last ten years, reflecting the solid increase in household income and business activity. Annual growth in real GDP averaged 5.1% from 1998 to 2002, before slowing to 2.6% afterwards. During this time, employment fluctuated considerably, resulting in a modest increase of 0.6% annually. With the deterioration of the economic conditions and low levels of consumer and business confidence, growth in real output is projected to slow further over the short-term outlook, while employment growth should remain modest.

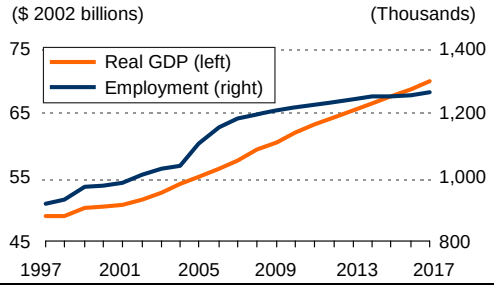
Over the 2008-2017 horizon, real GDP in the sector is projected to expand at an annual rate of 2.2%, down from 3.8% in the previous decade. Despite the slowdown in output growth, employment growth should remain essentially unchanged, averaging 0.5% annually.

Educational Services

The education sector comprises establishments primarily engaged in providing instructions and training in a wide variety of subjects. Elementary and secondary schools account for the largest share of the sector's employment, with 62% of all workers, while universities account for 20% and colleges for 8%. The workforce is characterised by a relatively high share of part-time employees (26%) and a substantial share of women in elementary and secondary schools (71%).

As a result of the improved financial position of governments and significant increase in investment in the education system after several years of under funding, GDP and employment increased at a faster rate in the last few years. However, the sector will be facing important challenges over the next decade. First, the declining share of the population aged between 5 and 17 will lead to a lower demand for non-postsecondary teachers. Second, university staff is getting older and it is becoming increasingly difficult to recruit in a context of rising international competition. Third, the move toward a more knowledge-based economy and the need to replace skilled workers from the baby boomers generation will lead to an increased demand for qualified workers. As a result, increased enrolments in postsecondary institutions as well as additional public funding are expected in order to answer those challenges.

Real GDP and Employment
Educational Services



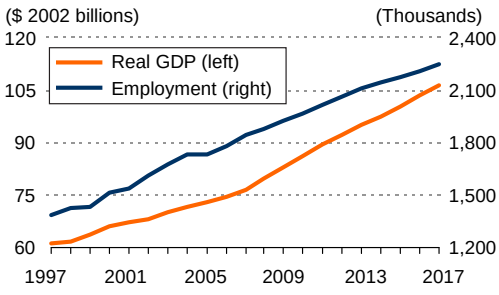
Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

Driven by increased spending in postsecondary education, GDP growth is projected to accelerate somewhat over the 2008-2017 horizon, averaging 2.0% annually, up from 1.7% in the previous decade. Employment should also benefit from increased postsecondary enrolments and funding, although a decreasing population aged between 5 and 17 (lowering labour demand in primary and secondary schools) and a substantial improvement anticipated in productivity growth will offset some of the positive impact and shall thus limit employment growth to an average of 0.7% per year over the projection period, down from 2.6% in the previous ten years. The expected strengthening in productivity growth is in part attributable to the increasing use of e-learning applications and the gradual shift of the student population toward postsecondary schools, where the number of students per teacher is higher.

Health Care and Social Assistance

This sector comprises establishments primarily engaged in providing health care by diagnosis and treatment, providing residential care for medical and social reasons, and providing social assistance such as counselling and welfare. Hospital is the most important industry, accounting for a third of total employment in the sector. Among the remaining industries are ambulatory health care services and social assistance, each accounting for 25% of the sector's employment. The sector is the second largest employer in the economy with a total of 1.8 million workers, of which 24% are part-time employees.

Real GDP and Employment
Health Care and Social Assistance



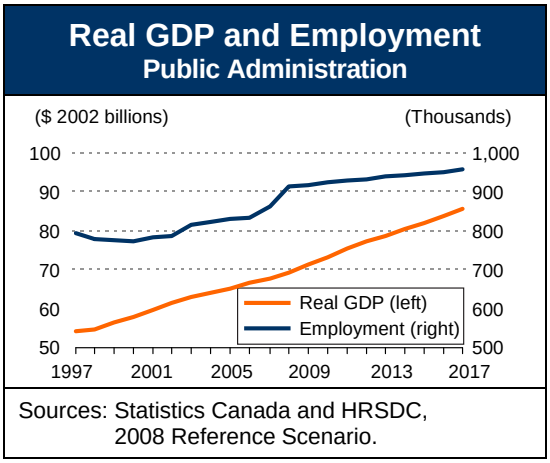
Sources: Statistics Canada and HRSDC, 2008 Reference Scenario.

The sector has been facing important challenges over the past decade, starting with an aging population. This led to a rising demand for health care services, resulting in increased public health care costs. Furthermore, new and more expensive technologies as well as additional reliance on high-priced drugs have also contributed to boost health care costs. At the same time, health care expenses by governments were restrained by the objective to balance public finances. These two conflicting challenges led many provincial governments to reform their public health care system, notably by relying further on primary care prevention and day-to-day operations. Consequently, in-hospital stays and residential care beds have been substituted for home care services. Furthermore, limited training seats for health professionals along with difficult working conditions and an ageing workforce, constrained labour supply and led to labour shortages in the sector. This resulted in the creation of additional training seats since the late 1990s, notably for registered nurse courses. Increased funding from governments, combined with additional training seats, led to significant growth in real GDP and employment in the current decade. Since 2000, GDP has increased by more than 16% while employment went up by nearly 22% and accounted for close to 16% of all job creation in Canada, well above its share in the overall economy.

Over the longer term, population aging will continue to drive labour demand and health care costs up, compelling provincial governments to increase health care funding. For the overall 2008-2017 period, real GDP growth is projected to accelerate by one percentage point relative to the previous decade, up from an annual rate of 2.3% to 3.3%. However, employment growth is projected to slow from 2.9% to 2.0% per year, as new ways of delivering services, the development of new technologies and the introduction of sophisticated equipment into the health care system are expected to result in productivity improvements, enabling more health care to be provided with fewer workers.

Public Administration

Public administration comprises establishments primarily engaged in activities of a governmental nature at the federal, provincial, and municipal levels. It covers legislative activities, taxation, national defence, public order and safety, immigration services, foreign affairs and international assistance, and the administration of government programs. The sector includes not only public servants and bureaucrats, but also members of the Canadian armed forces, policemen and firefighters. Federal, provincial and municipal administrations each account for approximately a third of the sector's employment. Public administration is closely linked to the fiscal positions and programs of governments.



The 1990s were a difficult period for the sector as all levels of governments grappled with large budget deficits. Production either declined or recorded marginal increases while employment fell for seven consecutive years between 1993 and 2000. The sector

strengthened thereafter as the federal and provincial fiscal situation improved markedly. Annual GDP growth averaged a solid 3.0% from 2000 to 2003, but weakened to around 1.7% in subsequent years, well below the average for the overall economy. With a stronger fiscal balance, governments resumed hiring in 2001 and employment increased continuously afterwards. The sector experienced substantial job creation in 2007, up by 27,200, with 63% of the rise in municipal administration, bringing the total increase in this jurisdiction to 45,100 over the past four years.[57]

In the longer term, on average, governments are expected to run small budget surpluses after potential deficits in the short term. As a result, output growth is projected to remain solid, averaging 2.4% per year from 2008 to 2017, a rate comparable to the previous decade, while employment growth is projected to accelerate slightly from 0.8% to 1.0%.

B - Models – Job Openings

Job openings are comprised of two primary components: expansion demand and replacement demand. Replacement demand can be further disaggregated into 3 sub-components: retirements, deaths and emigration. Other job leavers, such as discouraged workers or those who leave the labour force, are not included in replacement demand, but are considered as net re-entrants presented in the job seekers section.

Expansion Demand

Expansion demand corresponds to the job creation generated by economic growth. It can be referred as "required employment" – that is, the number of people needed to reach a certain level of production, given a specific level of productivity. By occupation, expansion demand is mainly affected by two factors:

- how the industries employing people in particular occupations evolve. For example, job creation among carpenters, masons and plumbers depends on the outlook of the construction industry. The industrial scenario (33 industries) is developed in cooperation with a macroeconomic forecaster. First, a projection of GDP by industry is produced based on the outlook for final demand categories of spending. Second, labour productivity by industry is projected based on its historical trend. The employment projection by industry is then derived based on the projected GDP and labour productivity by industry.
- how a particular occupation is affected by structural factors. For example, the development of office automation (computers, email, voice messaging systems, etc.) has affected employment in clerical and administrative occupations. First, historical occupational shares by industry are calculated at the 2- and 3-digit NOC level. The occupational shares are computed as the occupational employment in an industry divided by the total employment in that industry. Hence, the summation of all occupational shares must be equal to 1 for each industry. A projection of these shares is then performed using simple functional forms, namely trends and an output gap measure. This step is done for each 2- and 3-digit

[57] This period of solid increase in job creation came after a total decline of 42,700 from 1999 to 2003.

occupation, resulting in a total of 5,478 equations (2-digit: 26 occupations for 33 industries and 3-digit: 140 occupations for 33 industries).

The employment projection by occupation and industry is obtained by multiplying the projected employment by industry to the projected occupational shares for each industry. The employment projection by occupation and industry can then be summed up across all industries to produce the total employment projection for each occupation. Expansion demand by occupation corresponds to the changes in employment by occupation.

Retirements

Workers retiring from existing jobs are expected to be the single largest source of job openings over the coming decade. The goal of the retirement model is to capture the number of jobs that open up because of older workers permanently leaving the labour market. A multitude of definitions and estimation methods exist by which one could measure retirement. The most appropriate definition for occupational projection purposes is that of a "complete and permanent withdrawal from the labour market". Despite the existing surveys, there is no comprehensive dataset in Canada capable of providing reliable detailed information using this definition.

A comprehensive review of existing Canadian data sources revealed that the Longitudinal Administrative Databank (LAD) is the most appropriate one for estimating historical permanent retirement flows.[58] Survival analysis has revealed that tax filers over the age of 50 who have been away from paid work for 3 years or more are very unlikely to return to the labour market. Hence, this benchmark was established as a standard for measuring retirements. But, because the LAD does not contain any occupational detail, a separate model is used to compute the occupational composition of retirements.

Retirements have increased substantially in recent years and are projected to continue rising in the coming decade. Three primary components govern their evolution. Population is the most important of these, while labour market attachment (as measured by the employment rate) and retirement behaviour (measured by the probability of retirement) constitute the other necessary components. Of these three components, it is the growth of the population aged 50 and over which will fuel an unprecedented expansion in retirements over the coming decade. The methodology described below estimates these three components in order to arrive at an estimate of headline retirements.

- Employment projections by single age and gender are produced by combining the demographic projection with employment rates projections. Data on population by single age and gender are obtained from the demographic projection while employment rate projections propagate cohort-based changes in the share of the population which is

[58] The LAD was chosen primarily for its large representative sample of older workers and its longitudinal nature, two critical characteristics for developing an aggregate time series of retirement flows. In fact, the size of the LAD sample rivals the Census, unlike the Labour Force Survey and the Survey of Labour and Income Dynamics (SLID).

employed.[59] They are constrained to the aggregate unemployment rate and to the age and gender specific labour force participation rate projections.

- Annual retirement probabilities are obtained using the LAD, with those aged 50 and over separating from a job and remaining non-employed for at least three consecutive years being classified as retired. These LAD-based probabilities are computed as the number of retirements over the number of employed persons by single age and gender. This estimate is then projected forward using key behavioural drivers. Recent research[60] has identified 5 primary drivers which significantly affect the retirement decisions of workers. These are the unemployment rate (as a proxy for cyclical factors), household net wealth holdings, the crowding effects of excess labour supply, implicit subsidies for retirement embedded in defined benefit pension plans, and birth-cohort or "generational" effects.[61] Despite the ability of the above variables to accurately reproduce historical retirement patterns, many of them cannot easily be projected. Hence, proxies are used to enable a relevant series of projections to be produced for retirement probabilities by age and gender. These probabilities are projected by controlling for cyclical fluctuations and birth-cohort effects. The end result is an estimate of trends in the probability of retirement by single age and gender over the coming decade.

A projection of retirement is then obtained by multiplying the projected age- and gender-specific retirement probabilities to the projected age- and gender-specific employment levels described above.

Retirement levels by 3-digit occupation are obtained using the Labour Force Survey. Annual occupational retirements from the LFS are estimated as the number of employed workers approaching the LFS median retirement age. The estimate captures potential retirements rather than a clear cut projection of actual retirements. This is done by ageing the LFS employment profile of an occupation forward and calculating the average annual number of employed workers within five years of that occupation's median retirement age (which is assumed to remain constant over the projection period). The end result is 3-digit occupational projections which are then normalized to ensure that they sum up to the headline retirement projection.

Deaths

Occupational deaths are computed using Statistics Canada demographic data. Aggregate death rates by single age are obtained by dividing deaths by population. These rates are projected forward using an autoregressive model and are applied to the occupational employment projections by single age. The aggregation across all age groups produces the occupational death projections. Occupational characteristics are taken into account simply by the age structure of the occupation. Hence, no information on occupation-specific risks enters the projections.

---

[59] The concept of cohorts is used to account for the changing tastes towards employment for different generations. For example, on average, a woman born in 1970 will be much more likely to be working at any particular age in her life than one born in 1930.

[60] For more information, see Dunn, Kevin, "Estimating and Forecasting Aggregate Retirement Flows in the Canadian Labour Market", Human Resources and Social Development Canada (December 2005).

[61] In the conceptual model, birth cohort effects are kept flat by assumption over the forecast period.

Emigration

The estimation of emigration by 3-digit occupation (140 occupations) is done in four stages. First, it is assumed that net annual emigration will represent a fixed proportion of the Canadian population (0.14 % for an average annual emigration level of 48,000 people). Next, the historical data from the Annual Demographic Statistics are used on the proportion of emigrants aged 15 and over to obtain a projection of the emigration source population. Then, the number of emigrants who would have participated in the labour force is determined by using the overall participation rate projection. Finally, emigrants are distributed by occupation using occupational distribution of the non-student Canadian labour force in 2007.

C - Retirement Results by Occupation

The table below highlights the retirement projections for the three-digit NOC occupations. The projected number of retirements within each occupation is primarily determined by the interaction of two variables: the distribution of the workforce by age and the average age of retirement, both of which vary significantly amongst detailed occupations. Retirement pressures should be highest in occupations with an older workforce and where the retirement age is relatively low.

Retirements by Three-Digit Occupation, 2008-2017

	Total Retirements (000s) 2008-2017	Retirement Rate 2008-2017 (AR[1])	Median Retirement Age	Average Employment Age	Age Gap[2]
Total	**3,402**	**2.2%**	**61**	**40**	**21**
001 Legislators and senior management	42	5.0%	60	49	11
011 Managers in administrative services	26	2.3%	61	43	18
012 Managers in financial and business services	22	2.1%	61	43	18
013 Managers in communication (except broadcasting)	3	2.0%	61	42	19
021 Engineering, science and information systems managers	14	2.0%	61	43	18
031 Health, education, and social and community services managers	45	5.4%	58	46	12
041 Managers in public administration	14	4.6%	59	47	12
051 Art, culture, recreation and sport managers	4	3.0%	59	43	16
061 Sales, marketing and advertising managers	27	2.2%	61	43	18
062 Managers in retail trade	100	3.0%	61	44	17
063 Managers in food service and accommodation	38	2.1%	65	44	21
064 Managers in protective service	2	3.2%	61	44	17
065 Managers in other services	4	2.4%	61	43	18
071 Managers in construction and transportation	39	2.5%	62	45	17
072 Facility operation and maintenance managers	9	2.4%	62	44	18
081 Primary production managers	2	2.3%	62	45	17

Retirements by Three-Digit Occupation, 2008-2017 *(continued)*

	Total Retirements (000s) 2008-2017	Retirement Rate 2008-2017 (AR[1])	Median Retirement Age	Average Employment Age	Age Gap[2]
091 Managers in manufacturing and utilities	21	2.3%	62	45	17
111 Auditors, accountants and investment professionals	76	2.2%	61	42	19
112 Human resources and business service professionals	43	2.8%	61	44	17
121 Clerical supervisors	38	2.8%	59	41	18
122 Administrative and regulatory occupations	94	2.8%	60	43	17
123 Finance and insurance administrative occupations	58	2.4%	62	43	19
124 Secretaries, recorders and transcriptionists	83	4.0%	60	45	15
141 Clerical occupations, general office skills	67	2.8%	60	39	21
142 Office equipment operators	14	2.6%	60	38	22
143 Finance and insurance clerks	84	2.3%	60	40	20
144 Administrative support clerks	62	2.5%	60	41	19
145 Library, correspondence and related information clerks	31	1.5%	60	35	25
146 Mail and message distribution occupations	31	3.4%	60	41	19
147 Recording, scheduling and distributing occupations	39	1.6%	62	39	23
211 Physical science professionals	6	2.2%	62	41	21
212 Life science professionals	4	1.5%	62	41	21
213 Civil, mechanical, electrical and chemical engineers	26	1.9%	62	42	20
214 Other engineers	11	1.6%	63	41	22
215 Architects, urban planners and land surveyors	7	2.0%	63	43	20
216 Mathematicians, statisticians and actuaries	1	1.2%	63	38	25
217 Computer and information system professionals	28	0.8%	63	38	25
221 Technical occupations in physical sciences	6	2.1%	60	38	22
222 Technical occupations in life sciences	8	2.0%	60	40	20
223 Civil, mechanical and industrial engineering technicians	16	2.9%	60	40	20
224 Electronics and electrical engineering technicians	23	2.1%	60	39	21
225 Technical occupations in architecture, drafting, etc.	10	1.7%	60	38	22
226 Other technical inspectors and regulatory officers	15	3.0%	60	44	16
227 Transportation officers and controllers	7	2.4%	60	42	18
228 Computer and information system technicians	13	1.0%	60	36	24
311 Physicians, dentists and veterinarians	23	2.4%	64	46	18
312 Optometrists, chiropractors and other health professions	4	2.6%	62	44	18
313 Pharmacists, dietitians and nutritionists	7	2.0%	62	42	20
314 Therapy and assessment professionals	6	1.3%	62	39	23
315 Nurse supervisors and registered nurses	80	3.0%	60	43	17

Retirements by Three-Digit Occupation, 2008-2017 *(continued)*

	Total Retirements (000s) 2008-2017	Retirement Rate 2008-2017 (AR[1])	Median Retirement Age	Average Employment Age	Age Gap[2]
321 Medical technologists and technicians	18	2.2%	60	40	20
322 Technical occupations in dental health care	5	1.6%	60	40	20
323 Other technical occupations in health (except dental)	28	2.3%	60	40	20
341 Assisting occupations in health services	61	2.4%	61	40	21
411 Judges, lawyers and notaries	18	2.5%	64	45	19
412 University professors and assistants	23	2.5%	63	39	24
413 College and other vocational instructors	32	3.5%	60	44	16
414 Secondary and elementary school teachers and counsellors	135	3.2%	58	41	17
415 Psychologists, social workers and clergy	43	3.3%	60	44	16
416 Policy and program officers	35	2.3%	60	41	19
421 Paralegals, social service workers, etc.	55	1.6%	62	38	24
511 Librarians, archivists, conservators and curators	5	4.1%	62	46	16
512 Writing, translating and public relations professionals	24	2.3%	62	42	20
513 Creative and performing artists	22	2.3%	62	41	21
521 Technical occupations in libraries, archives, etc.	6	3.8%	60	41	19
522 Photographers, graphic arts technicians, etc.	6	1.3%	62	37	25
523 Announcers and other performers	1	1.0%	62	35	27
524 Creative designers and craftspersons	15	1.5%	62	38	24
525 Athletes, coaches, referees and related occupations	6	0.9%	62	27	35
621 Sales and service supervisors	36	1.6%	62	38	24
622 Technical sales specialists in wholesale trade	23	1.9%	62	41	21
623 Insurance and real estate sales occupations	51	2.8%	62	45	17
624 Chefs and cooks	23	1.1%	64	34	30
625 Butchers and bakers	10	1.6%	63	35	28
626 Police officers and firefighters	25	2.6%	56	39	17
627 Technical occupations in personal service	18	1.8%	62	39	23
641 Sales representatives in wholesale trade	42	1.7%	64	42	22
642 Retail salespersons and sales clerks	69	1.6%	64	33	31
643 Occupations in travel and accommodation	13	1.9%	60	37	23
644 Tour and recreation guides and casino occupations	3	1.5%	60	38	22
645 Occupations in food and beverage service	20	1.0%	60	29	31
646 Other occupations in protective service	8	2.3%	60	38	22
647 Childcare and home support workers	55	2.8%	60	41	19
648 Other occupations in personal service	8	1.2%	60	35	25
661 Cashiers	25	1.2%	63	29	34
662 Other sales and related occupations	23	1.3%	64	31	33

Retirements by Three-Digit Occupation, 2008-2017 *(continued)*

	Total Retirements (000s) 2008-2017	Retirement Rate 2008-2017 (AR[1])	Median Retirement Age	Average Employment Age	Age Gap[2]
664 Food counter attendants and helpers	21	1.2%	64	29	35
665 Security guards and related occupations	18	2.0%	68	41	27
666 Cleaners	110	2.7%	62	42	20
667 Travel, accommodation and recreation attendants	4	1.4%	63	32	31
668 Other elemental service occupations	12	2.5%	65	41	24
721 Contractors and supervisors, trades and related	59	2.7%	61	44	17
722 Supervisors in railway and motor transportation	12	4.1%	60	46	14
723 Machinists and related occupations	11	1.8%	63	41	22
724 Electrical trades and telecommunications occupations	42	2.7%	58	40	18
725 Plumbers, pipefitters and gas fitters	10	1.4%	63	38	25
726 Metal forming, shaping and erecting occupations	21	1.5%	63	38	25
727 Carpenters and cabinetmakers	19	1.3%	64	38	26
728 Masonry and plastering trades	8	1.2%	63	37	26
729 Other construction trades	13	1.5%	63	38	25
731 Machinery and transportation equipment mechanics	53	2.9%	59	41	18
732 Motor vehicle mechanics	21	1.3%	63	38	25
733 Other mechanics	5	1.7%	63	39	24
734 Upholsterers, tailors, shoe repairers, etc.	14	4.8%	61	47	14
735 Stationary engineers and power system operators	7	2.5%	61	44	17
736 Train crew operating occupations	3	2.7%	61	44	17
737 Crane operators, drillers and blasters	4	2.1%	61	41	20
738 Printing press operators, commercial divers, etc.	10	2.8%	61	42	19
741 Motor vehicle and transit drivers	107	2.2%	64	44	20
742 Heavy equipment operators	20	2.1%	63	43	20
743 Other transport equipment operators	4	2.0%	63	40	23
744 Other installers, repairers and servicers	10	1.6%	62	37	25
745 Longshore workers and material handlers	31	1.6%	62	37	25
761 Trades helpers and labourers	11	1.0%	63	33	30
762 Public works and other labourers	4	1.9%	63	41	22
821 Supervisors in logging and forestry	2	3.2%	63	44	19
822 Supervisors in mining, oil and gas	4	1.3%	63	42	21
823 Underground miners, oil and gas drillers, etc.	6	1.3%	63	39	24
824 Logging machinery operators	3	3.2%	63	42	21
825 Contractors, operators and supervisors in agriculture	62	2.5%	69	48	21
826 Fishing vessel masters and skippers	3	1.6%	68	46	22
841 Mine service workers and operators in oil	1	0.7%	63	33	30

Retirements by Three-Digit Occupation, 2008-2017 *(continued)*					
	Total Retirements (000s) 2008-2017	Retirement Rate 2008-2017 (AR[1])	Median Retirement Age	Average Employment Age	Age Gap[2]
842 Logging and forestry workers	3	2.3%	63	42	21
843 Agriculture and horticulture workers	7	1.0%	68	33	35
844 Other fishing and trapping occupations	0	0.8%	68	38	30
861 Primary production labourers	11	1.2%	63	33	30
921 Supervisors, processing occupations	22	3.4%	59	43	16
922 Supervisors, assembly and fabrication	18	3.1%	59	43	16
923 Central control operators in manufacturing and processing	7	2.9%	59	42	17
941 Machine operators: metal and mineral products	6	2.2%	62	40	22
942 Machine operators: chemical, plastic and rubber	12	2.0%	62	40	22
943 Machine operators: pulp and paper products	11	2.2%	62	40	22
944 Machine operators: textile processing	5	3.8%	62	44	18
945 Machine operators: fabric, fur and leather	15	3.6%	62	45	17
946 Machine operators: food, beverage and tobacco	16	2.0%	62	40	22
947 Printing machine operators and related occupations	4	1.7%	62	38	24
948 Mechanical, electrical and electronics assemblers	25	2.4%	60	41	19
949 Other assembly and related occupations	19	1.9%	62	40	22
951 Machining, metalworking and woodworking operators	23	2.0%	62	39	23
961 Labourers in processing, manufacturing and utilities	34	1.8%	62	38	24

Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Scenario Reference.

[1] AR: annual rate; the annual rate is calculated as the average number of retirements over the forecast divided by the level of employment the base year (2007).

[2] The age gap is an indicator of retirement pressures. Typically, the greater the difference between the retirement age and the employment age in a given occupation, the lower the retirement rate.

D - Models – Job Seekers

The job seeker models set out below replicate the dynamics of labour force flows. Over a given period, labour market composition and growth will be influenced by the arrival of recent school leavers (whether graduates or not), recent immigrants and persons returning to or leaving the labour market. The first 3 groups make up what we refer to as job seekers. The last group, those leaving the labour market, is instead considered to be a source of replacement demand.[62] In addition, because our models provide job seeker projections by occupation, an evaluation of net mobility among skill levels makes it possible to consider people's career development (vertical mobility).

[62] However, those who leave the labour market before age 50 will be considered in the calculation of net re-entrants.

School leavers

The school leavers model produces projections on the number of people who leave the Canadian school system to enter the labour market, for each three-digit occupation of the National Occupational Classification (140 occupations).

The first stage consists of projecting enrolments and graduates for four major educational levels: high school, trade and vocational, community college (including university certificates below a Bachelor's degree), and university (Bachelor's degree, university certificates above a Bachelor's degree, Master's degree, Ph.D.). To do so, administrative data used are mainly drawn from the following sources:

- The Postsecondary Student Information System (PSIS). The PSIS encompasses and replaces the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade/Vocational Enrolment Survey (TVOC).
- The Elementary-Secondary Education Statistics Project (ESESP).

It should be noted that these data, which are drawn from Statistics Canada's Centre for Education Statistics, are available up to 1999-2000 for trade and vocational training and college, and up to 2005-2006 for university and high school.[63] Apart from a few exceptions (university certificates and diplomas), the projections include only full-time students, so as to avoid counting persons who are already in the labour market as new entrants.

Several factors influence enrolment levels.[64] The following equation represents our model for projecting enrolment levels at time *t* for educational level *i*:

$$Enrolments_{it} = f\,(Enrolments_{i(t-1)}\,,PCRPDI_t\,,UR_t\,,Gov.\ Fund_t,\ Source\ Pop._{it}) \qquad (+,\ +,\ +,\ +,\ +)$$

where *PCRPDI* represents per capita real personal disposable income, *UR* the unemployment rate, *Gov. Fund* the amount of government funding allocated to education and *Source Pop* the source population.

It is expected that an increase in per capita real personal disposable income will drive up demand for education, and thus enrolments, as education is a 'normal' good (i.e., consumption increased with income). An increase in the unemployment rate also boosts enrolments, as it lessens the probability of employment in the labour market, thus reducing the opportunity cost of pursuing education. In addition, the more the government invests in the education system, through the funding of spaces in the education system or additional financial assistance (e.g., loans and scholarships), the easier it is to access it. Finally, the larger the source population, the higher enrolments should be.

---

[63] Because of the lags in releasing data by Statistics Canada, the model must first "forecast" the past before forecasting the future. For example, because college data is only available up to 1999, projections have to be made starting in 2000.

[64] For more information on potential factors affecting enrolments, see: Canadian Council on Learning, (2006), "Factors Influencing Postsecondary Enrolment Increases and Decreases – Systematic Reviews of Studies on PSE". The document is available at http://www.ccl-cca.ca/NR/rdonlyres/6BEB47E9-210C-4166-B7DC-38376C7847A1/0/EnrolmentinPSE.pdf

Graduates are then projected based on the number of enrolments:

$$Graduates_{it} = f(Enrolments_{i(t-T)}, Graduates_{i(t-1)}) \quad (+, +)$$

Enrolments are correlated positively with graduates. The more enrolments are observed, the more people should complete the program. The average program length is also taken into account (T).

The second stage consists of estimating the number of dropouts, as not all enrolled students complete their studies. As a general rule, dropouts from a given level of the education system are considered to be in competition on the labour market with the graduates of the level immediately below. For example, Master's degree dropouts are in competition with Bachelor's degree graduates.

At the high school level, the number of dropouts in a given year is calculated by subtracting the number of graduates in the current year (2008) from the number of students enrolled in Grade 9 four years earlier (in 2004-2005, for example). At the postsecondary level, a coefficient is used (which remains fixed during the projection period) that is taken from a study by Shaienks and Gluszynski (2007).[65] According to that study, among a sample of students aged 18 to 20 in December 1999 and enrolled in postsecondary studies, around 15% had dropped out six years later.

The third stage consists of measuring the number of school leavers by educational level. School leavers include those dropouts and graduates who do not continue their studies and want to enter the labour market. Foreign students are not included, because if they decide to become Canadian citizens, they will be taken into account through the immigration model.

The final stage consists of distributing school leavers by occupation. Two scenarios are considered for the distribution by occupation.

Ex post scenario

The first scenario, called the ex post scenario, reflects the experience of recent graduates, including their difficulties in accessing certain occupations. This scenario uses, for all educational levels, Labour Force Survey (LFS) data from the last 3 years to establish the distribution of school leavers by occupation. This distribution differs by educational level, as it reflects the source population pool. For example, the occupational distribution for high school leavers is represented by the LFS data for students aged 15 to 24, while the distribution for Bachelor's degree leavers includes older individuals. This scenario does not restrict graduates to holding an occupation directly related to their field of study. For example, a graduate with a Bachelor's degree in nursing may well have an occupation in a completely different field.

[65] Statistics Canada, Shaienks, D. and T. Gluszynski, (2007), "Participation in Postsecondary Education: Graduates, Continuers and Drop Outs, Results from YITS Cycle 4", Culture, Tourism and the Centre for Education Statistics – Research Papers series, number 059. Statistics Canada Catalogue number 81-595-MIE2007059.

Ex ante scenario

The second scenario, called the ex ante scenario, restricts new school leavers to seeking employment in occupations directly related to their field of study. This scenario is intended to derive a supply flow that reflects school leavers' career goals.

In the case of persons who have a postsecondary diploma (college, trade or vocational, or university), the model breaks down those graduates by field of study using the aforementioned administrative data, before proceeding with conversion by occupation. In all, 49 fields of study are retained for trade and vocational graduates, 55 for college graduates, and 58 for university graduates (Bachelor's degree, Master's degree and Ph.D.) Because the breakdowns by field of study are relatively stable over time, they are kept constant during the projection period.[66]

The model then uses data from Statistics Canada's National Graduate Survey (NGS) (graduates between 1995 and 1997 and graduates between 2000 and 2002) to determine how many postsecondary graduates, by field of study and educational level, were able to find employment after graduation. For each field of study within a given educational level, only occupations relating to that field of study were retained. For example, someone with a Bachelor's in nursing may seek work in an occupation such as a nursing sciences professional, health care technical personnel, or health sciences technologist. However, those same graduates are restricted to not seeking employment as a cashier, even though in reality some graduates may end up in such an occupation. This scenario also reflects the difficulties graduates may face early on in their career, by allowing graduates to fall back on less qualified occupations, if they are directly related to their field of study.

For graduates who have not completed postsecondary education (individuals with less than high school, high school graduates and individuals with only some postsecondary education), the model uses youths data from the Labour Force Survey for the occupational distributions.

Immigration

The immigration model produces projections on the number of recent immigrants who become job seekers, for each 3-digit occupation (140 occupations). The model is composed of four stages.

The model first establishes a projection of the recent immigrant population. First, it assumes that annual immigration will represent a fixed proportion of the Canadian population (0.75 % for an average immigration level of some 256,000 people). Next, historical data from the Annual Demographic Statistics are used on the proportion of immigrants aged 15 and older to obtain a projection of the recent immigrant source population. Then, the non-student labour force is determined by using the proportion of those who were not attending school and the participation rate taken from the last census.

[66] In “A Dynamic Analysis of the School-to-Work Transition of Post-Secondary Graduates in Canada”, (Human Resources Development Canada, R-99-14E, 1999), Ross Finnie found that broad field-of-study distributions did not change significantly over a 15-year horizon.

Finally, recent immigrants entering the labour market are distributed by occupation using the occupational distribution of immigrants who were in the labour force between 2001 and 2006 based on the 2006 Census. An alternative distribution could have been considered, based on immigrants' "intended" occupations before arrival. Some studies have shown, however, that the relationship between the "intended" occupation of immigrants before arrival and their "actual" occupation is not statistically significant. Green (1995)[67] concludes that characteristics such as education and geographic location are more important determinants of occupation than statements of intent at the time of landing.

Net re-entrants

The net re-entrants model is designed to measure the number of individuals who re-enter the labour market. Labour Force Survey data do not enable us to distinguish between those re-entering the labour market and those leaving it. The concept used in the model is thus based on a net evaluation of re-entrants, taking into consideration 4 educational levels (university, college, high school, less than high school), and nine age groups (15-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-64, and 65 and over).

For those under 50 years of age, the method consists of measuring changes in participation rates observed within a given group of individuals over a period of ten years. For example, individuals between 30 and 34 years of age are observed in 2007, and their participation rate is projected up to 2017 (when they will be between 40 and 44 years of age). This makes it possible to estimate the number of persons who re-enter or leave the labour market. For those aged 50 and over, we only want to capture the individuals who re-enter the labour market, as those who leave it will be covered by the retirement model. The approach used is approximate: participation rate flows are observed over ten years for the same age group (without ageing them).

By combining these results across age groups, an estimate of net re-entrants is obtained. That estimate is established by skill level using the distributions that the labour force with a given educational level fill occupations in a given skill level. This is then converted into occupations using the shares of the labour force (by age group and by education) of each occupation within each skill level, based on the Labour Force Survey data.

Net mobility

Net mobility, which captures individuals currently in the labour force moving between occupations, takes two forms:

- vertical labour mobility, in which workers move between occupations that require a different skill level. This includes upward occupational mobility, as workers who have gained labour force experience move to management positions, and downward occupational mobility, where workers choose to enter low-skilled occupations as part of their transition towards retirement.

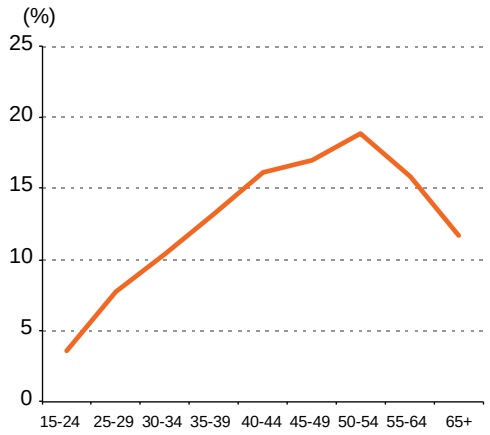
[67] For more details, see Green, David A., "Intended and Actual Occupations of Immigrants", in Don J. DeVoretz, ed., Diminishing Returns: The Economics of Canada's Recent Immigration Policy. Policy, Study 24 (1995).

- horizontal labour mobility, in which workers move between occupations within the same skill level.

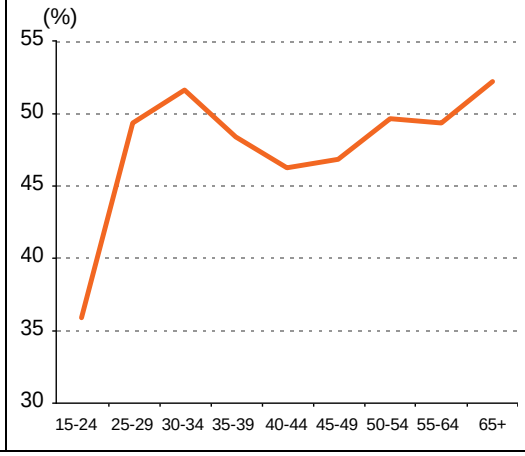
Only the first form of mobility, vertical mobility across skill levels, is modeled. Vertical mobility is obtained using the distributions of individuals with a given level of education filling an occupation in a given skill level (see the chapter *Labour Force: Recent Trends and Outlook* for more information). These distributions are estimated using data from the Labour Force Survey for five skill levels, four educational attainment categories (university, college, high school, less than high school), and nine age groups (15-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-64, and 65 and over).

For example, university school leavers often have to start in low-skilled occupations early in their career before eventually moving to higher skilled occupations. Indeed, the proportion of the university educated labour force (non-student) in occupations usually requiring university education rises from 36% for the 15-24 age group to 50% for the 25-29 age group. It then remains at this level until age 40.

Percentage of University Graduates in Management Occupations, by Age



Percentages of University Graduates in Occupations Usually Requiring a University Degree, by Age



Sources: Statistics Canada, Labour Force Survey, and Estimates by Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

As they gain experience, some will move up to management after age 40 reducing the proportion of the university educated labour force in occupations usually requiring university education to 48%. At around 50 years of age, about 18% of the university educated labour force is in management occupations. This proportion goes down to 12% after 65 years old, as older workers move out of management ranks as part of their transition towards retirement. These changes across age groups are computed and projected for the other 18 education and skill level combinations.

By applying these distributions to labour force projections by educational attainment and age group, a projection of net mobility by skill level can be derived. This measure is a 'net' concept, as it is difficult to capture 'gross' flows, i.e. both the number of people leaving or entering an occupation.

Net mobility is further disaggregated by occupation using labour force shares (by age and education) of each occupation within each skill level based on the Labour Force Survey.

E - Results of Future Imbalances by 3-Digit Occupation

Assessment of Future Labour Market Imbalances by Occupation (Ex-post scenario)

EX-POST		Non-Student Employment 2007 ('000s)	Job Openings: Expansion Demand (1)		Job Openings: Retirements (2)		Job Openings: Deaths (3)	Job Openings: Emigration (4)	Job Openings: Projected Job Openings (5)=(1+2+3+4)		Job Seekers: School Leavers (6)		Job Seekers: Immigration (7)		Job Seekers: Mobility (8)	Job Seekers: Others (9)	Job Seekers: Projected Job Seekers (10)=(6+7+8+9)		Balance: Annual Excess Demand* (11)=(10-5)/10	Balance: NFLMS **	Balance: XD / SL+IM ***
			08-17		08-17		08-17	08-17	08-17		08-17		08-17		08-17	08-17	08-17		08-17	08-17	08-17
	All Occupations	15 531.2	1 385.9	A	3 402.3	A	439.4	283.2	**5 510.8**	**A**	4403.70	A	1 007.6	A	0.00	177.88	**5 589.2**	**A**	**-7.8**	-0.1	-1.4%
	Management	1 469.2	120.5	A	412.1	AA	55.2	26.1	**614.0**	**AA**	238.91	BA	80.4	A	193.26	104.77	**617.4**	**A**	**-0.3**	0.0	-1.1%
	Skill Level A	2 765.8	449.5	AA	659.2	A	82.4	49.3	**1 240.3**	**AA**	866.76	A	186.4	A	12.35	107.78	**1 173.3**	**A**	**6.7**	0.2	6.4%
	Skill Level B	5 208.9	472.5	A	1 134.6	A	151.9	94.5	**1 853.5**	**A**	1388.54	A	233.0	A	-15.73	109.25	**1 715.0**	**A**	**13.8**	0.3	8.5%
	Skill Level C	4 532.3	276.7	A	923.9	A	110.8	83.7	**1 395.1**	**A**	1317.55	A	336.2	A	31.10	-58.20	**1 626.7**	**A**	**-23.2**	-0.5	-14.0%
	Skill Level D	1 555.1	66.8	BA	272.4	A	39.0	29.6	**408.0**	**BA**	591.94	AA	171.6	AA	-220.97	-85.73	**456.8**	**A**	**-4.9**	-0.3	-6.4%
	Business, Finance & Adm	3 166.8	198.9	A	810.8	A	90.7	57.0	**1 157.6**	**A**	799.97	A	168.6	A	36.34	50.28	**1 055.2**	**A**	**10.2**	0.3	10.6%
	Natural and Applied Sc.	1 207.1	194.0	AA	194.1	A	27.9	21.7	**437.7**	**A**	407.26	AA	128.0	AA	8.29	33.21	**576.8**	**AA**	**-13.9**	-1.2	-26.0%
	Health	1 036.3	288.0	AA	277.8	A	31.6	18.3	**615.7**	**AA**	274.39	A	49.5	A	9.89	26.46	**360.3**	**A**	**25.5**	2.5	78.9%
	Social Sc,. Education & Gov.	1 339.9	178.2	AA	355.8	A	38.8	24.1	**596.9**	**AA**	443.73	A	61.0	A	3.47	47.67	**555.8**	**A**	**4.1**	0.3	8.1%
	Art, Culture, Recreation & Sport	464.0	59.4	AA	88.6	A	13.0	8.4	**169.4**	**A**	176.05	AA	24.9	A	4.55	15.64	**221.1**	**AA**	**-5.2**	-1.1	-25.7%
	Sales and Services	4 068.5	260.8	A	789.0	A	109.6	74.4	**1 233.8**	**A**	1281.84	A	297.5	A	-55.37	5.65	**1 529.6**	**A**	**-29.6**	-0.7	-18.7%
	Trades & Transport	2 646.7	183.9	A	545.5	A	71.1	49.0	**849.6**	**A**	644.48	A	130.0	A	20.08	5.46	**800.0**	**A**	**5.0**	0.2	6.4%
	Primary	561.6	30.8	A	103.3	A	33.2	10.6	**177.8**	**A**	145.28	A	21.0	A	-13.45	8.25	**161.1**	**A**	**1.7**	0.3	10.1%
	Processing, Manufacturing & Utilities	1 040.3	-8.2	BA	237.4	A	23.5	19.6	**272.3**	**BA**	230.70	A	127.1	AA	-13.80	-14.75	**329.3**	**A**	**-5.7**	-0.5	-15.9%
001	Legislators & Senior Management	83.2	13.2	AA	41.6	AA	3.3	1.5	**59.6**	**AA**	6.24	BA	7.4	AA	9.20	7.21	**30.1**	**A**	**3.0**	3.5	215.6%
011	Administrative Services Managers	114.4	10.3	A	26.5	A	4.4	2.0	**43.2**	**A**	21.51	BA	6.2	A	15.12	7.37	**50.2**	**AA**	**-0.7**	-0.6	-25.1%
012	Managers in Financial / Business Services	102.8	5.0	A	21.8	A	3.8	1.8	**32.4**	**A**	25.08	A	4.7	A	13.74	6.77	**50.3**	**AA**	**-1.8**	-1.7	-59.9%
013	Managers in Communication (Except Broadcasting)	15.4	1.3	A	3.1	A	0.6	0.3	**5.3**	**A**	2.36	BA	0.6	A	5.65	0.93	**9.6**	**AA**	**-0.4**	-2.8	-144.1%
021	Engineering / Science / Information Systems Mgr's	69.5	8.2	A	13.9	A	2.7	1.2	**26.0**	**A**	12.50	BA	5.5	A	7.55	4.73	**30.2**	**AA**	**-0.4**	-0.6	-23.6%
031	Health / Education / Social & Community Services Mgr's	84.8	19.8	AA	45.4	AA	3.6	1.5	**70.3**	**AA**	10.00	BA	1.8	BA	11.98	5.83	**29.7**	**A**	**4.1**	4.8	343.2%
041	Managers in Public Administration	29.6	2.3	A	13.6	AA	1.1	0.5	**17.5**	**AA**	3.07	BA	0.2	BA	3.70	2.06	**9.0**	**A**	**0.9**	2.9	262.9%
051	Art / Culture / Recreation / Sport Managers	12.7	1.1	A	3.8	AA	0.5	0.2	**5.6**	**AA**	2.91	A	0.8	A	4.27	0.78	**8.7**	**AA**	**-0.3**	-2.4	-83.9%
061	Sales, Marketing & Advertising Managers	125.9	8.1	A	27.1	A	4.6	2.3	**42.1**	**A**	28.29	A	10.4	A	16.89	7.71	**63.3**	**AA**	**-2.1**	-1.7	-54.9%
062	Managers in Retail Trade	331.0	9.9	BA	99.6	AA	11.9	5.9	**127.3**	**A**	55.27	BA	20.0	A	43.82	24.32	**143.4**	**A**	**-1.6**	-0.5	-21.4%
063	Managers in Food Service & Accommodation	181.3	15.3	A	37.8	A	6.9	3.2	**63.2**	**A**	30.57	BA	10.4	A	22.79	14.50	**78.3**	**A**	**-1.5**	-0.8	-36.9%
064	Managers in Protective Service	6.4	0.7	A	2.0	AA	0.3	0.1	**3.1**	**AA**	0.10	BA	0.2	BA	0.50	0.37	**1.1**	**BA**	**0.2**	3.1	731.1%
065	Managers in Other Services	18.1	1.0	A	4.3	A	0.7	0.3	**6.3**	**A**	3.24	BA	1.4	A	2.56	1.32	**8.5**	**AA**	**-0.2**	-1.2	-47.1%
071	Managers in Construction & Transportation	155.4	19.1	A	39.1	A	5.9	2.7	**66.9**	**AA**	19.82	BA	5.6	A	17.96	11.12	**54.5**	**A**	**1.2**	0.8	49.0%
072	Facility Operation & Maintenance Managers	38.6	3.4	A	9.2	A	1.5	0.7	**14.8**	**A**	5.15	BA	1.1	BA	5.18	2.39	**13.8**	**A**	**0.1**	0.2	14.9%
081	Primary Production Managers	8.6	0.6	A	2.0	A	0.3	0.2	**3.0**	**A**	1.23	BA	0.4	A	1.07	0.54	**3.2**	**A**	**0.0**	-0.2	-9.7%
091	Managers in Manufacturing & Utilities	91.7	1.0	BA	21.4	A	3.2	1.6	**27.3**	**A**	11.57	BA	3.9	A	11.29	6.81	**33.6**	**A**	**-0.6**	-0.7	-40.9%
111	Auditors / Accountants / Investment Professionals	340.9	27.8	A	76.3	A	10.8	6.0	**120.9**	**A**	96.81	A	20.5	A	1.52	13.11	**132.0**	**A**	**-1.1**	-0.3	-9.4%

112	Human Resources & Business Service Professionals	154.2	18.4	A	42.7	AA	4.9	2.7	**68.7**	AA	38.26	A	5.6	A	-0.81	6.60	**49.6**	A	**1.9**	1.2	43.4%
121	Clerical Supervisors	132.6	8.3	A	37.6	AA	4.3	2.4	**52.6**	A	26.54	A	3.6	BA	-0.91	2.12	**31.4**	BA	**2.1**	1.6	70.4%
122	Administrative & Regulatory Occ's	330.5	30.6	A	93.7	AA	10.8	5.9	**141.1**	AA	68.96	A	12.6	A	-5.44	8.18	**84.3**	BA	**5.7**	1.7	69.6%
123	Finance & Insurance Administrative Occ's	244.7	21.9	A	57.5	A	8.0	4.4	**91.8**	A	53.30	A	8.0	A	-3.29	9.92	**68.0**	BA	**2.4**	1.0	38.9%
124	Secretaries, Recorders & Transcriptionists	209.3	-20.9	BA	83.3	AA	6.0	3.8	**72.1**	A	34.54	BA	9.5	A	-1.60	4.87	**47.3**	BA	**2.5**	1.2	56.4%
141	Clerical Occ's, General Office Skills	238.4	11.8	A	66.9	AA	5.7	4.4	**88.8**	A	75.24	A	19.0	A	0.74	-1.09	**93.9**	A	**-0.5**	-0.2	-5.4%
142	Office Equipment Operators	52.3	-0.4	BA	13.6	A	1.2	1.0	**15.4**	A	15.65	A	4.4	AA	0.01	-0.29	**19.8**	A	**-0.4**	-0.8	-22.1%
143	Finance & Insurance Clerks	368.8	33.7	A	83.7	A	8.7	6.6	**132.7**	A	104.74	A	22.2	A	-0.10	-3.84	**123.0**	A	**1.0**	0.3	7.6%
144	Administrative Support Clerks	250.6	20.1	A	62.1	A	5.9	4.5	**92.6**	A	65.12	A	6.0	BA	0.09	-2.94	**68.3**	BA	**2.4**	1.0	34.1%
145	Library, Correspondence & Related Info. Clerks	201.0	14.9	A	30.5	BA	4.9	3.8	**54.1**	BA	84.80	AA	15.5	A	-0.96	-2.73	**96.6**	AA	**-4.3**	-2.1	-42.4%
146	Mail & Message Distribution Occ's	90.6	-1.7	BA	30.9	AA	2.1	1.6	**32.9**	A	14.84	BA	3.6	A	0.96	-0.64	**18.8**	BA	**1.4**	1.6	76.6%
147	Recording / Scheduling / Distributing Occ's	237.3	4.7	BA	39.1	A	5.2	4.4	**53.4**	BA	65.99	A	19.1	A	2.43	-5.27	**82.2**	A	**-2.9**	-1.2	-33.9%
211	Physical Science Professionals	27.3	3.0	A	6.1	A	0.6	0.5	**10.3**	A	10.16	AA	5.8	AA	0.25	0.94	**17.2**	AA	**-0.7**	-2.5	-43.2%
212	Life Science Professionals	25.9	5.5	AA	3.8	BA	0.6	0.5	**10.4**	A	8.44	A	2.3	AA	0.02	1.00	**11.8**	AA	**-0.1**	-0.5	-13.1%
213	Civil / Mechanical / Electrical / Chemical Engineers	131.2	25.5	AA	25.6	A	3.1	2.4	**56.5**	AA	46.92	AA	19.3	AA	1.11	4.96	**72.3**	AA	**-1.6**	-1.2	-23.9%
214	Other Engineers	72.8	13.3	AA	11.4	BA	1.7	1.3	**27.7**	A	25.34	AA	10.5	AA	0.29	2.71	**38.8**	AA	**-1.1**	-1.5	-30.9%
215	Architects / Urban Planners / Land Surveyors	34.3	4.9	AA	6.7	A	0.8	0.6	**13.1**	A	10.24	A	2.2	A	0.39	1.42	**14.3**	A	**-0.1**	-0.3	-9.6%
216	Mathematicians / Statisticians / Actuaries	7.4	1.0	AA	0.9	BA	0.2	0.1	**2.2**	A	2.92	AA	0.5	A	0.05	0.25	**3.7**	AA	**-0.2**	-2.1	-44.4%
217	Computer and Info. Sys. Professionals	336.4	65.3	AA	27.7	BA	8.1	6.0	**107.0**	A	116.87	AA	43.2	AA	4.01	9.54	**173.6**	AA	**-6.7**	-2.0	-41.6%
221	Technical Occ's in Physical Sciences	29.8	1.7	A	6.3	A	0.6	0.5	**9.1**	A	12.68	AA	3.7	AA	-0.35	0.41	**16.5**	AA	**-0.7**	-2.5	-44.7%
222	Technical Occ's in Life Sciences	41.2	4.7	A	8.4	A	0.8	0.8	**14.7**	A	12.71	A	1.4	A	-1.07	0.29	**13.3**	A	**0.1**	0.3	9.6%
223	Civil / Mechanical / Industrial Engineering Technicians	54.7	9.9	AA	15.6	AA	1.2	1.0	**27.6**	AA	18.20	A	4.5	A	-0.85	1.00	**22.8**	A	**0.5**	0.9	21.2%
224	Electronics / Electrical Engineering Technicians	107.5	17.4	AA	22.7	A	2.2	1.9	**44.2**	AA	34.10	A	8.4	A	-0.81	2.08	**43.8**	A	**0.0**	0.0	1.0%
225	Tech. Occ's in Architecture / Drafting / etc.	56.3	4.1	A	9.7	A	1.1	1.0	**15.8**	A	23.43	AA	6.0	AA	-0.48	1.19	**30.1**	AA	**-1.4**	-2.6	-48.8%
226	Other Technical Inspectors / Regulatory Officers	49.6	7.1	AA	14.7	AA	1.0	0.9	**23.7**	AA	11.14	A	1.5	A	-0.67	1.05	**13.0**	BA	**1.1**	2.2	84.9%
227	Transportation Officers & Controllers	30.5	1.7	A	7.2	A	0.6	0.6	**10.1**	A	5.99	A	0.8	BA	-0.66	0.02	**6.1**	BA	**0.4**	1.3	58.8%
228	Computer & Info. Sys. Technicians	132.8	20.7	AA	13.4	BA	2.8	2.4	**39.2**	A	55.62	AA	12.5	AA	-0.49	1.63	**69.2**	AA	**-3.0**	-2.3	-44.0%
311	Physicians / Dentists / Veterinarians	97.8	34.7	AA	23.3	A	3.3	1.7	**63.1**	AA	21.24	A	6.7	A	0.01	5.04	**33.0**	A	**3.0**	3.1	107.7%
312	Optometrists / Chiropractors / Other Health Professions	14.8	3.4	AA	3.8	A	0.5	0.3	**8.0**	AA	4.84	A	0.3	BA	0.04	0.63	**5.9**	A	**0.2**	1.5	41.4%
313	Pharmacists, Dietitians & Nutritionists	33.8	3.2	A	6.7	A	1.0	0.6	**11.5**	A	11.74	AA	1.8	A	0.27	1.51	**15.3**	AA	**-0.4**	-1.1	-28.0%
314	Therapy & Assessment Professionals	48.9	15.6	AA	6.2	BA	1.6	0.9	**24.3**	AA	22.30	AA	1.9	A	0.49	1.59	**26.3**	AA	**-0.2**	-0.4	-8.2%
315	Nurse Supervisors & Registered Nurses	262.1	87.8	AA	79.6	AA	8.8	4.6	**180.9**	AA	66.21	A	11.2	A	0.11	9.37	**86.9**	A	**9.4**	3.6	121.4%
321	Medical Technologists / Technicians	83.5	25.4	AA	18.3	A	2.2	1.5	**47.4**	AA	26.74	A	5.4	A	-1.12	2.22	**33.2**	A	**1.4**	1.7	44.0%
322	Tech. Occ's in Dental Health Care	31.2	6.7	AA	5.0	A	0.8	0.6	**13.0**	AA	10.46	A	1.7	A	-0.62	0.80	**12.4**	A	**0.1**	0.2	5.5%
323	Other Tech. Occ's in Health (Except Dental)	122.9	33.4	AA	27.8	A	3.2	2.2	**66.6**	AA	31.72	A	3.5	BA	-1.65	2.80	**36.4**	A	**3.0**	2.5	85.8%
341	Assisting Occ's in Health Services	256.6	58.0	AA	61.4	A	6.5	4.6	**130.5**	AA	69.13	A	15.0	A	0.39	-3.32	**81.2**	A	**4.9**	1.9	58.6%
411	Judges / Lawyers / Notaries	72.1	10.0	AA	17.7	A	2.1	1.3	**30.9**	AA	18.89	A	1.7	BA	-0.08	3.40	**24.0**	A	**0.7**	1.0	33.9%
412	University Professors & Assistants	93.6	22.4	AA	23.2	A	4.0	1.7	**51.4**	AA	29.14	A	12.2	AA	-0.09	4.28	**45.5**	AA	**0.6**	0.6	14.2%
413	College & Other Voc. Instructors	93.6	7.8	A	32.5	AA	2.7	1.7	**44.7**	AA	18.27	BA	5.1	A	-0.16	4.12	**27.3**	A	**1.7**	1.9	74.1%
414	Secondary / Elementary School Teachers & Counsellors	423.6	24.1	A	135.2	AA	11.9	7.6	**178.8**	AA	162.03	AA	9.8	BA	2.62	16.35	**190.8**	AA	**-1.2**	-0.3	-7.0%
415	Psychologists / Social Workers / Clergy	131.9	29.5	AA	43.4	AA	4.0	2.3	**79.3**	AA	37.27	A	4.0	A	0.38	5.88	**47.5**	A	**3.2**	2.4	77.0%
416	Policy & Program Officers	150.3	26.1	AA	35.3	A	4.5	2.7	**68.6**	AA	57.19	AA	9.9	A	0.26	5.50	**72.8**	AA	**-0.4**	-0.3	-6.3%
421	Paralegals / Social Services Workers / etc.	345.2	56.0	AA	55.0	A	8.5	6.2	**125.7**	A	117.87	AA	18.1	A	-3.17	6.07	**138.8**	A	**-1.3**	-0.4	-9.7%
511	Librarians, Archivists, Conservators & Curators	12.9	1.6	A	5.3	AA	0.5	0.2	**7.6**	AA	2.73	A	0.7	A	-0.09	0.57	**3.9**	A	**0.4**	2.9	110.2%
512	Writing / Translating / Public Relations Professionals	104.1	10.3	A	23.8	A	3.5	1.9	**39.4**	A	31.81	A	5.8	A	0.42	4.86	**42.9**	A	**-0.3**	-0.3	-9.3%
513	Creative & Performing Artists	95.9	8.3	A	21.8	A	3.3	1.7	**35.1**	A	27.13	A	5.3	A	1.35	4.15	**37.9**	A	**-0.3**	-0.3	-8.8%
521	Technical Occ's: Libraries / Archives / etc.	14.6	1.0	A	5.6	AA	0.3	0.3	**7.2**	AA	3.99	A	0.3	BA	-0.06	0.29	**4.5**	A	**0.3**	1.8	62.7%
522	Photographers / Graphic Arts Technicians / etc.	46.3	2.7	A	6.0	BA	0.9	0.9	**10.4**	BA	19.28	AA	2.4	A	0.39	0.37	**22.5**	AA	**-1.2**	-2.6	-55.8%
523	Announcers & Other Performers	12.2	0.7	A	1.2	BA	0.2	0.2	**2.3**	BA	4.10	A	0.6	A	0.32	0.34	**5.3**	AA	**-0.3**	-2.5	-64.9%
524	Creative Designers & Craftspersons	99.9	22.9	AA	15.2	BA	2.0	1.8	**41.9**	AA	39.85	AA	6.3	A	-1.66	2.51	**47.0**	AA	**-0.5**	-0.5	-11.1%
525	Athletes, Coaches, Referees & Related Occ's	65.4	10.8	AA	5.9	BA	1.9	1.2	**19.8**	A	44.25	AA	2.7	A	-0.37	1.76	**48.3**	AA	**-2.8**	-4.4	-60.7%
621	Sales & Service Supervisors	227.9	29.8	AA	36.0	BA	5.5	4.1	**75.4**	A	64.38	A	6.8	A	1.87	4.20	**77.2**	A	**-0.2**	-0.1	-2.5%
622	Technical Sales Specialists, Wholesale Trade	120.3	10.6	A	23.4	A	2.7	2.2	**38.8**	A	33.80	A	2.9	BA	-2.00	3.15	**37.9**	A	**0.1**	0.1	2.4%
623	Insurance & Real Estate Sales Occ's	180.6	8.5	A	51.2	AA	3.9	3.2	**66.9**	A	32.33	BA	5.6	A	-2.99	7.42	**42.4**	BA	**2.4**	1.4	64.4%
624	Chefs & Cooks	200.3	26.1	AA	22.8	BA	5.3	3.8	**57.9**	A	76.05	AA	21.3	AA	2.59	2.00	**101.9**	AA	**-4.4**	-2.2	-45.2%

625	Butchers & Bakers	65.1	4.7	A	10.2	BA	1.7	1.2	**17.7**	**BA**	20.45	A	6.0	AA	0.99	0.66	**28.1**	**A**	**-1.0**	-1.6	-39.4%
626	Police Officers & Firefighters	98.7	7.3	A	25.3	A	2.2	1.7	**36.6**	**A**	29.25	A	0.6	BA	-1.97	1.89	**29.8**	**A**	**0.7**	0.7	22.9%
627	Technical Occ's in Personal Service	101.9	6.1	A	18.3	A	2.2	1.8	**28.4**	**A**	32.34	A	4.3	A	-0.81	3.45	**39.2**	**A**	**-1.1**	-1.1	-29.6%
641	Sales Rep's, Wholesale Trade	245.2	16.6	A	42.2	A	5.0	4.4	**68.2**	**BA**	57.48	A	8.1	A	-0.97	-0.52	**64.1**	**BA**	**0.4**	0.2	6.2%
642	Retail Salespersons & Sales Clerks	436.6	18.9	A	69.2	BA	11.4	8.1	**107.5**	**BA**	181.49	AA	38.3	AA	1.72	-0.83	**220.7**	**AA**	**-11.3**	-2.6	-51.5%
643	Occ's in Travel & Accommodation	69.0	3.1	A	13.1	A	1.5	1.2	**18.8**	**BA**	24.46	AA	6.2	AA	-0.16	-0.82	**29.7**	**A**	**-1.1**	-1.6	-35.3%
644	Tour & Rec. Guides & Casino Occ's	19.9	4.4	AA	3.1	BA	0.5	0.4	**8.3**	**AA**	5.71	A	2.7	AA	0.10	-0.14	**8.3**	**A**	**0.0**	0.0	-0.7%
645	Occ's in Food & Beverage Service	208.1	19.7	A	19.9	BA	5.8	3.9	**49.2**	**BA**	115.93	AA	11.0	A	1.09	-5.43	**122.6**	**AA**	**-7.3**	-3.5	-57.8%
646	Other Occ's in Protective Service	32.2	3.7	A	7.5	A	0.7	0.6	**12.5**	**A**	10.65	A	0.9	BA	-0.34	-0.26	**10.9**	**A**	**0.2**	0.5	13.7%
647	Childcare & Home Support Workers	194.6	1.3	BA	55.4	AA	4.1	3.6	**64.4**	**A**	42.66	A	21.5	AA	0.79	-0.60	**64.3**	**A**	**0.0**	0.0	0.1%
648	Other Occ's in Personal Service	62.9	8.9	AA	7.7	BA	1.4	1.1	**19.0**	**A**	25.42	AA	4.8	A	-0.04	-0.98	**29.2**	**AA**	**-1.0**	-1.6	-33.6%
661	Cashiers	218.5	11.2	A	25.2	BA	7.2	4.1	**47.7**	**BA**	107.09	AA	20.7	AA	-30.05	-13.25	**84.5**	**A**	**-3.7**	-1.7	-28.8%
662	Other Sales & Related Occ's	170.8	10.1	A	22.7	BA	5.1	3.2	**41.1**	**BA**	83.78	AA	12.9	A	-24.13	-8.90	**63.7**	**A**	**-2.3**	-1.3	-23.4%
664	Food Counter Attendants & Helpers	185.7	12.3	A	21.5	BA	6.2	3.5	**43.5**	**BA**	94.36	AA	25.9	AA	-23.00	-10.81	**86.4**	**AA**	**-4.3**	-2.3	-35.7%
665	Security Guards & Related Occ's	90.9	3.2	BA	17.8	A	2.1	1.7	**24.7**	**BA**	27.97	A	10.5	AA	-10.51	-2.23	**25.7**	**A**	**-0.1**	-0.1	-2.6%
666	Cleaners	401.5	14.8	BA	110.1	AA	9.0	7.4	**141.3**	**A**	74.69	BA	38.5	AA	-45.67	-18.70	**48.8**	**BA**	**9.2**	2.3	81.7%
667	Travel / Accommodation / Recreation Attendants	26.9	2.2	A	3.7	BA	0.8	0.5	**7.2**	**BA**	12.94	AA	0.7	BA	-3.74	-1.19	**8.7**	**A**	**-0.2**	-0.6	-11.1%
668	Other Elemental Service Occ's	48.2	2.5	A	12.2	A	1.2	0.9	**16.7**	**A**	11.14	A	5.1	AA	-4.72	-0.68	**10.9**	**BA**	**0.6**	1.2	35.8%
721	Contractors & Supervisors, Trades & Related	217.8	19.0	A	59.2	AA	5.4	3.9	**87.5**	**A**	26.13	BA	3.1	BA	-0.20	5.10	**34.1**	**BA**	**5.3**	2.5	183.1%
722	Supervisors- Railway & Motor Trans	28.0	1.3	A	11.6	AA	0.7	0.5	**14.1**	**AA**	1.77	BA	0.2	BA	0.14	1.08	**3.2**	**BA**	**1.1**	3.9	554.3%
723	Machinists & Related Occ's	65.1	2.4	BA	11.4	A	1.6	1.2	**16.6**	**BA**	14.48	A	4.5	A	-0.04	0.85	**19.7**	**A**	**-0.3**	-0.5	-16.5%
724	Electrical Trades & Telecommunications Occ's	154.2	14.9	A	41.7	A	4.0	2.8	**63.4**	**AA**	47.26	A	6.6	A	-0.01	2.14	**56.0**	**A**	**0.7**	0.5	13.8%
725	Plumbers, Pipefitters & Gas Fitters	70.5	7.9	A	9.9	BA	1.8	1.3	**20.9**	**A**	28.05	AA	2.0	BA	0.71	0.72	**31.5**	**AA**	**-1.1**	-1.5	-35.2%
726	Metal Forming / Shaping / Erecting Occ's	137.8	3.7	BA	21.1	BA	3.4	2.6	**30.7**	**BA**	47.15	AA	7.1	A	1.58	0.29	**56.2**	**A**	**-2.5**	-1.8	-46.9%
727	Carpenters & Cabinetmakers	148.7	8.4	A	18.7	BA	3.7	2.8	**33.6**	**BA**	44.91	A	7.9	A	3.21	-1.27	**54.7**	**A**	**-2.1**	-1.4	-40.0%
728	Masonry & Plastering Trades	62.2	12.6	AA	7.6	BA	1.7	1.2	**23.1**	**A**	18.00	A	5.2	A	1.80	-0.74	**24.2**	**A**	**-0.1**	-0.2	-5.1%
729	Other Construction Trades	89.8	9.3	A	13.2	BA	2.3	1.7	**26.5**	**A**	25.78	A	8.0	AA	2.48	-0.76	**35.5**	**A**	**-0.9**	-1.0	-26.9%
731	Machinery / Transportation Equipment Mechanics	182.0	3.0	BA	53.3	AA	4.5	3.3	**64.0**	**A**	44.70	A	5.6	A	-0.65	2.66	**52.4**	**A**	**1.2**	0.6	23.2%
732	Motor Vehicle Mechanics	162.3	5.2	BA	20.9	BA	4.1	3.0	**33.1**	**BA**	50.95	A	6.6	A	1.23	2.13	**60.9**	**A**	**-2.8**	-1.7	-48.3%
733	Other Mechanics	28.8	0.3	BA	5.0	A	0.7	0.5	**6.6**	**BA**	10.22	AA	0.8	BA	0.32	0.49	**11.8**	**A**	**-0.5**	-1.8	-47.8%
734	Upholsterers / Tailors / Shoe Repairers / etc.	28.7	1.1	BA	13.7	AA	0.7	0.5	**16.0**	**AA**	1.76	BA	3.0	AA	-0.36	1.12	**5.5**	**BA**	**1.0**	3.7	219.4%
735	Stationary Engineers / Power System Operators	29.5	-0.8	BA	7.3	A	0.7	0.5	**7.7**	**BA**	3.84	BA	0.4	BA	-0.39	0.80	**4.7**	**BA**	**0.3**	1.0	70.2%
736	Train Crew Operating Occ's	12.8	-0.8	BA	3.4	A	0.3	0.2	**3.1**	**BA**	1.77	BA	0.0	BA	0.09	0.23	**2.1**	**BA**	**0.1**	0.8	56.4%
737	Crane Operators, Drillers & Blasters	17.1	1.0	A	3.5	A	0.4	0.3	**5.2**	**A**	3.41	A	0.2	BA	0.11	-0.16	**3.6**	**BA**	**0.2**	1.0	44.9%
738	Printing Press Operators / Commercial Divers / etc.	33.9	0.1	BA	9.5	AA	0.8	0.6	**11.0**	**A**	7.28	A	1.2	A	0.44	0.64	**9.5**	**BA**	**0.1**	0.4	17.5%
741	Motor Vehicle & Transit Drivers	482.6	27.9	A	106.8	A	13.6	8.9	**157.2**	**A**	70.61	BA	29.7	A	7.46	-2.68	**105.1**	**BA**	**5.2**	1.1	51.9%
742	Heavy Equipment Operators	95.6	9.2	A	20.0	A	2.7	1.9	**33.8**	**A**	16.39	BA	1.1	BA	2.28	-1.69	**18.0**	**BA**	**1.6**	1.7	90.4%
743	Other Transport Equipment Operators	18.9	-1.5	BA	3.8	A	0.5	0.3	**3.1**	**BA**	4.38	A	0.4	BA	0.23	-0.27	**4.7**	**BA**	**-0.2**	-0.9	-33.8%
744	Other Installers / Repairers / Servicers	61.4	3.1	A	9.8	A	1.9	1.2	**15.9**	**BA**	25.37	AA	3.2	A	0.76	-1.81	**27.6**	**AA**	**-1.2**	-1.9	-40.6%
745	Longshore Workers & Material Handlers	188.0	21.4	A	30.7	A	5.8	3.6	**61.4**	**A**	58.86	A	15.7	A	3.66	-5.89	**72.3**	**A**	**-1.1**	-0.6	-14.6%
761	Trades Helpers & Labourers	113.9	9.2	A	10.8	BA	2.0	2.3	**24.3**	**BA**	60.75	AA	10.2	AA	-24.36	-9.52	**37.0**	**A**	**-1.3**	-1.1	-18.0%
762	Public Works & Other Labourers	23.3	3.6	AA	4.4	A	0.4	0.4	**8.9**	**A**	5.67	A	0.6	BA	-3.56	-1.52	**1.2**	**BA**	**0.8**	3.3	122.1%
821	Supervisors, Logging & Forestry	6.3	-0.7	BA	2.0	AA	0.5	0.1	**1.9**	**A**	1.15	BA	0.0	BA	-0.01	0.04	**1.2**	**BA**	**0.1**	1.2	61.5%
822	Supervisors, Mining / Oil / Gas	26.7	6.6	AA	3.6	BA	2.3	0.5	**13.0**	**AA**	3.66	BA	0.2	BA	0.27	0.21	**4.3**	**BA**	**0.9**	3.2	223.4%
823	Underground Miners / Oil & Gas Drillers / etc.	42.7	9.7	AA	5.6	BA	3.7	0.8	**19.8**	**AA**	10.30	A	0.3	BA	0.92	0.11	**11.6**	**BA**	**0.8**	1.9	76.6%
824	Logging Machinery Operators	9.5	-0.3	BA	3.0	AA	0.8	0.2	**3.6**	**A**	1.92	A	0.1	BA	-0.08	-0.40	**1.5**	**BA**	**0.2**	2.2	105.3%
825	Contractors / Operators / Supervisors: Agriculture	251.2	10.0	BA	61.6	A	20.1	4.4	**96.1**	**A**	26.19	BA	4.6	BA	0.53	17.30	**48.6**	**BA**	**4.7**	1.9	154.1%
826	Fishing Vessel Masters & Skippers	18.1	0.7	BA	2.9	A	1.4	0.4	**5.5**	**A**	1.49	BA	0.1	BA	0.06	0.27	**1.9**	**BA**	**0.4**	2.0	220.3%
841	Mine Service Workers & Operators in Oil	14.0	1.0	A	1.0	BA	0.3	0.3	**2.6**	**BA**	6.35	AA	0.2	BA	0.12	-0.56	**6.1**	**AA**	**-0.3**	-2.5	-53.2%
842	Logging & Forestry Workers	15.2	-3.9	BA	3.5	A	0.2	0.3	**0.1**	**BA**	3.00	A	0.5	A	0.33	-0.05	**3.8**	**BA**	**-0.4**	-2.4	-105.2%
843	Agriculture & Horticulture Workers	74.3	3.4	A	7.2	BA	1.7	1.5	**13.7**	**BA**	34.35	AA	8.2	AA	1.60	-2.32	**41.8**	**AA**	**-2.8**	-3.8	-66.1%
844	Other Fishing & Trapping Occ's	4.8	0.1	BA	0.4	BA	0.1	0.2	**0.7**	**BA**	2.05	AA	0.1	BA	0.25	-0.36	**2.0**	**A**	**-0.1**	-2.8	-62.8%
861	Primary Production Labourers	90.3	3.7	BA	10.5	BA	1.7	1.9	**17.8**	**BA**	53.60	AA	6.3	A	-18.50	-6.51	**34.9**	**A**	**-1.7**	-1.9	-28.5%
921	Supervisors, Processing Occ's	65.5	0.0	BA	22.2	AA	1.5	1.2	**24.9**	**A**	8.66	BA	2.0	A	-0.69	1.53	**11.5**	**BA**	**1.3**	2.1	126.9%
922	Supervisors, Assembly & Fabrication	59.2	-2.9	BA	18.1	AA	1.3	1.0	**17.6**	**A**	8.00	BA	1.2	BA	-0.27	1.55	**10.5**	**BA**	**0.7**	1.2	76.9%
923	Central Control Operators: Manufacturing / Processing	25.1	1.2	A	7.4	AA	0.6	0.4	**9.6**	**A**	5.64	A	1.0	A	-0.06	0.64	**7.2**	**A**	**0.2**	1.0	36.7%
941	Machine Operators: Metal & Mineral Products	26.7	0.4	BA	5.9	A	0.6	0.5	**7.4**	**BA**	4.93	BA	2.4	AA	0.46	-0.80	**6.9**	**BA**	**0.0**	0.2	5.7%
942	Machine Operators: Chemical / Plastic / Rubber	62.0	4.8	A	12.2	A	1.4	1.2	**19.5**	**A**	16.10	A	8.2	AA	0.32	-1.28	**23.3**	**A**	**-0.4**	-0.6	-15.5%
943	Machine Operators: Pulp & Paper Prod	48.3	-2.1	BA	10.8	A	1.0	0.9	**10.6**	**BA**	11.02	A	1.8	A	0.87	-1.02	**12.6**	**BA**	**-0.2**	-0.4	-15.9%
944	Machine Operators: Textile Processing	11.9	-3.5	BA	4.6	AA	0.2	0.2	**1.5**	**BA**	1.05	BA	1.9	AA	0.25	-0.08	**3.1**	**BA**	**-0.2**	-1.4	-56.2%

945	Machine Operators: Fabric / Fur / Leather	40.8	-4.1	BA	14.6	AA	0.8	0.8	**12.1**	**A**	3.77	BA	8.2	AA	0.91	-0.33	**12.5**	**A**	**0.0**	-0.1	-3.7%
946	Machine Operators: Food / Beverage / Tobacco	79.5	3.6	A	15.9	A	1.8	1.5	**22.8**	**A**	18.20	A	8.9	AA	1.46	-2.08	**26.5**	**A**	**-0.4**	-0.5	-13.7%
947	Printing Machine Operators & Related Occ's	24.8	1.9	A	4.3	A	0.6	0.5	**7.2**	**A**	5.73	A	3.1	AA	0.42	-0.73	**8.6**	**A**	**-0.1**	-0.5	-15.1%
948	Mechanical, Electrical & Electronics Assemblers	102.6	4.7	A	25.1	A	2.3	2.0	**34.0**	**A**	22.30	A	18.3	AA	0.73	-1.63	**39.7**	**A**	**-0.6**	-0.6	-14.0%
949	Other Assembly & Related Occ's	101.6	-2.1	BA	18.9	A	2.2	1.9	**20.9**	**BA**	26.51	A	16.5	AA	1.47	-1.75	**42.8**	**A**	**-2.2**	-2.1	-50.7%
951	Machining / MetalworkingWoodworking Operators	115.4	-5.2	BA	22.6	A	2.5	2.2	**22.1**	**BA**	27.27	A	9.6	A	1.77	-3.17	**35.5**	**A**	**-1.3**	-1.2	-36.3%
961	Processing / Manufacturing / Utilities Labourers	185.1	-5.9	BA	33.5	A	3.5	3.6	**34.8**	**BA**	59.95	A	40.2	AA	-32.74	-12.42	**55.0**	**A**	**-2.0**	-1.1	-20.2%

AA = Above Average, A = Average and B = Below Average. These classifications are determined by a cutoff that assigns 50% to the A category, 25% to the BA category and 25% to the AA category.

* Annual excess demand represents the difference between job openings (expected job openings) and job seekers (expected job seekers) expressed annually by dividing by the numbers of years in the forecast (i.e. 10 years)

** NFLMS is an indicator of excess demand (excess supply if negative) normalized to the base year employment (2007); NFLMS stands for Normalized Future Labour Market Situation.

*** That indicator reflects the percent increase of school leavers and immigration (reduction if negative) required to balance job openings and job seekers. For example, a 100% increase indicates that the job seekers would need to double in size to achieve balance between labour demand and supply while a -50% indicates the expected job seekers would need to be cut in half to achieve balance.

Assessment of Future Labour Market Imbalances by Occupation (Ex-ante scenario)

			Job Openings								Job Seekers								Balance		
	EX-ANTE	Non-Student Employment 2007 ('000s)	Expansion Demand (1)		Retirements (2)		Deaths (3)	Emigration (4)	Projected Job Openings (5)=(1+2+3+4)		School Leavers (6)		Immigration (7)		Mobility (8)	Others (9)	Projected Job Seekers (10)=(6+7+8+9)		Annual Excess Demand* (11)=(10-5)/10	NFLMS **	XD / SL+IM ***
			08-17		08-17		08-17	08-17	08-17		08-17		08-17		08-17	08-17	08-17		08-17	08-17	08-17
All Occupations		15 531.2	1 385.9	A	3 402.3	A	439.4	283.2	**5 510.8**	**A**	4 408.9	A	1 007.6	A	0.00	177.88	**5 594.4**	**A**	**-8.4**	-0.1	-1.5%
001	Legislators & Senior Management	83.2	13.2	AA	41.6	AA	3.3	1.5	**59.6**	**AA**	6.0	BA	7.4	AA	9.20	7.21	**29.8**	**A**	**3.0**	3.6	222.3%
011	Administrative Services Managers	114.4	10.3	A	26.5	A	4.4	2.0	**43.2**	**A**	32.6	A	6.2	A	15.12	7.37	**61.3**	**AA**	**-1.8**	-1.6	-46.6%
012	Managers in Financial / Business Services	102.8	5.0	A	21.8	A	3.8	1.8	**32.4**	**A**	15.7	A	4.7	A	13.74	6.77	**40.8**	**A**	**-0.8**	-0.8	-41.3%
013	Managers in Communication (Except Broadcasting)	15.4	1.3	A	3.1	A	0.6	0.3	**5.3**	**A**	0.9	BA	0.6	A	5.65	0.93	**8.1**	**AA**	**-0.3**	-1.8	-186.6%
021	Engineering / Science / Information Systems Mgr's	69.5	8.2	A	13.9	A	2.7	1.2	**26.0**	**A**	12.3	A	5.5	A	7.55	4.73	**30.0**	**A**	**-0.4**	-0.6	-22.6%
031	Health / Education / Social & Community Services Mgr's	84.8	19.8	AA	45.4	AA	3.6	1.5	**70.3**	**AA**	23.5	A	1.8	BA	11.98	5.83	**43.2**	**A**	**2.7**	3.2	107.0%
041	Managers in Public Administration	29.6	2.3	A	13.6	AA	1.1	0.5	**17.5**	**AA**	3.4	BA	0.2	BA	3.70	2.06	**9.3**	**A**	**0.8**	2.8	231.2%
051	Art / Culture / Recreation / Sport Managers	12.7	1.1	A	3.8	AA	0.5	0.2	**5.6**	**AA**	4.9	A	0.8	A	4.27	0.78	**10.7**	**AA**	**-0.5**	-4.0	-89.5%
061	Sales, Marketing & Advertising Managers	125.9	8.1	A	27.1	A	4.6	2.3	**42.1**	**A**	15.8	BA	10.4	A	16.89	7.71	**50.8**	**A**	**-0.9**	-0.7	-33.4%
062	Managers in Retail Trade	331.0	9.9	BA	99.6	AA	11.9	5.9	**127.3**	**A**	21.3	BA	20.0	A	43.82	24.32	**109.4**	**A**	**1.8**	0.5	43.4%
063	Managers in Food Service & Accommodation	181.3	15.3	A	37.8	A	6.9	3.2	**63.2**	**A**	12.2	BA	10.4	A	22.79	14.50	**59.9**	**A**	**0.3**	0.2	14.4%
064	Managers in Protective Service	6.4	0.7	A	2.0	AA	0.3	0.1	**3.1**	**AA**	0.8	BA	0.2	BA	0.50	0.37	**1.8**	**A**	**0.1**	2.0	138.1%
065	Managers in Other Services	18.1	1.0	A	4.3	A	0.7	0.3	**6.3**	**A**	0.1	BA	1.4	A	2.56	1.32	**5.4**	**A**	**0.1**	0.5	65.2%
071	Managers in Construction & Transportation	155.4	19.1	A	39.1	A	5.9	2.7	**66.9**	**AA**	7.3	BA	5.6	A	17.96	11.12	**41.9**	**A**	**2.5**	1.6	194.4%
072	Facility Operation & Maintenance Managers	38.6	3.4	A	9.2	A	1.5	0.7	**14.8**	**A**	1.9	BA	1.1	BA	5.18	2.39	**10.6**	**A**	**0.4**	1.1	140.7%
081	Primary Production Managers	8.6	0.6	A	2.0	A	0.3	0.2	**3.0**	**A**	1.0	BA	0.4	A	1.07	0.54	**2.9**	**A**	**0.0**	0.1	8.7%
091	Managers in Manufacturing & Utilities	91.7	1.0	BA	21.4	A	3.2	1.6	**27.3**	**A**	8.2	BA	3.9	A	11.29	6.81	**30.2**	**A**	**-0.3**	-0.3	-24.3%
111	Auditors / Accountants / Investment Professionals	340.9	27.8	A	76.3	A	10.8	6.0	**120.9**	**A**	133.9	A	20.5	A	1.52	13.11	**169.1**	**A**	**-4.8**	-1.4	-31.2%
112	Human Resources & Business Service Professionals	154.2	18.4	A	42.7	AA	4.9	2.7	**68.7**	**AA**	42.1	A	5.6	A	-0.81	6.60	**53.4**	**A**	**1.5**	1.0	32.0%
121	Clerical Supervisors	132.6	8.3	A	37.6	AA	4.3	2.4	**52.6**	**A**	16.0	BA	3.6	BA	-0.91	2.12	**20.8**	**BA**	**3.2**	2.4	161.9%
122	Administrative & Regulatory Occ's	330.5	30.6	A	93.7	AA	10.8	5.9	**141.1**	**AA**	65.8	A	12.6	A	-5.44	8.18	**81.1**	**A**	**6.0**	1.8	76.4%
123	Finance & Insurance Administrative Occ's	244.7	21.9	A	57.5	A	8.0	4.4	**91.8**	**A**	37.1	A	8.0	A	-3.29	9.92	**51.7**	**BA**	**4.0**	1.6	88.8%
124	Secretaries, Recorders & Transcriptionists	209.3	-20.9	BA	83.3	AA	6.0	3.8	**72.1**	**A**	43.8	A	9.5	A	-1.60	4.87	**56.5**	**A**	**1.6**	0.7	29.3%
141	Clerical Occ's, General Office Skills	238.4	11.8	A	66.9	AA	5.7	4.4	**88.8**	**A**	61.2	A	19.0	A	0.74	-1.09	**79.9**	**A**	**0.9**	0.4	11.2%
142	Office Equipment Operators	52.3	-0.4	BA	13.6	A	1.2	1.0	**15.4**	**A**	12.3	A	4.4	AA	0.01	-0.29	**16.5**	**A**	**-0.1**	-0.2	-6.8%
143	Finance & Insurance Clerks	368.8	33.7	A	83.7	A	8.7	6.6	**132.7**	**A**	111.5	A	22.2	A	-0.10	-3.84	**129.8**	**A**	**0.3**	0.1	2.2%
144	Administrative Support Clerks	250.6	20.1	A	62.1	A	5.9	4.5	**92.6**	**A**	40.5	A	6.0	BA	0.09	-2.94	**43.7**	**BA**	**4.9**	1.9	104.8%
145	Library, Correspondence & Related Info. Clerks	201.0	14.9	A	30.5	BA	4.9	3.8	**54.1**	**BA**	55.8	A	15.5	A	-0.96	-2.73	**67.7**	**A**	**-1.4**	-0.7	-19.0%
146	Mail & Message Distribution Occ's	90.6	-1.7	BA	30.9	AA	2.1	1.6	**32.9**	**A**	6.2	BA	3.6	A	0.96	-0.64	**10.1**	**BA**	**2.3**	2.5	232.0%
147	Recording / Scheduling / Distributing Occ's	237.3	4.7	BA	39.1	A	5.2	4.4	**53.4**	**BA**	31.3	BA	19.1	A	2.43	-5.27	**47.6**	**BA**	**0.6**	0.2	11.6%
211	Physical Science Professionals	27.3	3.0	A	6.1	A	0.6	0.5	**10.3**	**A**	14.7	AA	5.8	AA	0.25	0.94	**21.8**	**AA**	**-1.1**	-4.2	-55.8%
212	Life Science Professionals	25.9	5.5	AA	3.8	BA	0.6	0.5	**10.4**	**A**	19.4	AA	2.3	AA	0.02	1.00	**22.8**	**AA**	**-1.2**	-4.8	-57.0%
213	Civil / Mechanical / Electrical / Chemical Engineers	131.2	25.5	AA	25.6	A	3.1	2.4	**56.5**	**AA**	59.1	AA	19.3	AA	1.11	4.96	**84.4**	**AA**	**-2.8**	-2.1	-35.7%
214	Other Engineers	72.8	13.3	AA	11.4	BA	1.7	1.3	**27.7**	**A**	29.2	A	10.5	AA	0.29	2.71	**42.7**	**AA**	**-1.5**	-2.0	-37.6%
215	Architects / Urban Planners / Land Surveyors	34.3	4.9	AA	6.7	A	0.8	0.6	**13.1**	**A**	16.6	AA	2.2	A	0.39	1.42	**20.6**	**AA**	**-0.8**	-2.2	-40.2%
216	Mathematicians / Statisticians / Actuaries	7.4	1.0	AA	0.9	BA	0.2	0.1	**2.2**	**A**	8.4	AA	0.5	A	0.05	0.25	**9.2**	**AA**	**-0.7**	-9.5	-78.8%
217	Computer and Info. Sys. Professionals	336.4	65.3	AA	27.7	BA	8.1	6.0	**107.0**	**A**	137.1	AA	43.2	AA	4.01	9.54	**193.9**	**AA**	**-8.7**	-2.6	-48.2%
221	Technical Occ's in Physical Sciences	29.8	1.7	A	6.3	A	0.6	0.5	**9.1**	**A**	22.6	AA	3.7	AA	-0.35	0.41	**26.4**	**AA**	**-1.7**	-5.8	-65.5%
222	Technical Occ's in Life Sciences	41.2	4.7	A	8.4	A	0.8	0.8	**14.7**	**A**	43.9	AA	1.4	A	-1.07	0.29	**44.5**	**AA**	**-3.0**	-7.2	-65.8%
223	Civil / Mechanical / Industrial Engineering Technicians	54.7	9.9	AA	15.6	AA	1.2	1.0	**27.6**	**AA**	27.2	AA	4.5	A	-0.85	1.00	**31.9**	**AA**	**-0.4**	-0.8	-13.3%
224	Electronics / Electrical Engineering Technicians	107.5	17.4	AA	22.7	A	2.2	1.9	**44.2**	**AA**	73.0	AA	8.4	A	-0.81	2.08	**82.7**	**AA**	**-3.8**	-3.6	-47.2%
225	Tech. Occ's in Architecture / Drafting / etc.	56.3	4.1	A	9.7	A	1.1	1.0	**15.8**	**A**	31.8	AA	6.0	AA	-0.48	1.19	**38.5**	**AA**	**-2.3**	-4.0	-60.1%
226	Other Technical Inspectors / Regulatory Officers	49.6	7.1	AA	14.7	AA	1.0	0.9	**23.7**	**AA**	11.7	A	1.5	A	-0.67	1.05	**13.6**	**A**	**1.0**	2.1	77.2%
227	Transportation Officers & Controllers	30.5	1.7	A	7.2	A	0.6	0.6	**10.1**	**A**	3.6	BA	0.8	BA	-0.66	0.02	**3.8**	**BA**	**0.6**	2.1	142.7%
228	Computer & Info. Sys. Technicians	132.8	20.7	AA	13.4	BA	2.8	2.4	**39.2**	**A**	19.7	BA	12.5	AA	-0.49	1.63	**33.3**	**A**	**0.6**	0.4	18.5%

311	Physicians / Dentists / Veterinarians	97.8	34.7	AA	23.3	A	3.3	1.7	**63.1**	AA	23.8	A	6.7	A	0.01	5.04	**35.6**	A	**2.8**	2.8	90.1%
312	Optometrists / Chiropractors / Other Health Professions	14.8	3.4	AA	3.8	A	0.5	0.3	**8.0**	AA	3.5	A	0.3	BA	0.04	0.63	**4.5**	A	**0.3**	2.4	91.0%
313	Pharmacists, Dietitians & Nutritionists	33.8	3.2	A	6.7	A	1.0	0.6	**11.5**	A	11.6	A	1.8	A	0.27	1.51	**15.2**	A	**-0.4**	-1.1	-27.4%
314	Therapy & Assessment Professionals	48.9	15.6	AA	6.2	BA	1.6	0.9	**24.3**	AA	24.5	AA	1.9	A	0.49	1.59	**28.5**	AA	**-0.4**	-0.9	-16.0%
315	Nurse Supervisors & Registered Nurses	262.1	87.8	AA	79.6	AA	8.8	4.6	**180.9**	AA	110.9	AA	11.2	A	0.11	9.37	**131.6**	A	**4.9**	1.9	40.4%
321	Medical Technologists / Technicians	83.5	25.4	AA	18.3	A	2.2	1.5	**47.4**	AA	48.2	AA	5.4	A	-1.12	2.22	**54.7**	AA	**-0.7**	-0.9	-13.6%
322	Tech. Occ's in Dental Health Care	31.2	6.7	AA	5.0	A	0.8	0.6	**13.0**	AA	11.2	A	1.7	A	-0.62	0.80	**13.1**	A	**0.0**	0.0	-0.9%
323	Other Tech. Occ's in Health (Except Dental)	122.9	33.4	AA	27.8	A	3.2	2.2	**66.6**	AA	25.4	A	3.5	BA	-1.65	2.80	**30.0**	A	**3.7**	3.0	126.6%
341	Assisting Occ's in Health Services	256.6	58.0	AA	61.4	A	6.5	4.6	**130.5**	AA	64.0	A	15.0	A	0.39	-3.32	**76.1**	A	**5.4**	2.1	68.8%
411	Judges / Lawyers / Notaries	72.1	10.0	AA	17.7	A	2.1	1.3	**30.9**	AA	24.6	A	1.7	BA	-0.08	3.40	**29.7**	A	**0.1**	0.2	4.8%
412	University Professors & Assistants	93.6	22.4	AA	23.2	A	4.0	1.7	**51.4**	AA	77.6	AA	12.2	AA	-0.09	4.28	**94.0**	AA	**-4.3**	-4.5	-47.4%
413	College & Other Voc. Instructors	93.6	7.8	A	32.5	AA	2.7	1.7	**44.7**	AA	27.7	A	5.1	A	-0.16	4.12	**36.8**	A	**0.8**	0.8	24.0%
414	Secondary / Elementary School Teachers & Counsellors	423.6	24.1	A	135.2	AA	11.9	7.6	**178.8**	AA	249.4	AA	9.8	BA	2.62	16.35	**278.2**	AA	**-9.9**	-2.3	-38.3%
415	Psychologists / Social Workers / Clergy	131.9	29.5	AA	43.4	AA	4.0	2.3	**79.3**	AA	92.8	AA	4.0	A	0.38	5.88	**103.0**	AA	**-2.4**	-1.8	-24.6%
416	Policy & Program Officers	150.3	26.1	AA	35.3	A	4.5	2.7	**68.6**	AA	105.3	AA	9.9	A	0.26	5.50	**121.0**	AA	**-5.2**	-3.5	-45.5%
421	Paralegals / Social Services Workers / etc.	345.2	56.0	AA	55.0	A	8.5	6.2	**125.7**	A	216.5	AA	18.1	A	-3.17	6.07	**237.5**	AA	**-11.2**	-3.2	-47.6%
511	Librarians, Archivists, Conservators & Curators	12.9	1.6	A	5.3	AA	0.5	0.2	**7.6**	AA	7.4	AA	0.7	A	-0.09	0.57	**8.5**	AA	**-0.1**	-0.7	-11.7%
512	Writing / Translating / Public Relations Professionals	104.1	10.3	A	23.8	A	3.5	1.9	**39.4**	A	58.6	AA	5.8	A	0.42	4.86	**69.8**	AA	**-3.0**	-2.9	-47.0%
513	Creative & Performing Artists	95.9	8.3	A	21.8	A	3.3	1.7	**35.1**	A	38.7	AA	5.3	A	1.35	4.15	**49.5**	AA	**-1.4**	-1.5	-32.7%
521	Technical Occ's: Libraries / Archives / etc.	14.6	1.0	A	5.6	AA	0.3	0.3	**7.2**	AA	11.7	AA	0.3	BA	-0.06	0.29	**12.2**	AA	**-0.5**	-3.4	-41.8%
522	Photographers / Graphic Arts Technicians / etc.	46.3	2.7	A	6.0	BA	0.9	0.9	**10.4**	BA	22.3	AA	2.4	A	0.39	0.37	**25.5**	AA	**-1.5**	-3.3	-61.2%
523	Announcers & Other Performers	12.2	0.7	A	1.2	BA	0.2	0.2	**2.3**	BA	2.9	A	0.6	A	0.32	0.34	**4.1**	A	**-0.2**	-1.5	-52.3%
524	Creative Designers & Craftspersons	99.9	22.9	AA	15.2	BA	2.0	1.8	**41.9**	AA	67.5	AA	6.3	A	-1.66	2.51	**74.7**	AA	**-3.3**	-3.3	-44.4%
525	Athletes, Coaches, Referees & Related Occ's	65.4	10.8	AA	5.9	BA	1.9	1.2	**19.8**	A	48.1	AA	2.7	A	-0.37	1.76	**52.1**	AA	**-3.2**	-4.9	-63.6%
621	Sales & Service Supervisors	227.9	29.8	AA	36.0	BA	5.5	4.1	**75.4**	A	51.0	A	6.8	A	1.87	4.20	**63.8**	A	**1.2**	0.5	20.0%
622	Technical Sales Specialists, Wholesale Trade	120.3	10.6	A	23.4	A	2.7	2.2	**38.8**	A	11.3	BA	2.9	BA	-2.00	3.15	**15.4**	BA	**2.3**	1.9	163.7%
623	Insurance & Real Estate Sales Occ's	180.6	8.5	A	51.2	AA	3.9	3.2	**66.9**	A	12.9	BA	5.6	A	-2.99	7.42	**22.9**	BA	**4.4**	2.4	237.1%
624	Chefs & Cooks	200.3	26.1	AA	22.8	BA	5.3	3.8	**57.9**	A	66.3	A	21.3	AA	2.59	2.00	**92.1**	A	**-3.4**	-1.7	-39.1%
625	Butchers & Bakers	65.1	4.7	A	10.2	BA	1.7	1.2	**17.7**	BA	57.8	AA	6.0	AA	0.99	0.66	**65.5**	AA	**-4.8**	-7.3	-74.9%
626	Police Officers & Firefighters	98.7	7.3	A	25.3	A	2.2	1.7	**36.6**	A	54.3	AA	0.6	BA	-1.97	1.89	**54.8**	AA	**-1.8**	-1.8	-33.2%
627	Technical Occ's in Personal Service	101.9	6.1	A	18.3	A	2.2	1.8	**28.4**	A	25.1	A	4.3	A	-0.81	3.45	**32.1**	A	**-0.4**	-0.4	-12.3%
641	Sales Rep's, Wholesale Trade	245.2	16.6	A	42.2	A	5.0	4.4	**68.2**	BA	56.9	A	8.1	A	-0.97	-0.52	**63.6**	A	**0.5**	0.2	7.1%
642	Retail Salespersons & Sales Clerks	436.6	18.9	A	69.2	BA	11.4	8.1	**107.5**	BA	107.6	A	38.3	AA	1.72	-0.83	**146.8**	A	**-3.9**	-0.9	-26.9%
643	Occ's in Travel & Accommodation	69.0	3.1	A	13.1	A	1.5	1.2	**18.8**	BA	28.4	AA	6.2	AA	-0.16	-0.82	**33.6**	A	**-1.5**	-2.1	-42.7%
644	Tour & Rec. Guides & Casino Occ's	19.9	4.4	AA	3.1	BA	0.5	0.4	**8.3**	AA	5.3	A	2.7	AA	0.10	-0.14	**8.0**	A	**0.0**	0.2	3.8%
645	Occ's in Food & Beverage Service	208.1	19.7	A	19.9	BA	5.8	3.9	**49.2**	BA	65.0	A	11.0	A	1.09	-5.43	**71.7**	A	**-2.2**	-1.1	-29.5%
646	Other Occ's in Protective Service	32.2	3.7	A	7.5	A	0.7	0.6	**12.5**	A	13.7	AA	0.9	BA	-0.34	-0.26	**14.0**	A	**-0.2**	-0.5	-10.3%
647	Childcare & Home Support Workers	194.6	1.3	BA	55.4	AA	4.1	3.6	**64.4**	A	65.8	A	21.5	AA	0.79	-0.60	**87.5**	A	**-2.3**	-1.2	-26.5%
648	Other Occ's in Personal Service	62.9	8.9	AA	7.7	BA	1.4	1.1	**19.0**	A	19.3	A	4.8	A	-0.04	-0.98	**23.0**	A	**-0.4**	-0.6	-16.6%
661	Cashiers	218.5	11.2	A	25.2	BA	7.2	4.1	**47.7**	BA	67.7	A	20.7	AA	-30.05	-13.25	**45.1**	BA	**0.3**	0.1	3.0%
662	Other Sales & Related Occ's	170.8	10.1	A	22.7	BA	5.1	3.2	**41.1**	BA	51.2	A	12.9	A	-24.13	-8.90	**31.2**	BA	**1.0**	0.6	15.5%
664	Food Counter Attendants & Helpers	185.7	12.3	A	21.5	BA	6.2	3.5	**43.5**	BA	70.1	A	25.9	AA	-23.00	-10.81	**62.2**	A	**-1.9**	-1.0	-19.4%
665	Security Guards & Related Occ's	90.9	3.2	BA	17.8	A	2.1	1.7	**24.7**	BA	26.5	A	10.5	AA	-10.51	-2.23	**24.3**	A	**0.0**	0.0	1.2%
666	Cleaners	401.5	14.8	BA	110.1	AA	9.0	7.4	**141.3**	A	55.1	BA	38.5	AA	-45.67	-18.70	**29.3**	BA	**11.2**	2.8	119.6%
667	Travel / Accommodation / Recreation Attendants	26.9	2.2	A	3.7	BA	0.8	0.5	**7.2**	BA	19.7	AA	0.7	BA	-3.74	-1.19	**15.4**	AA	**-0.8**	-3.1	-40.5%
668	Other Elemental Service Occ's	48.2	2.5	A	12.2	A	1.2	0.9	**16.7**	A	7.0	BA	5.1	AA	-4.72	-0.68	**6.8**	BA	**1.0**	2.1	81.6%
721	Contractors & Supervisors, Trades & Related	217.8	19.0	A	59.2	AA	5.4	3.9	**87.5**	A	11.9	BA	3.1	BA	-0.20	5.10	**19.9**	BA	**6.8**	3.1	452.5%
722	Supervisors- Railway & Motor Trans	28.0	1.3	A	11.6	AA	0.7	0.5	**14.1**	AA	0.7	BA	0.2	BA	0.14	1.08	**2.1**	BA	**1.2**	4.3	1334.0%
723	Machinists & Related Occ's	65.1	2.4	BA	11.4	A	1.6	1.2	**16.6**	BA	20.5	A	4.5	A	-0.04	0.85	**25.7**	A	**-0.9**	-1.4	-36.5%
724	Electrical Trades & Telecommunications Occ's	154.2	14.9	A	41.7	A	4.0	2.8	**63.4**	AA	50.3	A	6.6	A	-0.01	2.14	**59.0**	A	**0.4**	0.3	7.8%
725	Plumbers, Pipefitters & Gas Fitters	70.5	7.9	A	9.9	BA	1.8	1.3	**20.9**	A	11.3	A	2.0	BA	0.71	0.72	**14.7**	BA	**0.6**	0.9	46.7%
726	Metal Forming / Shaping / Erecting Occ's	137.8	3.7	BA	21.1	BA	3.4	2.6	**30.7**	BA	38.7	A	7.1	A	1.58	0.29	**47.8**	A	**-1.7**	-1.2	-37.1%
727	Carpenters & Cabinetmakers	148.7	8.4	A	18.7	BA	3.7	2.8	**33.6**	BA	31.1	A	7.9	A	3.21	-1.27	**40.9**	A	**-0.7**	-0.5	-18.8%
728	Masonry & Plastering Trades	62.2	12.6	AA	7.6	BA	1.7	1.2	**23.1**	A	9.7	A	5.2	A	1.80	-0.74	**16.0**	A	**0.7**	1.1	47.6%
729	Other Construction Trades	89.8	9.3	A	13.2	BA	2.3	1.7	**26.5**	A	17.0	A	8.0	AA	2.48	-0.76	**26.8**	A	**0.0**	0.0	-1.3%
731	Machinery / Transportation Equipment Mechanics	182.0	3.0	BA	53.3	AA	4.5	3.3	**64.0**	A	49.8	A	5.6	A	-0.65	2.66	**57.5**	A	**0.7**	0.4	11.8%
732	Motor Vehicle Mechanics	162.3	5.2	BA	20.9	BA	4.1	3.0	**33.1**	BA	47.0	A	6.6	A	1.23	2.13	**57.0**	A	**-2.4**	-1.5	-44.5%
733	Other Mechanics	28.8	0.3	BA	5.0	A	0.7	0.5	**6.6**	BA	13.2	AA	0.8	BA	0.32	0.49	**14.8**	AA	**-0.8**	-2.9	-59.1%
734	Upholsterers / Tailors / Shoe Repairers / etc.	28.7	1.1	BA	13.7	AA	0.7	0.5	**16.0**	AA	4.0	BA	3.0	AA	-0.36	1.12	**7.8**	A	**0.8**	2.9	116.3%

735	Stationary Engineers / Power System Operators	29.5	-0.8	BA	7.3	A	0.7	0.5	**7.7**	**BA**	5.5	A	0.4	BA	-0.39	0.80	**6.3**	**BA**	**0.1**	0.5	22.9%
736	Train Crew Operating Occ's	12.8	-0.8	BA	3.4	A	0.3	0.2	**3.1**	**BA**	0.8	BA	0.0	BA	0.09	0.23	**1.1**	**BA**	**0.2**	1.6	241.1%
737	Crane Operators, Drillers & Blasters	17.1	1.0	A	3.5	A	0.4	0.3	**5.2**	**A**	4.4	A	0.2	BA	0.11	-0.16	**4.6**	**A**	**0.1**	0.4	13.0%
738	Printing Press Operators / Commercial Divers / etc.	33.9	0.1	BA	9.5	AA	0.8	0.6	**11.0**	**A**	5.9	A	1.2	A	0.44	0.64	**8.2**	**BA**	**0.3**	0.8	40.3%
741	Motor Vehicle & Transit Drivers	482.6	27.9	A	106.8	A	13.6	8.9	**157.2**	**A**	28.4	BA	29.7	A	7.46	-2.68	**62.8**	**BA**	**9.4**	2.0	162.4%
742	Heavy Equipment Operators	95.6	9.2	A	20.0	A	2.7	1.9	**33.8**	**A**	13.7	BA	1.1	BA	2.28	-1.69	**15.4**	**BA**	**1.8**	1.9	125.0%
743	Other Transport Equipment Operators	18.9	-1.5	BA	3.8	A	0.5	0.3	**3.1**	**BA**	1.6	BA	0.4	BA	0.23	-0.27	**1.9**	**BA**	**0.1**	0.6	58.2%
744	Other Installers / Repairers / Servicers	61.4	3.1	A	9.8	A	1.9	1.2	**15.9**	**BA**	14.8	A	3.2	A	0.76	-1.81	**17.0**	**A**	**-0.1**	-0.2	-5.8%
745	Longshore Workers & Material Handlers	188.0	21.4	A	30.7	A	5.8	3.6	**61.4**	**A**	43.5	A	15.7	A	3.66	-5.89	**57.0**	**A**	**0.4**	0.2	7.5%
761	Trades Helpers & Labourers	113.9	9.2	A	10.8	BA	2.0	2.3	**24.3**	**BA**	45.9	A	10.2	AA	-24.36	-9.52	**22.1**	**BA**	**0.2**	0.2	3.8%
762	Public Works & Other Labourers	23.3	3.6	AA	4.4	A	0.4	0.4	**8.9**	**A**	3.9	A	0.6	BA	-3.56	-1.52	**-0.6**	**BA**	**0.9**	4.1	211.3%
821	Supervisors, Logging & Forestry	6.3	-0.7	BA	2.0	AA	0.5	0.1	**1.9**	**A**	3.6	AA	0.0	BA	-0.01	0.04	**3.6**	**AA**	**-0.2**	-2.7	-47.6%
822	Supervisors, Mining / Oil / Gas	26.7	6.6	AA	3.6	BA	2.3	0.5	**13.0**	**AA**	5.9	A	0.2	BA	0.27	0.21	**6.5**	**A**	**0.6**	2.4	106.2%
823	Underground Miners / Oil & Gas Drillers / etc.	42.7	9.7	AA	5.6	BA	3.7	0.8	**19.8**	**AA**	5.4	BA	0.3	BA	0.92	0.11	**6.7**	**BA**	**1.3**	3.1	228.6%
824	Logging Machinery Operators	9.5	-0.3	BA	3.0	AA	0.8	0.2	**3.6**	**A**	1.9	A	0.1	BA	-0.08	-0.40	**1.6**	**BA**	**0.2**	2.2	102.2%
825	Contractors / Operators / Supervisors: Agriculture	251.2	10.0	BA	61.6	A	20.1	4.4	**96.1**	**A**	20.4	BA	4.6	BA	0.53	17.30	**42.8**	**BA**	**5.3**	2.1	213.4%
826	Fishing Vessel Masters & Skippers	18.1	0.7	BA	2.9	A	1.4	0.4	**5.5**	**A**	2.7	A	0.1	BA	0.06	0.27	**3.2**	**BA**	**0.2**	1.3	81.3%
841	Mine Service Workers & Operators in Oil	14.0	1.0	A	1.0	BA	0.3	0.3	**2.6**	**BA**	3.6	A	0.2	BA	0.12	-0.56	**3.4**	**BA**	**-0.1**	-0.5	-19.4%
842	Logging & Forestry Workers	15.2	-3.9	BA	3.5	A	0.2	0.3	**0.1**	**BA**	4.3	A	0.5	A	0.33	-0.05	**5.0**	**A**	**-0.5**	-3.2	-103.8%
843	Agriculture & Horticulture Workers	74.3	3.4	A	7.2	BA	1.7	1.5	**13.7**	**BA**	32.2	AA	8.2	AA	1.60	-2.32	**39.7**	**AA**	**-2.6**	-3.5	-64.3%
844	Other Fishing & Trapping Occ's	4.8	0.1	BA	0.4	BA	0.1	0.2	**0.7**	**BA**	1.3	A	0.1	BA	0.25	-0.36	**1.3**	**A**	**-0.1**	-1.3	-44.4%
861	Primary Production Labourers	90.3	3.7	BA	10.5	BA	1.7	1.9	**17.8**	**BA**	37.3	AA	6.3	A	-18.50	-6.51	**18.6**	**BA**	**-0.1**	-0.1	-1.9%
921	Supervisors, Processing Occ's	65.5	0.0	BA	22.2	AA	1.5	1.2	**24.9**	**A**	3.8	BA	2.0	A	-0.69	1.53	**6.6**	**BA**	**1.8**	2.8	318.0%
922	Supervisors, Assembly & Fabrication	59.2	-2.9	BA	18.1	AA	1.3	1.0	**17.6**	**A**	2.7	BA	1.2	BA	-0.27	1.55	**5.2**	**BA**	**1.2**	2.1	318.0%
923	Central Control Operators: Manufacturing / Processing	25.1	1.2	A	7.4	AA	0.6	0.4	**9.6**	**A**	3.8	A	1.0	A	-0.06	0.64	**5.3**	**BA**	**0.4**	1.7	90.8%
941	Machine Operators: Metal & Mineral Products	26.7	0.4	BA	5.9	A	0.6	0.5	**7.4**	**BA**	4.3	A	2.4	AA	0.46	-0.80	**6.3**	**BA**	**0.1**	0.4	15.2%
942	Machine Operators: Chemical / Plastic / Rubber	62.0	4.8	A	12.2	A	1.4	1.2	**19.5**	**A**	7.9	BA	8.2	AA	0.32	-1.28	**15.2**	**A**	**0.4**	0.7	27.2%
943	Machine Operators: Pulp & Paper Prod	48.3	-2.1	BA	10.8	A	1.0	0.9	**10.6**	**BA**	9.7	A	1.8	A	0.87	-1.02	**11.3**	**BA**	**-0.1**	-0.1	-5.8%
944	Machine Operators: Textile Processing	11.9	-3.5	BA	4.6	AA	0.2	0.2	**1.5**	**BA**	1.6	BA	1.9	AA	0.25	-0.08	**3.7**	**A**	**-0.2**	-1.9	-63.1%
945	Machine Operators: Fabric / Fur / Leather	40.8	-4.1	BA	14.6	AA	0.8	0.8	**12.1**	**A**	3.1	BA	8.2	AA	0.91	-0.33	**11.8**	**A**	**0.0**	0.1	1.9%
946	Machine Operators: Food / Beverage / Tobacco	79.5	3.6	A	15.9	A	1.8	1.5	**22.8**	**A**	12.3	A	8.9	AA	1.46	-2.08	**20.6**	**A**	**0.2**	0.3	10.1%
947	Printing Machine Operators & Related Occ's	24.8	1.9	A	4.3	A	0.6	0.5	**7.2**	**A**	7.4	A	3.1	AA	0.42	-0.73	**10.2**	**A**	**-0.3**	-1.2	-28.5%
948	Mechanical, Electrical & Electronics Assemblers	102.6	4.7	A	25.1	A	2.3	2.0	**34.0**	**A**	23.0	A	18.3	AA	0.73	-1.63	**40.4**	**A**	**-0.6**	-0.6	-15.5%
949	Other Assembly & Related Occ's	101.6	-2.1	BA	18.9	A	2.2	1.9	**20.9**	**BA**	17.6	A	16.5	AA	1.47	-1.75	**33.9**	**A**	**-1.3**	-1.3	-37.8%
951	Machining / MetalworkingWoodworking Operators	115.4	-5.2	BA	22.6	A	2.5	2.2	**22.1**	**BA**	19.2	A	9.6	A	1.77	-3.17	**27.4**	**BA**	**-0.5**	-0.5	-18.4%
961	Processing / Manufacturing / Utilities Labourers	185.1	-5.9	BA	33.5	A	3.5	3.6	**34.8**	**BA**	43.9	A	40.2	AA	-32.74	-12.42	**38.9**	**BA**	**-0.4**	-0.2	-4.9%

AA = Above Average, A = Average and B = Below Average. These classifications are determined by a cutoff that assigns 50% to the A category, 25% to the BA category and 25% to the AA category.

* Annual excess demand represents the difference between job openings (expected job openings) and job seekers (expected job seekers) expressed annually by dividing by the numbers of years in the forecast (i.e. 10 years)

** NFLMS is an indicator of excess demand (excess supply if negative) normalized to the base year employment (2007); NFLMS stands for Normalized Future Labour Market Situation.

*** That indicator reflects the percent increase of school leavers and immigration (reduction if negative) required to balance job openings and job seekers. For example, a 100% increase indicates that the job seekers would need to double in size to achieve balance between labour demand and supply while a -50% indicates the expected job seekers would need to be cut in half to achieve balance.