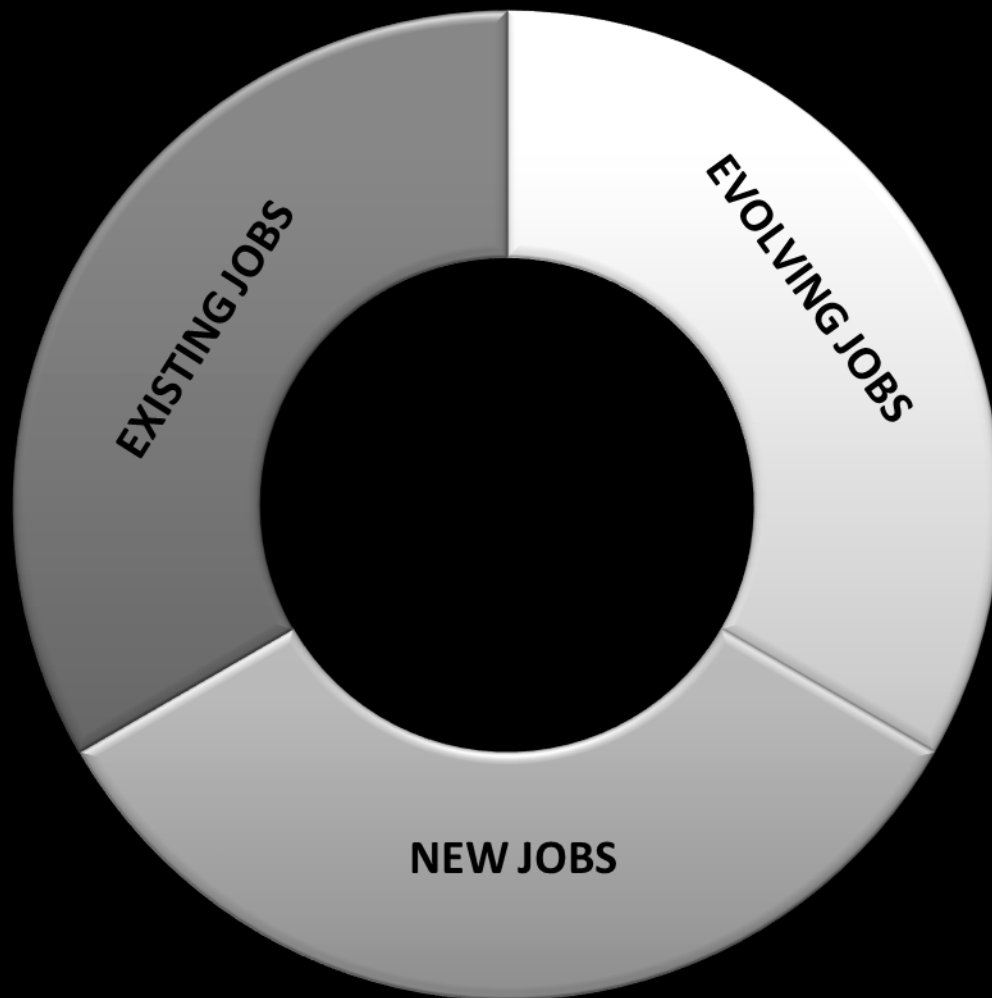


# **JOBS OF THE FUTURE: OPTIONS AND OPPORTUNITIES**



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March 2012

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## EXECUTIVE SUMMARY

We are about to encounter a crisis that will challenge our economic well-being and shake the foundations of our institutions and social structures. We cannot escape the changes that lie just in front of us, despite how much our current economic woes may distract us from this reality. We cannot escape, but we can prepare. The effectiveness of our response or plan depends upon the creativity and determination we are prepared to apply to meeting this challenge.

**Two years ago the “People without Jobs Jobs without People” Report (Miner, 2010a) drew attention to the crisis arising from the intersection of two transformational changes: an aging population and an emerging knowledge economy. This Report updates those findings and then suggests ways that we can better prepare for the Jobs of the Future.**

Let’s first look at the issues surrounding our aging population. As the baby boomer generation advances into the age of normal retirement, there will be a significant decline in the proportion of our population in the prime working years of 15 to 64. Using Government of Canada data, the projected shortfall in the availability of workers is expected to rise to at least 1.4 million and possibly to as high as 3.9 million by 2031, depending on the assumptions of population growth used. So, even in the midst of an economic slowdown or recession, we clearly need to understand the serious nature of the looming labour shortage. But that is only half the story that propels this situation into a crisis.

Second, the emergence of the knowledge economy demands that the proportion of the labour force with education or training beyond high school must increase and increase dramatically. Using a variety of Canadian and U.S. estimates and projections, the evidence indicates that by 2031, 77% of our workforce will need to have post-secondary credentials, whether apprenticeship, university, college, polytechnic, professional or industry

sponsored. Canada currently has slightly above 60%, although those in the 25 to 34 age group are higher at just over 66%.

So where do we turn for solutions? Increasing the size of our total population through immigration would help, but it will not solve the problem. Increasing the participation rates of those currently under-represented in the labour force definitely needs to be a priority. As well, we need to explore ways of accelerating the graduation rates of our post-secondary students, increasing employer-provided training, improving literacy rates and creating a more integrated educational system. But what is perhaps the greatest need is a change in attitudes towards post-secondary education. **We simply have to accept that the vast majority of our young people must aspire to and achieve post-secondary education or training.**

How we can achieve this, and create a more competitive economic environment occupies a major part of this study. In this regard, it is important that we realize that we are not alone in confronting this challenge. Most of the developed world is in the same predicament and, as a consequence, we will face stiff competition. The jurisdiction, whether province, region, state or country, that successfully and proactively figures out how to meet these challenges will capture a significant strategic advantage. We need to find ways to create more jobs, and more of these will need to be new jobs. We will have to prepare more students to be ready to fill these new jobs. This will require major changes to our post-secondary systems and creating new partnerships among parties that have hitherto not worked together. These new jobs will come about in a variety of ways, some more predictable than others. In seeking to understand better the impact that the dual forces of demography and the knowledge economy will have on the labour force, we explore more deeply both our economic and demographic assumptions and the mega trends that are influencing them. We also discuss how our communities can prepare for the changes that are about to confront them.

Finally, and to illustrate the approach being proposed, we take one major trend, aging, and examine it more closely in terms of its impact on the labour force and the types of new jobs that may emerge. Many of the trends discussed will have impacts that are more local than many people appear to realize. As a consequence, each community (at whatever level it is appropriate to locate that concept) must make its own decisions about what will have the greatest impact on them and what strategic response they will adopt.

## INTRODUCTION

Since the publication of *People Without Jobs; Jobs Without People* in 2010, the question most frequently asked is what can my son or daughter do to prepare for the jobs of the future? It is both an important and a daunting question, because not only will the future well-being of our young people hinge on getting the answer right, but the health of our economy and our social wellbeing will depend on getting it right as well. The answer, or more realistically the answers, is anything but obvious.

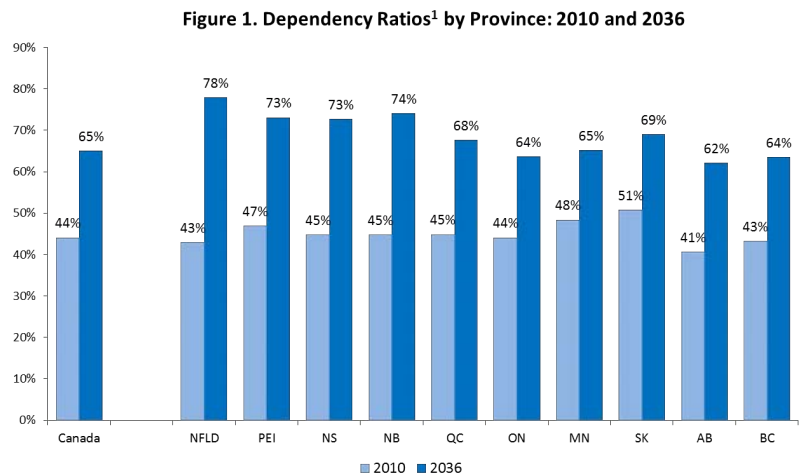
Predicting the future is always a perilous venture with respect to jobs as with most areas of human endeavor. To paraphrase the immortal words of Robbie Burns, the best laid plans of mice and men often go astray. A recession, currency fluctuations or devaluations, an oil crisis or a break though discovery can quickly render the most painstaking analysis of future trends virtually irrelevant.

While we cannot predict with certainty what the labour market of the future holds in store for subsequent generations, we are not at a total loss in understanding where we are headed. The new jobs that we and our children need to prepare for are not always going to be unrecognizable today; many will be modifications and adaptations of jobs already being performed, albeit often with new titles and new training requirements. Some old jobs will certainly

disappear, however, as they have done in the past. There is not much call for VCR tapes these days.

The fact is that we do know quite a lot about some of the changes that will impact significantly on the future of the labour market and employment. The picture painted by this information is by no means entirely benign. There are some real challenges that will confront us, both as individuals and as a society, and they are just around the corner. The urgency of the situation is such that we absolutely must take action now to prepare ourselves and our children.

Some of what we will confront has been outlined in earlier reports, focusing on Ontario and Canada (Miner, 2010a and Miner, 2010b). In this report the data have been updated and new data added. If you do not need a refresher, you can move on to the Jobs of the Future section (page 17). For those who want a refresher or need convincing of the seriousness of the demographic changes just ahead, a glance at Figure 1 should serve to underline the gravity of the situation. Here we see the most recent Statistics Canada projected dependency ratios for Canada and each of the provinces to 2036.



<sup>1</sup>Dependency ratio is the percentage of population in the younger and older age groups. Source: Statistics Canada, 2010, catalogue no. 91-520-X using scenario M1 population projection (medium growth)

These ratios are simply the percentage of the population aged 65 years and older, plus those younger than 15, compared to the number of people 15 to 64 who are employed. Of course, this

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is not a precise measure of actual dependency. Some of those over 65 are and will continue to work and be employed, as will some younger than 15. Nonetheless, the ratio gives a measured indication of the degree to which our youngest and oldest members will be “dependent” on others. To put it differently, some 44% of our population is currently dependent, a proportion that is fairly uniform across the provinces (the exception is Saskatchewan, where the proportion is over 50%). However, if we look forward to 2036, the proportion will rise to an average of 65% nationally and over 70% in Atlantic Canada.

**It is important to understand the significance of these data. They imply that in the not too distant future about two-thirds of our population will be dependent upon the one-third who are employed.** Is this tenable? We need to explore the implications of this statistical projection in greater detail and gain a better understanding of its myriad implications for our society and economy. This, in part, is the burden of this report.

We can start by reminding ourselves of the dramatic and far-reaching transformation of our educational systems that was triggered by an earlier demographic change: the arrival of the baby boomer generation, beginning in the U.S. in 1946 and a year later in Canada. It kept swelling the ranks of our youth population for some seventeen years, to be followed by the so-called baby boom echo, which expanded the system once again. The upshot of that demographic change was a thorough transformation of our educational systems: new elementary and then secondary schools were opened virtually on a daily basis. The high school systems were completely revamped, with new options available to a wider range of student aptitudes and abilities. New universities were established while many affiliated institutions gained their independence. New and unique college systems were created. And now, this year – in 2011-12 – the first of the “baby” boomers will reach the age of 65. Many, if not most, will retire (indeed, attractive early retirement options, especially for those employed in the public sector, have already started the exodus), although the

recent recession has slowed the process somewhat.

**What we have to understand is that the changes wrought by the retirement of the baby boomers will be as dramatic and far-reaching as those brought on by their arrival.** Indeed, if appropriate policy responses are not devised – and quickly – these changes have the potential to shake the very foundations of our social and economic way of life. Some countries have already begun to adapt (EFMD, 2007). France, Spain and the United Kingdom, for example, have moved to increase the normal age of retirement. In his recent speech in Davos, Switzerland, Stephen Harper hinted at a similar move by Canada, along with the possibility of reductions in our social safety net.

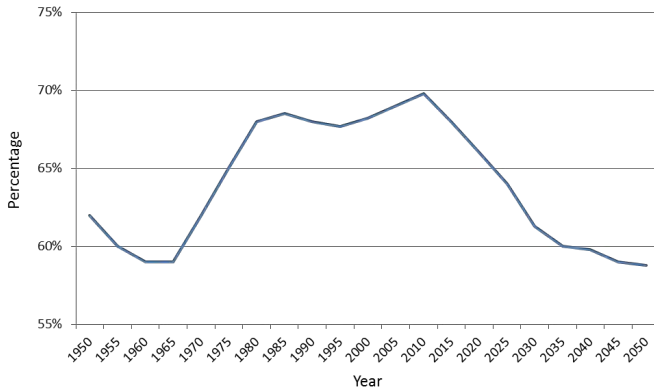
The purpose of this paper is to provide a deeper understanding of the demographic changes about to confront us. In particular, it will explore and analyze the implications of these changes for Canada’s labour force. It will then examine the policy options that will have to be seriously considered by our governments, industry and post-secondary institutions. In this, it will identify an urgent challenge that is about to confront our post-secondary system, a challenge that has only recently (Clark, Trick and Van Loon, 2011) appeared on the radar of our policy discussions and debates.

First a word of warning. In the current economic recession, it is not surprising that for many of us our focus is on the prospects of economic recovery. Understandable as this may be, it would be shortsighted in the extreme if this were to blind us to the demographic realities that lie just around the corner. The economy will recover, hopefully sooner rather than later. Ironically, if it takes a little longer we may buy some time in which to prepare for and adapt to the demographic and workforce changes that are inevitably coming. We have no choice in the matter. **The consequence of not responding effectively to the challenges posed by an aging population is to accept the virtual inevitability of slower economic growth or even decline and the social dislocations that attend such a scenario.**

## OUR AGING POPULATION

So, we begin by confronting what we know about the impact of the aging boomer generation. Figure 2 (Barnett, 2007) presents a graphic representation of the past and projected future size of Canada's labour force. In the mid-sixties the proportion of the population in the prime working age range of 15 to 64 was below 60%. By 1980, it had increased to nearly 70% and is projected to peak at 70% by 2011-12. After that, the proportion of working-age Canadians will fall dramatically to 61% by 2030, and will continue to fall to 59% by 2050.

Figure 2. Percentage of Total Canadian Population, 15 - 64 Years of Age



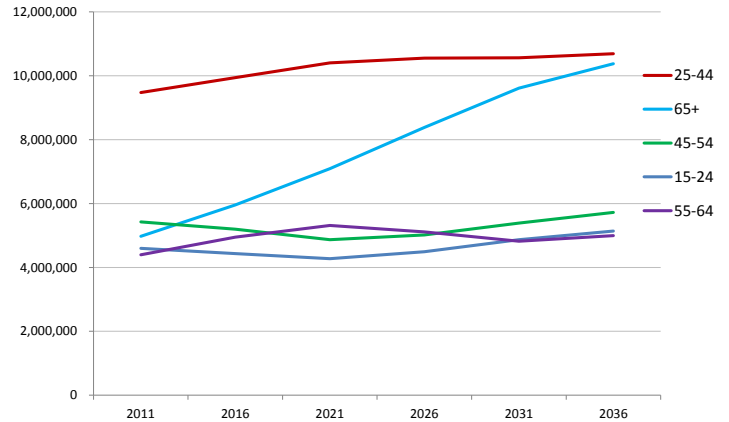
Source: Russell Barnett, Bank of Canada Review, Summer 2007

It simply records the march of the baby boom “bulge” as it works its way through the years from birth to old age, with markers from 15 to 64 as the normal period of productive work and 65 as the normal age of retirement. As one would expect, we observe an increase in the working age population beginning in 1965, 19 years after the birth of the first baby boomer, and a corresponding decline beginning in 2011 when that same baby boomer reaches the normal retirement age of 65.

In Figure 3 we see a different perspective on the same development. What this shows, quite graphically, is the rapid growth of the 65+ population relative to the more or less static population aged 25 to 44, the segment of the

population with the highest labour force participation rates. As is plainly evident, by 2036 there will be almost as many Canadians aged 65 or older, the majority of whom would normally expect to be retired, as there are aged 25 to 44.

Figure 3. Canada Population Projections by Age



Source: Statistics Canada, 2010

Of course we have to be careful in interpreting these data. Things could change. The birth rate could increase. A surge in immigration could add to the working population. These things could happen, but there is little likelihood that any such changes would have more than a modest incremental impact on Canada's labour force. The vast majority of those who will constitute Canada's labour force in 2030 have already been born and are living amongst us. So, we cannot escape the fact that the basic structure of Canada's labour force of the coming decades is already in place. Only dramatic policy interventions could change this.

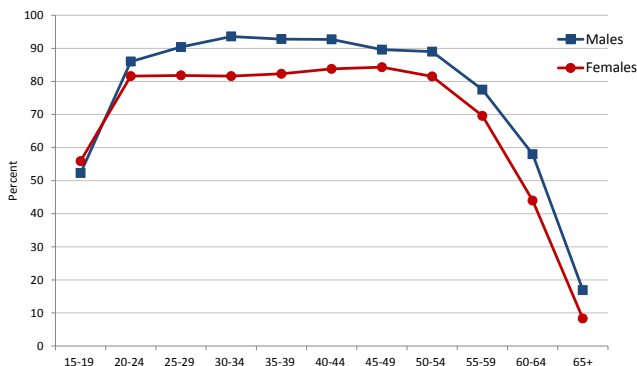
**This is the conclusion we have to accept: While the total population of Canada will continue to increase, most of the growth will consist of people over 65 years of age and less likely to be employed. The corollary of this is equally stark: Our labour force will be too small to support all of these retirees at least in the manner to which many of them have become accustomed.**

In other words, a shrinking labour force will have to support a larger and larger number of people who will need and expect a range of services, some of which are very expensive. Health care, pension, and old age security, to name just three, will have to be paid for by a proportionately smaller number of employed Canadians.

So, demographic changes that are already upon us will result in a continuing decline in participation rates. As Dugan and Robidoux (1999, p. 49) observed, "... looking ahead, the ... participation rate will continue to fall gradually as a result of downward pressure from demographic changes. By 2015, it is estimated it will be at about 63 per cent..." a decline of 8%.

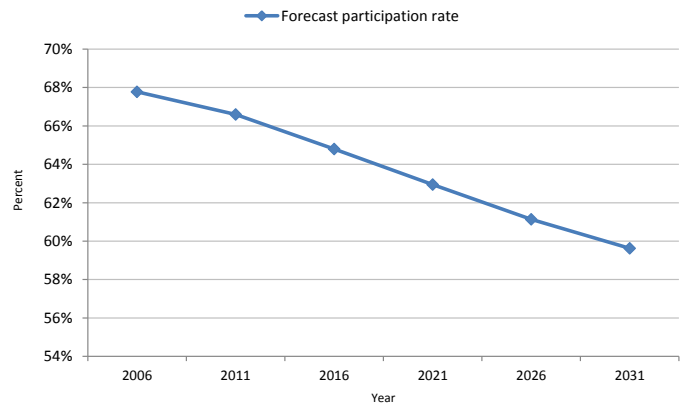
To check this conclusion, we have used current participation rates and calculated the impact of projections of the aging population. Figure 4 shows what we would expect in terms of participation rates, which rise during the early years, level off in the middle years, and decline in later years, with rates for men running about 10 percentage points above those for women except in the earliest years. Figure 5 presents a different perspective, tracking actual and projected participation rates through to 2031, with male and female rates combined. As one can see, labour force participation is projected to decline from just under 68% to just under 60%, a drop of approximately 8%, precisely what Dugan and Robidoux calculated.

Figure 4. Canadian Participation Rates by Gender and Age



Source: Statistics Canada, Labour Force Survey for June 2011

Figure 5. Canadian Labour Force Participation Rate Changes: 2006 to 2031



Source: Created using Statistics Canada data

**There can be little doubt from these data that the structure of the labour force is about to change and change dramatically, as the population continues to age, and a larger and larger proportion of the population enters the age of normal retirement.** What is less clear at this stage is what the impact of this will be on individual Canadians and on our society and the economy. Can we expect problems? How serious will they be? When are they likely to occur? Before we can move on to a consideration of some of these issues, we need to develop a clearer picture of just what the Canadian population will look like in the future and what changes will be required to maintain our economic viability.

Before we do that, however, another word of caution is required. We are dealing here with national data and analyses, and in so doing we run the risk of neglecting regional and provincial variations. And, of course, there are variations in provincial education systems and student achievement. A separate analysis was done for Ontario (Miner, 2010b) but we leave it to others to compile their own results for other provinces, using their provincial labour force participation rates, educational attainment levels and demographic shifts in order to compare their province's experience with the Canadian pattern shown here.

## LABOUR SUPPLY AND DEMAND

**The question now becomes: What will be the impact of the aging population on the availability of jobs and workers?** In

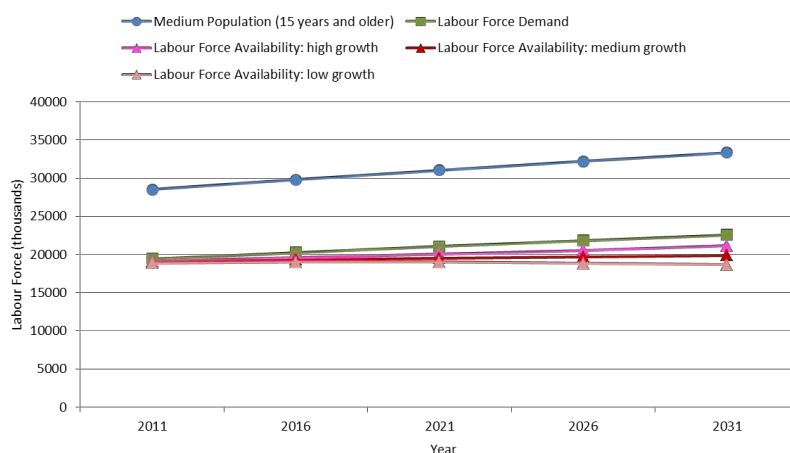
seeking to answer that question, we begin with a Statistics Canada study which developed six scenarios of population growth using different assumptions of immigration, emigration, and births and deaths (Statistics Canada, 2005). Three of these scenarios are used here, representing low, medium, and high rates of population growth. To obtain measures of labour market demand, we have used data from Human Resources and Skills Development Canada (HRSDC, 2007) which projected demand to 2015. These were extended by a very modest 0.8% rate of increase through to 2021 and a 0.7% rate of increase for the subsequent ten years.

The results of these data and calculations are shown in Figure 6. Using the medium projection of population growth, the blue line describes the projected growth of the total population aged 15 and above. Using “pre-recession” labour force participation rates from 2008, the three lines portrayed in shades of red represent the three population projections converted to measures of labour market supply, or availability. As would be expected, the growth in the availability of workers is sensitive to the assumptions used, as discussed above. Bearing this in mind, we see that the high rate of population growth yields a labour market supply of some 21.1 million, while the medium rate drops that figure to 19.9 million, and the low rate puts the number at 18.6 million.

What is most telling in this analysis is illustrated by the gap that is readily apparent between all three red lines and the green line, which represents the projected demand for labour. Demand for labour is projected to increase from 19.4 million in 2011 to 22.6 million by 2031. **No matter which rate of**

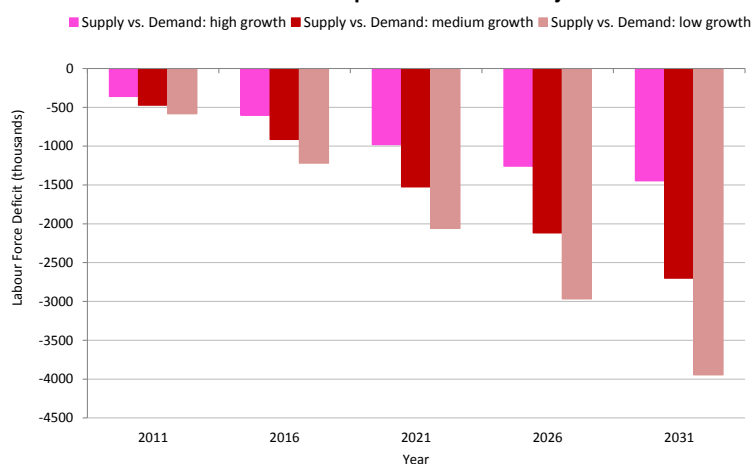
**population growth is used, the demand for labour is projected to outstrip the supply.** This, of course, is the direct result of an overall decline in participation rates, which in turn, is caused by the fact that the baby boom “bulge” is working its way inexorably toward the age of normal retirement.

Figure 6. Canada Population and Workforce Projections: 2011-2031



The same outcome is shown in a different and perhaps more dramatic fashion in Figure 7, which uses bar graphs to illustrate the growing deficit over time between labour supply and demand, for each of the three scenarios (high, medium and low rates of population growth).

Figure 7. Canada Labour Force Supply and Demand: High, Medium and Low Population Growth Projections





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The deficit in the supply of labour, using the medium population projection, hits a shocking 1.5 million by 2021, rising to 2.7 million by 2031. While the deficit is smaller if we use the high population growth assumption, it still reaches over 1.4 million by 2031. By contrast, the slow growth assumption yields a truly catastrophic outcome with a projected deficit between labour supply and demand of almost 4 million.

**This is the impact that will be the inevitable result of the aging baby boom generation, unless immediate and appropriate action is taken to change things.** In order to address the looming deficit in the supply of labour, we will have to find ways of increasing that supply, either by increasing the total population, or by increasing the participation rate, or both. But an aging baby boom generation is not the only transformation that is underway. **The fact of the matter is that in the midst of the looming deficit in the availability of workers, we are simultaneously witnessing profound changes in the nature of work itself, changes brought about by the emergence of the knowledge economy.**

## THE EMERGING KNOWLEDGE ECONOMY

What we know is that an increasing proportion of the jobs that will exist will require a level of education or training beyond secondary school; an apprenticeship, a certificate, a diploma, a degree, an industrial credential, or a professional qualification. To avoid unnecessarily complicating this analysis, we shall simply lump together all these forms of post-secondary education or training as meeting the necessary threshold of required skills. The question then becomes: How many skilled workers will Canada need?

There is remarkable convergence among recent studies regarding the skill requirements of the emerging knowledge economy. On the conservative end of the scale, Human Resources

and Skills Development Canada estimated in 2007 that "...65% of all new jobs created over the next five years are expected to require some form of post-secondary education/training" (Service Canada, 2007, p. 3). Interestingly, the deputy minister of the same department, at a recent meeting of the Public Policy Forum in Ottawa (March, 2011), upped that figure to 75%. An earlier study by the government of British Columbia came to the same conclusion. "Forecasts...indicate that three-quarters (75%) of new and replacement jobs...will require at least some post-secondary education and/or training equivalent." (BC Ministry of Skills, Training and Education, 1997, p. 1). In 2009 the BC Ministry of Advanced Education and Labour Market Development put the figure at 76.2%, and in 2010 the same ministry raised the number to 80% (BC Ministry of Regional Economic and Skills Development, 2010). In 2005 the Ontario Ministry of Education observed that fully 81% of the new jobs created in that province between 1996 and 2001 required management training, apprenticeship training, or a college diploma or university degree. A summary of the available range of estimates is listed in Table 1.

**Table 1. Estimates of Current & Future "New Job" Requirements:**

- 65% (HRSDC, 2007): 75% (HRSDC, 2011)
- 67% (Canadian Council on Learning, 2009)
- 75/76% (B.C. Ministry of Advanced Education & Labour Market Development, 1997 and 2009)
- 78% (U.S. Skills2Compete, 2007)
- Ontario targets 70% attainment level (Speech from the Throne, 2010)
- BC targeting an 80% attainment rate for 2030 and a 90% transition rate by 2020 (Skills for Growth, 2010)

The Obama administration in the US reached a similar conclusion, expressed in qualitative terms as follows: "In general, the U.S. appears to be shifting towards jobs that require workers with greater analytical and interpretive skills – skills that are typically acquired with some post-secondary education" (Executive Office of the President,

Council of Economic Advisors, July 2009, p. 21). Tellingly, the same report observed that “Undoubtedly, some of the fastest growing jobs over the next decade have yet to be identified.... For example, in 2003 a quarter of ... [current] jobs ... were not even listed among the Census Bureau’s occupational codes in 1967” (p. 22).

A U.S. study (Holzer and Lerman, 2007) did offer quantitative support for the assertion that future jobs will require a high level of education and training. They put the proportion requiring education or training beyond the high school level at 78%. The U.S. based Lumina Foundation put this in stark relief, arguing that without change to a more educated workforce, there will be a shortage of 16 million post-secondary educated adults in America by 2025.

**We can reasonably conclude that the need for a more highly educated and trained workforce has by now been established, even if the precise proportion of what skills will be required has not yet been defined.** At this point it may be helpful to note that when referring to “new” jobs, we actually have two categories that need to be recognized. One is the truly new job, a job that literally did not exist previously. The other is a job that may continue to carry the same or a similar name, but now requires skills that are sufficiently different that it qualifies as new. This is what we mean by the evolving nature of work. A job that could once be performed by an unskilled worker, for example, will, as the result of technological change, increased responsibility, or new processes or systems, evolve to the point where skilled training is essential. It has been estimated that this typically happens approximately every 15 years. With the changes occurring on the technology front this 15 year interval may now be considerable shorter. So we return to the question: If we accept that a more highly skilled and educated workforce will be required in future, what proportion will need to be skilled? Can we be more specific about Canada’s future skill requirements?

## CANADA’S FUTURE SKILL REQUIREMENTS

As we have seen, there are a variety of estimates of what our skilled labour force requirements will be in the future. **If we use a very conservative estimate, we can put the initial proportion of skilled workers required at 70%, and increase that by .5 percentage points each year going forward, to reach 80% by 2031.** This puts us well within the range of the available Canadian and U.S. forecasts as portrayed in Table 1. This projection is shown in the first line of Table 2.

Table 2. Labour Force Skill Assumptions

	2011	2016	2021	2026	2031
<b>New Job Skill Requirements</b>	70.0%	72.5%	75.0%	77.5%	80.0%
<b>Labour Force Skill Availability</b>	62.0%	63.0%	64.0%	65.0%	66.0%
<b>Overall Labour Force Skill Requirements</b>	63.4%	67.4%	71.9%	74.3%	76.7%

The second line in the table shows the actual current and projected skilled labour force. How did we arrive at these projections? Using 2006 census data, the Canadian Council on Learning (CCL) reported that six out of ten Canadians (60%) between the ages of 25 to 64 “...had completed some form of PSE....” (2009, p. 113). **This places Canada among the highest in the world in terms of educational achievement.** In the age group 25 to 34, however, fully 66.6% had completed a post-secondary qualification (CCL, 2009, p. 119). Norrie and Lin (2009) suggest that in Ontario the percentage for the younger age group might be as high as 70% assuming all students complete their credentials. We can therefore assume that the impact of the younger, better educated members of the workforce will gradually work their way through the population, increasing the overall level of education and training, even if

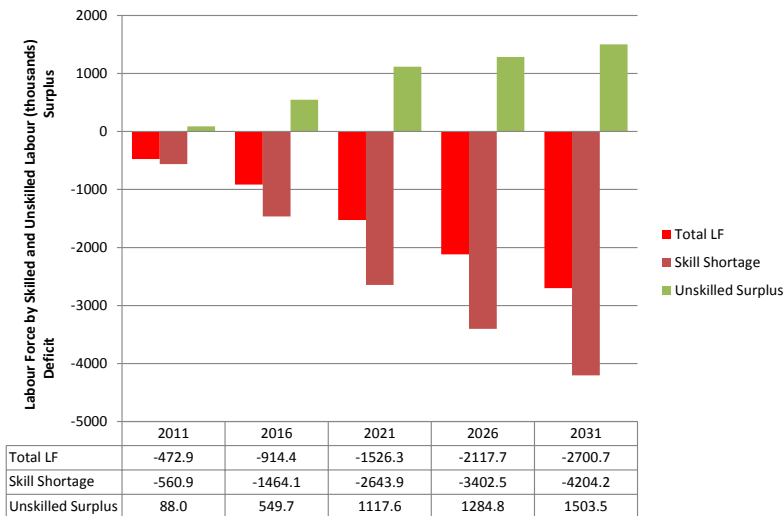
nothing else were done. Using this logic, we can estimate that by 2031 approximately 66% of the workforce will have a post-secondary credential. There will, of course, be some provincial variations.

**Putting these data together, we conclude, as in the third line of Table 2, that by 2031 approximately 77% of the workforce will require a post-secondary education or training.** This begs the crucial question of whether the supply of skilled workers will meet the demand and, if not, how serious the imbalance will be.

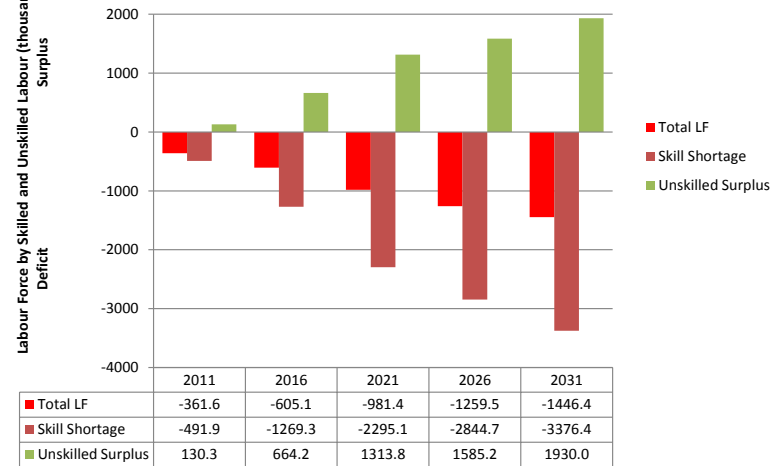
### SUPPLY AND DEMAND: A LOOMING IMBALANCE

We answer these questions by combining our labour force availability projection using Statistics Canada's three population scenarios (high, medium and low) with the skill requirements in Table 2. The results for the medium and high population scenarios are provided in Figures 8 and 9.

**Figure 8. Canada Labour Force Balance: Medium Population Growth**



**Figure 9. Canada Labour Force Balance: High Population Growth**



In both cases the red bars represent the total projected labour force shortage and thus appear below the line. These are the same results shown earlier in Figure 7. The mauve line then separates out the shortage of skilled labour, which also appears below the line. The green line, by contrast, shows the projected surplus of unskilled labour and is shown above the line.

Thus we confront the prospect of a looming shortage of skilled labour occurring in the midst of a surplus of unskilled labour. The social and economic consequences of this (people without jobs and jobs without people) are both complex and alarming. **The message is clear: Unless we take effective action to increase the proportion of skilled labour in our economy, we face a future with large numbers of unskilled workers looking for jobs that require skills they do not possess.**

This message is beginning to be understood. In addition to earlier reports in this series (Miner, 2010a, 2010b), we now have similar concerns raised by the World Economic Forum (Cumberlege et. al.,

2011), Statistics Canada (Martel, et. al., 2011), Profit Magazine (McElgunn, 2011), WorkBC (2010), and the Government of Alberta (2011).

It is difficult to overstate the significance of the situation we will face if appropriate corrective action is not taken, and taken quickly. We are currently tracking on the medium growth projections. So, using this knowledge, we can look at the green bar in Figure 8 and see that by 2016 there will be almost 550,000 unskilled workers who will not qualify for the skilled vacancies that will exist. This number will grow to 1.1 million by 2021. And, it must be remembered that these numbers are in addition to the rate of unemployment that would normally exist. At the very same time, as the mauve bar shows, there will be almost 1.5 million skilled jobs unfilled due to the shortage of appropriately trained or educated workers. The shortage will grow almost exponentially to well over 2.6 million by 2021 and to a staggering 4.2 million by 2031. If we need a glimpse of what is in store, we need look no further than a Canadian Press article (Kelly, 2009) in which it was reported that in the midst of a recession, several high technology companies in Waterloo, Ontario were unable to fill job vacancies. A further illustration is revealed by the fact that in 2011 Rio Tinto, a British-Australian mining giant, ran television advertisements to recruit employees for its Ontario operations. Skilled labour shortages now threaten the oil sands (de Souza, 2012) and the Greater Toronto area is reported to have an undersupply of technology, engineering and design workers (TRRA, 2012).

Even if we were to focus on the high population growth model illustrated by Figure 9, with its apparently less dramatic projected total labour shortage (the red bar), we have to remember that in this scenario there would be a seemingly unconscionably large group of unemployed, unskilled workers.

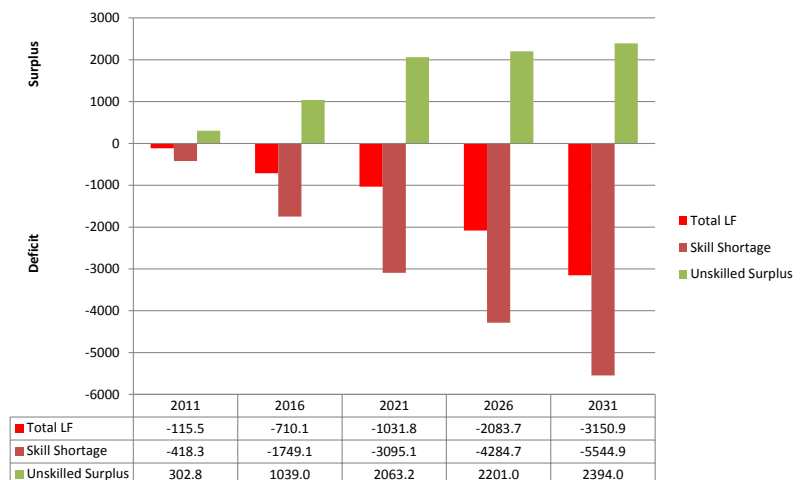
**To state the problem as clearly and bluntly as possible, we need to address two issues simultaneously. First, we need to find ways to increase Canada's labour force or its participation rate, or both. We need to do this to counteract the effects of the pending retirement of the baby boomers. Second, and at the same time, we need to find ways to increase the skill level of our workforce. And we need to do this to meet the challenges posed by the emerging knowledge economy.**

If it is any consolation, we may take some comfort from the knowledge that Canada is not the only country facing this challenge. Figures 10 and 11 present similar analyses for the United States and the United Kingdom. But before we become too comfortable, we should realize that the fact that

Figure 10. US Labour Force Balance



Figure 11. UK Labour Force Balance\*



\*only those aged 25 years and older

others will face similar challenges means that we will almost surely face stiff international competition in the search for skilled workers.

## THE SEARCH FOR SOLUTIONS: GROWING OUR WORKFORCE

Perhaps the most obvious way to increase the size of our workforce is to increase the total population, and the most likely way to do that, at least for Canada, is to increase immigration. If we could increase the number of new Canadians significantly, and if they possessed the appropriate skills, we could at least mitigate the problem created by baby boomer retirements. But there are several barriers in the way of doing this. For one, immigrants tend not to be well distributed across the country, concentrating mainly in metropolitan Toronto, Montréal and Vancouver and, despite government efforts; it has proven difficult to persuade them to locate in areas with greater demographic challenges, such as Saskatchewan and Atlantic Canada.

Another barrier faced by recent immigrants involves matching their own skills and experience with existing job vacancies. Foreign credentials are not always or easily recognized in Canada, language can pose problems and, of course, so can the dilemma faced by many new entrants to the Canadian workforce for both native and new Canadians: Jobs often demand relevant experience which, by definition, new labour force entrants do not have.

The problem does not always lie with the immigrant. Canadian immigration policy places a premium on the possession of needed skills, but institutional rigidities often serve as roadblocks to immigrants' successful integration into the workforce.

The fact is that immigrants do not fare as well as native-born Canadians when it comes to employability, especially those who are recently

arrived in Canada (the first five years). This is demonstrated in Table 3 which compares the two groups at the peak of their employable years, 25 to 54 (Statistics Canada, 2008a). While on average 88% of all Canadians in this age group are in the labour force, the proportion for recent immigrants is only 73% and it takes ten years for that rate to approximate the Canadian average. At the other end of the same scale, the Canadian unemployment rate in 2010 was 8.0% for the total population but for recent immigrants it was 15.8% (it was 11.1% for those who had been in Canada for from 5 to 10 years).

**Table 3. Immigrant vs. Canadian Labour Force Participation**

Labour Force Participation	Canadian <sup>1</sup>	Immigrant <sup>2</sup>		
		Very Recent	Recent	Established
	87.9%	73.3%	82.3%	86.8%

<sup>1</sup> Born in Canada

<sup>2</sup> Very Recent = 5 years or less, Recent = 5 to 10 years, Established = 10 years or more

The conclusion from this seems clear: Simply recruiting more immigrants is not the answer to the challenges posed by an aging population and skill shortages. In order to contribute directly to improving our participation rate, we would need to attract immigrants whose education or training credentials, language capabilities, and work experience are more readily accepted into the workforce. And to have a long term effect they would need to be relatively young. And, of course, they would have to choose Canada among competing international recruiters.

Another opportunity might exist in finding ways to get more people into the workforce from groups relatively underrepresented at present. The most apparent groups include women, aboriginal persons, and persons with disabilities, youth and older workers.

As Table 4 shows, the participation rate for aboriginal persons is significantly lower, across all age groups, than for the remainder of the population (Statistics Canada, 2008b). While there are provincial variations in these rates, there is no doubt that the underrepresentation of aboriginal persons in the Canadian labour force represents an important and growing supply of underutilized human capital.

**Table 4. Canadian Aboriginal Labour Force Participation Rates<sup>1</sup>**

Age (years)	Population		
	Total Population <sup>2</sup>	Aboriginal Population	Difference
15 - 24	65.6%	52.0%	13.6%
25 - 54	85.7%	75.8%	9.9%
55 - 64	59.7%	53.3%	6.4%

<sup>1</sup>Taken from 2006 Census data, Statistics Canada, No. 97-559-XCB2006008

<sup>2</sup> Includes the Aboriginal population which makes the difference less

A similar situation applies to the case of persons with disabilities. The participation rate for working-age persons with disabilities (those between 15 and 64) was only 54.9% in 2006. This contrasts with other Canadians for whom the rate was 77.8%. While the participation rates vary widely depending on the type of disability being considered, there is obviously considerable room for improvement.

There has been a phenomenal improvement in labour market participation by women. From a rate of only 54% in 1976, the participation of women aged 25 to 44 had increased to 82.3%. For women aged 45 to 54 the comparable increase was from 48.1% to 82.2%. Impressive as these increases are, there is still room for further improvement, as Figure 4 demonstrates.

Our biggest supply challenge involves the education and training of young people. If we could

improve the efficiency and effectiveness of the educational process we might be able to prepare young people for entry to the workforce more quickly while maintaining or improving the quality of their education or training. This is no doubt a controversial idea, but given the enormous sums we currently spend and the length of time required to complete various qualifications, it is also an idea with enormous potential to contribute directly to the problems we face. Because this issue is so full of possibilities, we will consider it in greater detail later, and only a brief overview is offered here.

The point has often been made, but seldom acted upon, that the structures of our high school and most of our post-secondary programs have been inherited from an agrarian past that is no longer relevant. Students were out of school during the summer so they could help on the farm. The perpetuation of this arrangement is now often justified as enabling students to work in order to pay the cost of their tuition. What we need to realize is that this arrangement also carries a substantial social cost, a cost that will only increase. To illustrate, if university students were to spend just two of their summers in school, they could be out of school and in the workforce a full year earlier. Obviously there would need to be adjustments to student aid programs to compensate and avoid narrowing access, as recommended by the now defunct Canada Millennium Scholarship Foundation (Berger, Motte and Parkin, 2009), but the idea warrants serious consideration. A recently released report (Drummond, 2012) makes a similar recommendation for using facilities more fully and accelerating program completion. A variation on this theme (accelerated graduation) is provided by the renewed debate in the U.S. over the return to a three-year BA (Goldstein, 2009) and the call for a similar reform in Canada (Clark, Moran, Skilnik and Trick, 2009).

Substantial efficiencies might also be attained if we could somehow manage to persuade the institutional players and provinces to coordinate their efforts more effectively. The absence of effective credit transfer arrangements within and between provinces is deplorable. Students face a

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virtual nightmare scenario of tangled regulations and blocked opportunities. Again, the cost to students and society can be substantial when a student's prior learning is neither recognized nor credited. In this regard, prior learning is treated far more appropriately when a Canadian student goes to the U.S., Australia or Ireland.

A related possibility lies in expanding the use of joint college-university articulation arrangements. Ironically, while early efforts in this regard involved students progressing from college to university, or alternating terms in each institution, the more recent pattern has been for students to complete a four-year university degree and then enroll in a one- or two-year postgraduate certificate or diploma program in a college. The idea is to present the prospective employer with not only an academic credential, but also evidence of employable skills.

The British Columbia Institute of Technology, during the 2011 meeting of Polytechnics Canada, reported that fully 30% of its full-time students were university graduates. In Nova Scotia meanwhile, the Community College is expanding its post-diploma offerings in anticipation of attracting more university graduates. One can expect these trends to continue and expand. But the amount of a student's time represented by this "stacking" of university and college programs must be considered excessive as compared with the alternative of having the institutions work out collaborative arrangements.

There is also need for improved liaison between secondary and post-secondary institutions. The problem at the high school level, where graduation rates have improved in all provinces, appears to be the level of engagement of a large proportion of students (Willms, Friesen and Milton, 2009), a situation that bodes ill for their future post-secondary success. Closer cooperation between institutions at the various levels, thus removing or at least reducing the barriers and disjunctions that currently exist, would seem to offer the most promising route.

Our goal should be to present students with a seamless path to the education or training they seek, one that contains few if any administrative bottlenecks. Joint programming, teacher exchanges, prior learning assessments are among the possibilities that need to be explored and adopted. What we have to recognize is that students who, for whatever reason, drop out of school will be much more likely to find themselves unemployed or employed in dead-end jobs. They may eventually find their way back to high school, college, or university, but in the meantime they have lost valuable time and the economy has lost valuable skills. Several provinces are currently experimenting with dual credit options and these efforts should be applauded and encouraged.

Finally, there is the obvious possibility of attacking the problem of a declining participation rate at its cause. As was evident from Figure 4, participation rates start to decline in the 55 to 64 age group and virtually disappear after the age of 65. Given the increasing size of this group, even a small increase in the participation rate would yield a substantial increase in employment. For example, if we take the medium population growth model for 2031, an increase of just 5% in the participation of those aged 55 and over would add 695,000 people to the labour force. The trick, of course, is to figure out how to accomplish this.

We do know, however, that in both Canada and the U.S. a large proportion of the baby boom generation wants to be involved in the labour force after 65. For example, the Del Webb study in the U.S. (2010) indicated that 74% of those at the leading edge of the baby boom want to do some work after retirement. However, the type of work desired, according to a Merrill Lynch survey (2005, p. 62), is not the typical 9 to 5 employment. As Table 5 illustrates (Merrill Lynch, 2005, p. 66), only 6% of those responding wanted traditional full-time employment. Most wanted a situation giving them more control, either as self-employed entrepreneurs, part-time workers, or an arrangement allowing them flexibility to cycle between work assignments involving contracts, term appointments, consultancies, etc.

**Table 5. US Baby Boomer Work Related Retirement Wishes**

42%	cycle between periods of work and leisure
17%	never work again
16%	PT work
13%	start their own business
6%	FT work
6%	undecided

Source: Merrill Lynch, 2005, N=2,348 (40 to 58 years old)

In Canada, survey results show a similar pattern (HR Council for the non-profit sector, 2010). Fifty-seven per cent of Canadians said they planned to work past retirement, but that if they were to do so they wanted both more control over their working life (increased vacations, part-time or seasonal work, flexible leave arrangements for personal or family reasons) and greater life security (health benefits, insurance, and pensions). The question of salary did not even enter the equation. That is the good news.

The bad news is that employers appear to be less interested than employees in facilitating these kinds of flexible arrangement. An Ipsos Reid Survey (December, 2009) of 804 boomers and 254 managers/executives discovered a significant dissonance between the two groups. While 63% of the boomers wanted flexibility in their work arrangements, only 54% of employers were willing to make such accommodations. Similarly, while 34% of boomers would like to ease into retirement, only 21% of the employers would be willing to let them do so. Equally revealing is the fact that fully 64% of employees indicated they found it difficult to discuss retirement plans with their employer. This suggests that many employers may not have any idea of what their employees' retirement preferences actually are.

This is just a brief summary of the range of options that need to be considered in seeking to increase the size of Canada's labour force. The list is surely sufficiently suggestive to warrant the conclusion that it is possible to meet the challenge posed by the retiring boomers. Yet we also need to find ways

to ensure that a larger proportion of the labour force has the skills required for successful employment in the knowledge economy of today and in the future.

## **THE SEARCH FOR SOLUTIONS: GROWING OUR SKILLED WORKFORCE**

We cannot know with any precision or certainty what the jobs of the future will look like. We do know, however, that the vast majority of these jobs will require an education or training beyond the high school level, whether this means an apprenticeship, graduation from a college, polytechnic or university, or industry certification. This has become an absolute necessity, and yet for some the greatest hurdle in reaching this goal is to accept the reality of its necessity. Even though we know from research that people with higher levels of education earn more, are healthier, are less likely to be involved in crime, and are more satisfied with their lives, still too many people are either unaware of these facts or do not accept their relevance for them. Sadly, we are now engaged in a debate over building more jails rather than improving our educational systems at all levels. Despite improvements, our high school graduation rates are still too low. We have to change attitudes and expectations, getting more people to view further education as a necessity, a means of getting a more fulfilling life, and not merely as an expense.

Canadian industry is part of the problem, and it has to become part of the solution. It has to become fully engaged in its training responsibilities and yet, according to the Canadian Council on Learning (CCL), employer-sponsored training was virtually stagnant between 1997 and 2002 (CCL, 2007). The council also reported that fully one-third of Canadian workers identified unmet training needs in their workplace (CCL, 2007, p. 3). Canadian firms spent only 1.5% of their payroll on training. This contrasts with the U.S. where the figure is



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somewhere between 2.25% and 2.8% (Bailey, 2007 and Campbell and Hughes, 2009).

Employers offer a number of explanations for this state of affairs. They fear poaching by other firms, they cite inadequate government assistance, and they claim not to be aware of training options that are available. The list of reasons also includes a lack of time, difficulty in calculating the return on investing in training, the cost of customized training, a belief that training is not really the responsibility of business, and the claim that employees are not really interested in training (Hughes and Grant, 2007).

For their part, employees share some responsibility for the low level of training. Even when it is offered it is frequently declined. The reason is often a belief that training is not really required for the job they are doing and, like employers, they profess ignorance of the opportunities available. Other reasons include the belief that the costs involved are too high, that they do not have enough time, that they doubt their own competence, and that training is either not a priority or that they are simply not interested (Myers and de Broucker, 2006).

There is also a relatively large complement of people who are simply disengaged from learning. They are generally relatively young, male, and from lower socio-economic families. They are often unemployed, and they usually dropped out of school before graduation. If they are employed at all it is usually in temporary, unskilled jobs. They usually cannot see the benefits for themselves of schooling, and they lack confidence in their own futures. They often lack good role models.

Canadians also have to face up to the fact that we have an appalling rate of illiteracy. One estimate, using Statistics Canada data, is that four out of ten (40%) of Canadians aged 16 to 65 struggle with low literacy levels to the point where their ability even to take advantage of skills training is inhibited (ABC, 2009). The illiteracy rate amongst immigrants is 60%, or six in ten. By way of

contrast, only 2.2% of our workplace training is devoted to basic skills training (CCL, 2007, p. 3).

Here, perhaps, is the greatest challenge of all. In order to raise the skill level of our labour force, we need to change attitudes about the importance of education and training. Attitudinal change is necessary at all levels: employees, employers, students and parents. It requires commitment from all segments of society: government, business, unions and non-unionized employees, as well as our educational institutions. What is required is a common commitment to elevate the level of our workforce – to raise the proportion of skilled workers – from the current level of 60% to at least 77%. And we have to do this quickly; we need to reach that target within one generation, by about 2031. And we have to start now.

## **THE NEED FOR ACTION**

Canada's international competitiveness, hence economic and social wellbeing, will depend largely on whether we can rise to the challenge posed by the need to increase the size of our labour force and simultaneously to increase our educational and skill levels. If we do not act quickly and boldly, we run the risk of losing out to competitor nations which are prepared to grasp the nettle. In Europe, for example, the European Foundation for Management Development (EFMD) observed that "The economy and competitiveness of the companies will much depend on the skills of the workforce. It is mainly in the mind of high skilled workers that we can find innovative solutions and competitive advantage" (EFMD, January 2007).

Do Canadians understand the challenges facing us? Some, it appears, do. The Council of Ministers of Education Canada (2008) for example, stated that "Canada must develop an accessible, diversified and integrated system of Adult Education learning and skills development that delivers training when Canadians need it." An article by the Canadian Policy Research Network

put it this way: “The social and economic importance of encouraging adults to engage in continuous learning through their working lives is undisputed” (Myers and de Broucker, 2006).

But do actions match the rhetoric? Dale Kirby expresses a justifiable skepticism. “Despite considerable rhetoric about the need for a learning society and the importance of lifelong learning for Canada to remain or become a competitive knowledge-based economy, the progress in effectively supporting adult and older learners has been disconcertingly slow. Adult education participation levels in Canada appear to have remained relatively stagnant since the early 1990s...” (Kirby, 2009, p. 10).

Nevertheless, a recent episode in Ontario illustrates both the hurdles in the path of a more aggressive attack on the problems described here as well as the value of perseverance. Since launched in 2008, Ontario’s ‘Second Career’ program enrolled over 50,000 students. The program offered one and two year educational opportunities in both public and private colleges that would assist workers who had lost their jobs in the recent recession. Getting these individuals into and through the program proved to be a painful process. There were literacy issues, students were often unprepared, there were conflicts and turf battles among the agencies involved coupled with the lack of clear organizational mandates resulted in inefficiencies. Nonetheless, in its first year more than 20,000 unemployed workers who required retraining were enrolled in the program.

Over the next 25 years, using the medium population growth projection, Canada will need to train, retrain or recruit some 4.2 million skilled workers. That translates into an increase of 168,000 post-secondary graduates per year. It will not be easy, and many who have not previously considered post-secondary education a viable option will have to be persuaded to change their

outlook. Unfortunately, research is not particularly helpful here. There is very little empirical evidence indicating which educational strategies have proven to be the most helpful in increasing the attainment levels of underrepresented groups (Miner, 2011).

How this could be accomplished, in terms of retraining verses recruitment is set out in Table 6, using the medium population growth assumptions. It shows that priority should initially be given to retraining, since the principal resource (unskilled workers) is readily available and their and our needs are pressing. If we move aggressively on this front, we can simultaneously attack unemployment and our skill shortage. Eventually, however, and likely by about 2021 we will largely exhaust the pool of unskilled workers available for retraining and we will need to increase our efforts to grow the total size of our labour force.

**Table 6. Skilled Labour Force Sources (Medium Population Projection)**

Year	Skilled Workers Needed in Year			Sources of Skilled Workers	
	With No Skill Training Change	If Previous Year Skill Training Needs Met	“Graduates” per year	Retraining Unskilled Workers	Increase Labour Force Participation Needed
2011	560,853	560,853	112,171	87,972	472,881
2016	1,464,115	903,262	180,652	461,776	441,486
2021	2,643,861	1,179,747	235,949	567,840	611,907
2026	3,402,515	758,654	151,731	167,262	591,392
2031	4,204,177	801,662	160,332	218,668	582,995

The urgency of the current situation may be difficult for some to grasp, faced as they are by a world of relatively high unemployment and budgetary deficits. But the fact of the matter is that we are about to face a world with a lot of people without jobs while an even larger number of jobs are available without people to fill them. Employers may be forced to move their operations to find the

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workers they need. This creates an opportunity for those with skilled workers. The current recession may provide a welcome breathing space which, if we are wise, we will use to prepare for the inevitable labour market shortages to come. The recession will pass, as all recessions eventually do, but the demographic changes that are unfolding cannot be wished away. Indeed, the anticipated shortages are already beginning to appear.

All that is clear enough, at least to those willing to look beyond their immediate situation. What is not so readily apparent, however, is just what jobs, skills or occupations will be in demand in the future. This is the question to which we now turn.

## JOBS OF THE FUTURE

A dose of reality first. We do not know precisely what jobs will be available in the future, and no one can accurately predict what the “new” jobs will be. That said, we also face a second constraint. Canada does not have the labour market information system that it needs to navigate the demographic changes that confront us. The latest Labour Market Information Report (Drummond, et. al., 2009) describes our current deficiencies in this regard. Little has been done to improve the situation since that report was released. Indeed, the scrapping of the long form census, the termination of the Work-place and Employee Survey (WES) and the cancellation of the Youth in Transition Survey have all made matters worse. Compared to the U.S. or Europe, Canadian standards are clearly deficient. Meanwhile, the policy premium on reliable labour market information will only increase. Despite constitutional boundaries, labour markets are increasingly national and international, not provincial. To be fair, there have been some improvements of late, and the new Working in Canada website ([www.workingincanada.gc.ca](http://www.workingincanada.gc.ca)) and the revised occupational projection site ([www23.hrsdc.gc.ca](http://www23.hrsdc.gc.ca)) show promise.

In contemplating the future of work we are actually dealing with three types of changes that are interwoven in their effects. First, there are changes that will take place in existing jobs as their numbers are transformed by economic and demographic shifts. Second, there are evolving jobs, where job characteristics and demand will change in response to macro-economic, scientific, social and technological shifts. And finally, there are genuinely new jobs, those that did not previously exist and arise because of mega trends affecting occupations and careers.

**Existing Jobs.** We need to acknowledge that choosing a vocation or job is ultimately a very personal matter, and no amount of analytical precision can guide an individual to the job best suited to her or him. While accepting the reality and importance of these personal preferences, they cannot be the focus of this inquiry. We can, however, perhaps assist individuals in better understanding whether their dreams will be easier or harder to achieve. We begin by looking at the future of existing jobs.

In terms of an analytical approach, the Canadian Occupational Projections System (COPS) is probably the best known. It uses 140 National Occupational Codes and Statistics Canada data related to job losses resulting from retirements, deaths and emigration and gains from immigration and graduations to project whether demand for these occupations will increase or decrease. The results are illustrated for three occupational groups in Table 7: creative and performing artists, financial and insurance clerks and medical technologists.

Looking at the projected shortages and excesses in these three categories, and accepting the standard caveat of “all other things being equal”, we can see that there is a projected shortage of creative artists and medical technologists and a surplus of financial and insurance clerks. But if we look at projected openings and school leavers we gain a better understanding of the size of the market and the number of people who are projected to enroll in programs leading to that occupation. Thus, for example, while openings for financial and

insurance clerks are projected to decline and for medical technologists to increase, there are projected to be over three times as many financial and insurance clerks needed. It is also important to understand the nature of the job categories under consideration. For example, the job listed as creative artist includes such diverse individuals as producers, directors, choreographers, conductors, composers, arrangers, musicians, singers, dancers, actors, painters and sculptors. There may be an overall shortage of creative artists, but not necessarily a shortage in one particular category.

**Table 7. COPS Employment Projections (2009-2018)**

	<b>Creative Artist</b>	<b>Financial And Insurance Clerk</b>	<b>Medical Technologist</b>
Code	513	143	321
Employment	93,351	354,699	83,890
Median Age	41	40	40
Retirement Age	62	59	60
Expansion Demand	10,615	20,365	14,593
Retirements	20,735	92,281	17,245
Other Replacement Demand	3,139	8,163	2,077
Emigration	1,370	5,272	1,227
Projected Openings	35,858	126,081	35,142
School Leavers	23,641	103,792	28,992
Immigration	5,429	22,658	5,514
Net Mobility	294	12,507	-579
Projected Job Seekers	29,365	138,958	33,926
Shortage (excess)	6,483	(11,877)	1,216

The COPS projections can provide useful information, especially if the time between career decision and entering the labour market is relatively short. In occupations with long training requirements the utility of this tool is obviously limited. It takes at least twelve years for a grade ten student to qualify as a university professor, for example, and over that period of time so many things could change as to make a projection of future demand for university professors largely irrelevant, not to mention the question of which subject and field the student might select.

There is also the fact that the COPS projections are based on a relatively static picture of the job market and reflect only one possible economic scenario. If those economic assumptions are inaccurate, then the projections become less valid. There have been calls for the use of multi-scenario projections to compensate for this short coming (Drummond et. al., 2009).

The United States Bureau of Labor Statistics also provides projections of the fastest growing occupations along with the magnitude of their growth ([www.bls.gov](http://www.bls.gov)). Table 8 presents the top ten jobs in both categories. Health related occupations clearly dominate the lists.

**Table 8. US Bureau of Labour Statistics Projections: 2010-11 Edition ([www.bls.gov](http://www.bls.gov))**

<u>Fastest Growing Occupations: Top 10</u>	<u>Largest Numerical Growth: Top 10</u>
- Biomedical Engineers	- Registered Nurses
- Network Systems and Data Communications Specialists	- Home Health Aides
- Home Health Aides	- Customer Service Representatives
- Personal and Home Care Aides	- Food Preparation
- Financial Examiners	- Personal and Home Care Aides
- Medical Scientists	- Retail Sales Persons
- Physician Assistants	- Office Clerks
- Skin Care Specialists	- Accountants and Auditors
- Biochemists & Biophysicists	- Nurses Aides And Orderlies
	- Post-secondary Teachers

At the provincial level most provinces make some type of projections. To select one, the 'Manitoba Job Futures' currently consists of some 203 occupational profiles which contain information on employment prospects, wages, working conditions and educational or training requirements. While geared specifically to Manitoba, their guide (<http://mb.jobfutures.org/home.cfm?lang=en&site=graphic>) is particularly helpful. Similar useful projections are provided by British Columbia (WorkBC, 2010) and the Government of Alberta (2011).

Projections of future job opportunities can be useful to prospective job seekers provided their information search is sufficiently broad. To illustrate, COPS projected the number of computer

and information system professional job seekers at close to 190,000 in a market predicted to have only 131,000 vacancies. Yet, the Information and Communications Technology Council (ICTC) in 2011 predicted a shortage of over 106,000 ICT positions between 2011 and 2016 ([www.ictc-ctic.ca](http://www.ictc-ctic.ca)). The difference between COPS and ICTC is explained by the changing nature of the industry where jobs change faster than COPS can recognize them. **This brings us to the second category in our search to understand the jobs of the future: jobs that will evolve in response to environmental, demographic, technological, economic and other trends.**

**Evolving Jobs and Evolving Job Demand.** The counselling service of the University of Calgary ([www.ucalgary.ca/counselling](http://www.ucalgary.ca/counselling)) has identified five mega trends that will shape the future of work. As shown in Table 9, the list encompasses information, natural systems, technology, demographics, and globalization. The Calgary project identifies the types of jobs that are expected to evolve and grow from these trends. The logic of this approach rests on the belief that the major trends that can be identified will have specific and predictable impacts on existing jobs. For example, the impact of an aging population will not only witness a growth in the demand for nurses and nursing assistants, but will also lead to changes in the nature of those occupations as they respond to the needs of the elderly.

The trend approach to mapping future employment growth is also apparent in recent efforts by governments to encourage the growth of particular industries or industrial sectors. Toronto, for example, sees itself as a major financial hub and seeks to grow employment in this sector. The growing international recognition of the strength of the Canadian banking system, coupled with global economic problems has certainly added to the prospect of success in this regard. Meanwhile, Ontario has identified seven occupations or industries they intend to grow ([www.tcu.gov.on.ca](http://www.tcu.gov.on.ca)). These include aerospace, biotechnology, distance learning, environment, green energy technologies, health informatics and multimedia. If the government is successful in this venture, it is not

difficult to extrapolate from the list the jobs that would grow and evolve in response to the government stimulus.

**Table 9. University of Calgary Career Counseling ([www.ucalgary.ca/counselling](http://www.ucalgary.ca/counselling))**

**Trends & Jobs**

<p><b>Information Revolution (selected from 16)</b>          Information System Librarian Specialist          Researcher          Manager of Communications          Financial Advisor</p>	<p><b>Natural Systems Awareness (selected from 20)</b>          Natural Healing Practitioner          Fitness Consultant          Environmental Engineers          Genetic Researcher          Water Quality Technician</p>
<p><b>Demographics (selected from 34)</b>          Any elder health field          Travel Consultant          Estate Lawyer          Funeral Director          Human Resource Personnel Officer</p>	<p><b>High Technology and Material Creation (selected from 13)</b>          Software Developers          Computer Animators</p>
<p><b>Global Village (selected from 7)</b>          Internet Specialists          Protocol Officers          Translators          International Lawyers</p>	

Attractive as the trend approach may at first appear, we should not overlook the difficulties of predicting its precise impact on job creation, even if it successfully anticipates a major shift in the structure of the economy. For example, China is currently devoting massive resources to green energy. An indirect result of this has been a rapid drop in the price of solar panels, to the point where they are almost competitive with more traditional sources of energy. Where will that leave other countries which placed their bets on the same energy solution? Who will get the emerging jobs? Identifying emerging trends is no guarantee that you can pick the right one in which to invest in for your community.

Similarly, we can be reasonably certain that in thirty years we will not be so dependent on internal combustion engines and petroleum for transportation, but what will the replacement technology be, what will the business model look like that supports it, and, finally, what jobs will

evolve from all this? With these questions in mind, we turn to the third category in the jobs of the future.

**New Jobs.** In terms of new jobs, a study in the United States found that about a quarter of all jobs did not even exist 35 years earlier (Executive Office of the President’s Council, 2009, p. 22). Given the dramatic changes currently taking place in technology, social media and the environment, it is by no means unrealistic to suggest that the proportion of new jobs will grow even faster in the future.

If evidence is needed as to the rapidity of recent transformational changes that have had profound implications for how people earn their living and carry out the business of living, we might consider that in 1997 only 11% of people in the developed world used the internet but by 2010 it had increased to 70%. Meanwhile, internet use in the developing world increased from virtually 0% in 2000 to over 20% in 2010. While Craigslist started in 1995 in the San Francisco Bay area, it was only in 2000 that it started to expand aggressively in other U.S. and Canadian cities. Kijiji, a subsidiary of e-Bay, was launched in March 2005, with E-Bay itself only coming online in 1995. By way of contrast, think of the shrinking size of newspaper classified advertisements in recent years. Meanwhile, the first iPhone was only released in 2007 and Facebook was launched in February of 2004. We have only recently seen the huge demand in jobs for apps designers. In 2000 Netflix adopted its single-pay, unlimited-use model and in 2008 it added 2,500 new movies and television shows to its inventory, and in 2010 it got first-run rights from Paramount, MGM, Lion’s Gate, Sony, and Disney. A year later Blockbuster went bankrupt. Finally, environmentally “friendly” automobiles were almost unheard of only a decade ago. Yet on January 19, 2010 General Motors began mass production of the battery parts for the Chevy Volt.

These and other examples are cited to remind us of just how much change has occurred in recent years and, more to the point, how much these

changes have and will continue to transform the nature of work and the new jobs that come in its wake. And while we cannot predict the changes to come or the impact they will have on employment, we can be reasonably certain that change will continue to occur.

Some interesting, and in some cases fascinating, suggestions have recently been made as to what the future world of work may offer. Three are selected here, by Alan Gordon (2009), Thomas Frey (2011) and Sharon Crosier who is with the University of Calgary ([www.ucalgary.ca/counselling](http://www.ucalgary.ca/counselling)). They are presented in Tables 10, 11 and 12. Those of us sprouting a growing number of grey hairs (or no hair at all) will be particularly interested in the arrival of Gordon’s memory augmentation surgeons, Frey’s organ agents, and Crosier’s gene replacement specialists.

**Table 10. Futurist Adam Gordon (2020-2030 Jobs):**

Body Part Maker	Narrowcasters
Nano-Medic	Social “Networking” Worker
Memory Augmentation Surgeon	Personal Branders
Organ Agent	Virtual Clutter Organizer
Old Age Wellness Manager	Waste Data Handler
End-of-life Planner	Virtual Lawyer
Climate Change Reversal Specialist	Avatar Manager
‘New Science’ Ethicist	Space Pilot
Time Broker	Alternative Vehicle Developers
Weather Modification Police	
Quarantine Enforcer	
Automated Systems Monitor	
Vertical Farmer	
‘Pharmer’ – Genetically Engineered Crops & Livestock	

**Table 11. U of Calgary: Sharon Crozier (selected from 24)**  
([www.ucalgary.ca](http://www.ucalgary.ca))

Robot Technician
Euthanasia Ethics Advisor
Gene Replacement Specialist
Online Astrologer
Virtual Vacation Broker
Cloning Expert
Multi-Generational Relationship Counsellor
Fusion Engineer

**Table 12. Futurist Thomas Frey**

<u>Jobs emerging before 2020</u>	<u>Jobs emerging 2030 and beyond</u>
Avatar designers	Plant Psychologists
Urban agriculturalists	Gravity Pullers
3D Printing Engineers	Nano Weapons Specialists
Privacy Managers	Extinction Revivalists
Social Education Specialists	Earthquake Forecasters
Data Hostage Specialists	Amnesia Surgeons
Organ Agents	Time Hackers
Octogenarian Service Providers	Clone Ranchers
New Science	Weather Control Specialists
Philosopher-Ethicists	
A variety of Dismantlers	Drone Dispatchers

Will all of these forecasted jobs materialize? Probably not, but some, or something not dissimilar, may very well. From Gordon's list we are already seeing interesting developments in the field of nano-medics, space pilots and personal branders. In relation to space pilots, one can already book flights into space through Virgin Airlines, although you might have to wait a while to take off. With respect to Crosier's list, euthanasia ethics advisers and virtual vacation brokers are probably not far behind. As for Frey, his near-term predictions, up to 2020, of avatar designers, privacy managers and urban agriculturalists appear to be plausible, while the post-2020 notions of plant psychologists, gravity pullers and time hackers likely strike most as a tad far-fetched. But who knows? The doubters might do well to remember the often reported but seldom verified remark attributed to Thomas Watson who, as chair of the board of IBM, is said to have remarked in 1943 that "I think there's a world market for maybe five computers".

**Lessons Learned.** The first lesson we should probably draw from this discussion is that even though we may understand the nature of long-term trends, we have not been very good at predicting future job opportunities. Moreover, even if we have occasionally hit the mark in terms of future jobs, we have seldom understood how to align supply with demand. Thus, for example, we know there has

been a shortage of ICT personnel for years but we still encounter barriers in getting the labour market into balance. Perhaps it is because too many parents remember the IT "meltdown" of years ago and advise their children to choose other careers.

Even if we were to improve our ability to predict new and evolving jobs, it remains exceedingly difficult to know where they will be located. About all we can say for sure is that a premium will exist for those who are mobile. We can also assume that growth in new and emerging jobs will lead to higher corporate and political competition as companies and countries try to catch rides on the same bandwagons. We see this already in the case of the green economy. Where will the centre of activity settle, and who will benefit most from it?

**What we do know from this is that no matter what happens to the future of work, knowledge and skill will become ever more important and prized possessions.**

An inability to predict the future of jobs does not mean we cannot take effective action to prepare for it. We can take steps to improve Canadians' employability, to strike a better match between the skills of job seekers and the needs of employers and to give Canada a competitive edge. We can anticipate opposition to at least some of what we believe needs to be done, particularly insofar as we will be proposing a transformation of our post-secondary education system. Change, especially when led by government, does not come easily for this sector. But both governments – at all levels – and industry must be active partners in the process. A laissez-faire approach will not lead us to success.

At this point our narrative shifts from analysis to prescription. Perhaps suggestion would be a better term, since prescription suggests a certainty that we do not possess. And with that shift, the style of presentation also changes somewhat. Because we have entered a realm in which informed opinion plays an important role, the narrative from here on assumes a more personal character.

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## LOOKING FORWARD

My thesis is that the future of work is likely to be very different in the coming decades. My father, like most of his post-war generation, spent his entire forty-plus year career working for a single employer. I began my working life in the 1960s and, to date, have had five or six employers and now have established my own post-retirement business. One of our sons, who is in his 30s has already had four employers and will move to his fifth shortly. This is one important aspect of the new world of work.

Statistics Canada's now defunct Work-place and Employee Survey (WES) provided a wealth of valuable information from a labour market perspective and reported in 2005 that every two years 24% of the work force shifted jobs and about 10% shifted careers. We can only speculate as to whether these numbers have increased recently, but my guess is that they have. Therefore, we should accept and prepare for more frequent job and career changes.

**Trends.** What mega trends will most influence the jobs of the future? Let's start with relatively broad trends, that we can identify as applicable at the national level, and then work our way to the local scene, adapting the trends as appropriate. In this way we have the potential to remain sensitive to local variations in circumstances and opportunities while still being guided by broader trends.

We can all no doubt offer our own views of what we perceive to be the major trends affecting the labour market of the future. The trends I think will make the most difference are set out in Table 13. They are pitched at the macro level, characterized by global changes. Changes at the local or micro level – even as specific as a new highway, industry or educational institution – should also be included in the analysis where applicable.

**Table 13. Mega Trends/Paradigm Shifts**

- Demographic changes (aging population)
- Increased oil prices
- Health paradigm shift
- Global warming/climate change/ environmental industries
- Advancements in information, communication & social networking technologies and usages
- Water usage, management & sale
- Security enhancement
- Globalization

There is admittedly nothing particularly novel in my list. At the same time, while these items have been the subject of some discussion, their impact has not been fully felt or even understood. What new jobs will be created? For example, it is reported that less than half of the world's population has access to a safe and reliable supply of fresh water, while Canada sits on one of the largest fresh water supplies in the world. At some point, we will have to face up to this disconnect and new jobs will emerge. With identity thefts, terrorist scares, internet security breaches, and the rise of other invasive technologies, I worry that our need for ever more and different kinds of security will grow, perhaps exponentially. What will these new jobs be? Will we not also need to understand and deal with the long-term impact of such phenomena as global warming and oil depletion? Do we really expect the growth of social media to abate? All of these trends seem certain to carry with them demands for new and distinct employment opportunities, even if we cannot predict exactly what those opportunities will be or where they will occur.

There is a saying that has captured the imagination of those engaged in community development: "it takes a village to raise a child". If we can embrace something of the same sentiment in a broader context, we might observe that **it takes a community (educational, business, labour, governmental and community groups) to prepare for the jobs of the future.** It is only going



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to work if we can find ways to bring all groups to a common table. There will be conflicting interests and values to be sure, but we need to recognize that each player has a unique and important role to play in contributing to this enterprise. In the pages remaining we will address each of these groups in turn, but since the focus of interest is post-secondary education and training, that is where we begin the discussion.

**Post-Secondary Education.** Canada has one of the best post-secondary systems in the world. Graduation rates for university students compare favourably with other OECD countries while rates for colleges and polytechnics place us in the top tier. Because we rely almost entirely on a public system, we escape the problems of widely varying quality that characterizes post-secondary education, for example, in the United States. Our institutions offer a wide variety of programs and are well distributed geographically to the point that most Canadians can find a post-secondary institution well within commuting distance. So should we be smug? Not quite, at least not if we glance at what the future seems to be offering and demanding.

## THE WORLD IS CHANGING

It has often been observed that Canada is one of the most decentralized nations in the world, and one manifestation of this is the fact that, alone amongst OECD countries, we do not have a national office or minister of advanced education. Because of this we do not have a national strategy for education. This deficit will increasingly limit our ability to respond effectively to the educational and mobility challenges that face the country as a whole. **Even if some provinces manage to align their post-secondary policies with labour market needs, as some appear to be doing, there remains an urgent need for a national focus and a national strategy. Without one it will not be long before we are taking skilled workers from each other. We already see some**

## provinces setting up recruitment fairs in other provinces.

British Columbia and Alberta have achieved more in the reform of their post-secondary systems in the last few years than all other provinces combined. B.C. has the best credit transfer system in the country and has now transitioned many of its community colleges into universities. The province now has a system that includes universities, community colleges, a polytechnic university, a polytechnic and various institutes. There is, admittedly, some concern over the number of new teaching focused universities that have recently been created, and whether they will stay that way and form an integrated system. Yet, the province's ability to differentiate the system has to be seen as a positive accomplishment.

Alberta has taken a similar approach in its public system which comprises research-intensive universities, regional universities, teaching-intensive universities, polytechnics, community colleges and institutes. Alberta is to be commended for adopting this differentiation approach and following it through effectively. Alberta, British Columbia and New Brunswick also deserve credit for their acceptance of a role for private universities and colleges, as well as the private trade schools that are common across the country.

About two years ago a report entitled *People Without Jobs Jobs Without People: Ontario's Labour Market Future* (Miner, 2010b) was issued. One of the key conclusions of that report was that Ontario needs to achieve a higher level of educational attainment in order to compete successfully in the knowledge economy. That message appears to have made its mark, since in the most recent Speech from the Throne; the Ontario government announced that its objective would be to reach 70% of its workforce with a post-secondary credential. To achieve this, they will create an additional 60,000 post-secondary places. Our research indicates that Ontario will need to reach this goal by 2021.

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In recent years much has been said and written about the perceived need to increase post-secondary access. Using Ontario as an example growth solutions there have focused on the establishment of additional teaching “only” universities and/or campuses (Clark, et. al., 2011), creation of better pathways to university, including adoption of the U.S. “2+2” model, and increased funding for existing universities. Drummond (2012) pays particular attention to the issue of credit transfer, the 2 + 2 model and the need for better pathways. I believe for us to move in these directions (new universities and a 2 + 2 model) would be to miss the mark of what really needs to happen in Canada. Not only would these moves be very expensive but they don’t take into account the needs of students who will actually benefit from a post-secondary education. While our discussion is focused on Ontario, the arguments apply generally to all provinces.

Whatever we think may be necessary to grow the post-secondary system; we have to recognize the constraints we are under. Neither Ontario nor Canada is awash with unencumbered cash that can be thrown at the problem. Nor do parents or students appear to be ready or willing to run up ever larger levels of debt to pay for schooling. **Is it now time to stop giving educators free rein to shape the system in their interests rather than the public interest?**

At the risk of ruffling a few feathers, we can start by asking whether Ontario really needs the three more universities that have been proposed. No doubt those who support this will argue that there is sufficient demand throughout the GTA to justify the expenditure. It is true that the demand is there. For the politicians, the votes also seem to be there, especially in the communities that will win the university “lottery”. But is this really the wisest use of our scarce public resources?

The response of those supporting more universities will likely include the argument that these are intended to be distinctive, and cheaper, institutions, with mandates that avoid expensive commitments to research in favour of a clear and limited focus on

teaching. Clark et. al. (2011), for example, proposed that the normal teaching load would be 4 and 4 (eight course over a year) compared to the more typical 2 and 2 or 3 and 2 teaching loads. If we pursue this idea, we should be prepared for a very heated debate over whether it is practical or desirable to have teaching-only universities in Canada. Even if they started out that way, experience suggests that little by little they would succumb to the pressure to become “real” universities, with all the attributes, especially a research function and graduate programs that have come to characterize the idea of a Canadian university. These pressures are already being felt in the new teaching focused universities in British Columbia.

But perhaps the more important question is whether more universities will really address the most pressing needs of the labour market in respect of post-secondary education and training. There is no question that university enrolments have continued to increase. But what is not so generally known is the number of university graduates who have subsequently enrolled in Ontario colleges on a full-time basis. Extrapolating for survey data the findings show that in 2003 that number stood at 11,291. By 2010 it had risen to 19,572, an increase of 73% in seven years. And that does not include the 14,412 students who enrolled in a college after completing some university credits. Why is this number so large and increasing? Presumably it has something to do with getting a job.

Should this be cause for concern? Should we be concerned that we are paying twice for the education obtained? We pay once when the student earns a four-year bachelor’s degree and, when that does not lead to a job; we pay a second time so they can complete a one- or two-year job-related college program. And what about the students? These students entered university with the expectation that their education would lead to a job. Little did they know that the road to employment would take much longer than expected and cost a great deal more, most of it

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probably borrowed. Is this really the system we want to expand?

Another suggestion being proposed (Drummond, 2012 and Clark et. al., 2009) is for Ontario to adopt a U.S. style “2+2” system where students spend their first two years in a college following which their credits can be transferred to a university where another two years will complete their degrees. There are some powerful arguments that can be advanced in support of this arrangement. For one thing, the college is likely to be closer to home, permitting students to save money as compared with having to leave home to attend university, as many do. The college portion of this kind of arrangement is also likely to be considerably cheaper to deliver with lower tuition costs, precisely because colleges do not typically support research programs. B.C. already has a version of this arrangement and it works reasonably well largely because that province established its credit transfer system when there were only three universities. But before we jump on this seemingly attractive bandwagon, consider some of the impediments in the way of adopting this approach in Ontario and most other provinces.

At present, first and second year students’ represent something of a “cash cow” for the universities. By putting as many of them as possible in large classes taught by low-paid, part-time or sessional lecturers without research responsibilities, the cost of these students is kept to a minimum. The university, meanwhile, devotes the savings to their more expensive upper-year, graduate and research programs, responsibilities normally assigned to the more expensive full-time professors. If all or most of the first- and second-year students were hived off and diverted to colleges, the universities would lose a “lucrative” revenue stream and would expect some form of remuneration.

What makes the U.S. “2+2” system work is the fact that the state run systems are, in fact, systems. And what makes them operate as systems is the fact that in each case there is an over-arching board with authority to impose its will on individual

institutions. This is a far cry from Ontario where each of the 20 universities has its own governing board and senate. It is true there are some bilateral agreements involving colleges and universities, such as those between Humber and Guelph, Seneca and York, and Ryerson and George Brown, but this is a far cry from the system-wide approach common in the U.S.

In 2001, as the newly minted President of Seneca College, I was invited to a meeting organized by the Ontario Ministry of Training, Colleges and Universities (MTCU). With me were a dozen or so college and university presidents and we were told that the credit transfer situation had gotten completely out of hand and had to be fixed. We were all advised to “get onside”. The problem, it was explained, was that too many college courses were not being accepted for credit at the universities. What MTCU failed to realize was that the problem was much larger than that. Colleges were not accepting credit from other colleges. Universities were not accepting credit from other universities and some colleges were not accepting university credits. The resulting double payment was proving too costly for the students and for the government. So here we are, a decade and more later, and the problem remains. The recently released report on the Reform of Ontario’s Public Service (Drummond, 2012) recommends creating an “enforceable credit recognition system.” Under these circumstances one can only imagine how long it might take to put in place a system where the first two years of a bachelor’s program taken at a college would automatically be accepted for transfer to a four year bachelor’s program offered by either a university or a college. Ontario is not on its own. These problems and barriers exist to different degrees across the country.

**It is time we shifted our focus from what educational institutions want to what is best for the students, for employers and for the taxpayers. In short, we need to do what is best for the system as a whole.**

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## NEW DIRECTIONS FOR POST-SECONDARY EDUCATION

We could begin by listing all of the difficulties that will stand in the way of pointing our post-secondary institutions in new directions. No doubt we could construct a lengthy list. But is that what we really need: The reasons why change will be difficult? My own view is that it is much more helpful to sketch in where, at least in general terms, we need to be going, and then try to see how we might get there. After all, as the great philosopher Yogi Berra is credited with saying, "If you don't know where you are going, you will wind up somewhere else." With that in mind, where should our future post-system be going? Here are a few suggestions:

1. It should function as a system, ideally as a national system, with a common framework of credentials based more on the character and quality of the education provided than on who provides it. The Higher Education Strategy Associates (2012, p. 30) point out that "... there...needs to be more harmonization of standards among providers, in order to ensure that diverse qualifications remain broadly portable."
2. The system should reflect a better working relationship with both unions and educational institutions in fulfilling their education and training responsibilities.
3. It should incorporate a variety of coordinated educational and training opportunities in place of the current college and university silos.
4. Literacy and employability skills should be the foundation for all educational and training programs.
5. It should significantly reduce the time between making an occupational decision, getting the education or training needed and entering the work force.
6. The component institutions should be firmly committed to the economic objectives of the community, province and the nation in which

they are located, which supports them, and which they were established to serve.

7. It should provide a breadth of experiences that encourage lifelong learning as well as relevant education and training.
8. It should be characterized by a high degree of differentiation within the framework of a truly integrated system.
9. It should increase educational relevance, affordability, flexibility and timeliness.

Let us take a closer look at some of these characteristics.

**Employability Skills.** My argument is that what is taught at the post-secondary level must be based on and incorporate basic employability and literacy skills. What are these skills? There may be some debate about one or two of the specifics, but the most frequently listed include the following:

- Reading
- Writing
- Speaking
- Numeracy
- Document usage
- Critical thinking
- Group work
- Continuous learning
- Computer usage

Personally, I would add multicultural awareness and entrepreneurship. Given the increased frequency of job and career shifts these skills will form the foundation for all future training and retraining.

Colleges and polytechnics tend to consider these skills more central to their mandates than universities but, in my view, both would be more effective if they devoted more time and energy to the development of these skills. Traditionalists will no doubt argue that these are not the responsibility of post-secondary or advanced education. They

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should have been attended to in elementary and secondary school. That would be fine if we could afford, as we once did, to exclude from our post-secondary institutions most of those who do not arrive already proficient in all these areas. Developing these skills, it will be further argued, detracts from the true responsibility of these institutions, which is to impart knowledge of specific subject areas. Cannot the two be accomplished simultaneously? I believe they can.

I use my own experience to illustrate what I have in mind. I did a history degree years ago, and when I reflect on that experience I realize that I did a lot of reading, writing, document searching and usage and, of course, thinking. I did little or no speaking, use of numbers, group work, continuous learning or computer usage. The last of these can be forgiven; computers were not exactly common when I went to university. But would it not have been possible to so construct my curriculum such that historical content and these generic skills were combined? I have no doubt that the answer is yes. Could I not have used and learned about group work in a history class? Could numeracy skills have been built into some of my classes, perhaps not calculus but surely statistics and probability? And surely speaking, computer usage and continuous learning would now be easily incorporated.

**The point here is that we need to think of curriculum development in a somewhat different way.** To illustrate, picture two columns of course requirements. In one column we list all the content requirements needed for the degree (the number and types of courses at which levels). In the other column we list the skills to be incorporated in the program. Both would then be described in the institution's calendar. Here is an example, using a hypothetical history course.

*101: Canadian History*

*A study of Canadian history from 1946 to the present. The course will focus on the economic, political and social transitions that have occurred since the end of World War II. There will be a particular emphasis on the rise of*

*regional differences and the evolving role of the federal government. This course also includes the development of the following employability skills: reading, writing, speaking, document search and usage, group work and computer usage.*

Under my plan, in addition to having the right number and type of courses to graduate, students would need to accumulate the requisite set of skills. As an alternative approach, some of these skills might be imparted in stand-alone courses. The point is that before a student graduates, he or she would have had the opportunity to prepare for employment as well as to study a particular subject.

**Improving Academic and Employment Decisions (Timeliness).** It is self-evident that the shorter the interval between the decision to pursue a particular line of academic study and employment, the greater the likelihood that the choice will be based on accurate labour market information and opportunities. For most high school students, the choices begin to refine themselves around grade 10, and significant penalties in terms of time lost are imposed on those who change their minds. Our existing post-secondary silos complicate this process for many students with what are often unnecessary if not entirely unreasonable requirements associated with program selection, declaration of majors, barriers to transferring credits, etc. After high school the process of streaming continues. In most college programs, students are expected to make their career choices at time of application. In universities they must typically choose their faculty and program area (Arts, Science, Business, Engineering, etc.) from the beginning and refine that to the specific program (Honours English, Biology, Marketing, Civil Engineering, etc.) shortly thereafter. Why this approach? The answer from both college and university people will likely be some variant of this: students need to make decisions early allowing them to line up their prerequisite courses in the proper order so their

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degree/diploma is completed in the prescribed time.

In a previous life I was a university Dean of Business, and while there have surely been many changes in the way things are done, I doubt the fundamentals of program selection have changed substantially. Students were generally 'required' to choose their major early in year two. The reason had to do more with money and control than academic merit. The view of universities and their funding agencies is that students who have not selected their faculty or major program are "worth less" financially than those who have. The result is that undeclared students are funded at a lower level. Thus the incentive is clearly in favour of getting students into a defined program as soon as possible. As well, there is a strong desire to know how many students are in which programs as soon as possible since that greatly facilitates scheduling faculty teaching assignments. Against this, we need to recognize that virtually every business program, college or university, is designed in much the same way. The core course requirements and major requires are remarkable similar in terms of number, type and timing. All are structured for institutional rather than student benefit.

By way of contrast, if we considered what might be possible rather than merely what currently exists, there is no reason why the choice of major could not be delayed well into the third year or the beginning of the fourth year. This would mean, however, that undeclared students would need to be allowed the same access to courses as those who have already declared their major and not be "wait listed" as is currently the case. **The point is that curriculum decisions based on what might benefit students in planning their programs relative to labour market demand (improved timeliness) would result in significantly difference course alignments and provide student with far more flexibility.**

Are there not other ways in which we could get students to the labour market faster without sacrificing academic quality or integrity? What about accelerated programs. As we know, our

current educational programs largely reflect an agrarian past. We attend school for eight months or so, with four months free to help on the farm. How many of today's students work on farms? **Just think, if the typical university student went to school through two summer semesters, he or she could graduate a full year earlier, with better employment decisions, fewer debts and an earlier opportunity to earn an income as added bonuses. For the rest of us they would be taxpayers sooner.**

Of course, if we reduced the opportunities for students to take advantage of summer employment we would need to adjust student aid programs to largely grants. But we should at least weigh against this the advantages of an expanded and better prepared workforce. And while we consider that, might we not also ask ourselves if we really need four year degrees in all fields of study. How about 3 + 1s (three years university and one year college)?

**Affordability.** Considerations of the time between admission to a post-secondary institution and employment leads logically to a discussion of the cost of education. Did you know that in most cases university tuition actually pays for most if not all the actual teaching costs? Contrast this with the long-standing assumption of how faculty members actually spend their time. The standard distribution of work was 40% on teaching, 40% on research and 20% on institutional and community activities. Universities now place far more emphasis on research, to the point where the percentage of time is probably more like 50%, with the increase coming at the expense of teaching (now more like 30%).

Now compare that with how universities are funded. In most cases tuition makes up at least 40% of total revenue, and in some cases 50% or more. The fact of the matter is that student tuition is paying for a portion of university research. Is this appropriate? As observed by Drummond (2012) "Many universities...have gone so far as to apply cross-subsidies within their institutions, effectively taking money from undergraduate tuition revenues

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to further support research.” **The bottom line is that tuition could be reduced with no negative effect on the teaching function of universities.**

Alternatively, it would remain the same but result in much smaller classes (Clark, et. al., 2011).

Research, administration and community service are important, but should they be a charge on student tuition?

Other cost savings are also possible. Better credit transfer arrangements, as previously discussed, would help, as would accelerated program completion opportunities. And, as hinted at in the previous section, what about reducing the time required to complete a basic undergraduate degree from four years to three (Clark, et.al., 2009, Clark, et. al., 2011 and Drummond, 2012)? Would the quality of a degree necessarily be sacrificed? Bear in mind the point discussed earlier, that more and more students are adding a year or two of college **after** graduating from university in order to get a job. Is it beyond human ingenuity to devise a way of integrating these components so that the total time required could be reduced? **We might then end up with four-year programs that really accomplished what students obviously want: an academic program that also leads to employment.** A recently released report by Ontario’s Higher Education Quality Council (Higher Education Strategy Associates, 2012) provides a good historical and geographical analysis of three year and accelerated bachelor degrees.

The weakness of inter-institutional cooperation is a major cost driver at present. We have far too few joint programs and we fail to recognize prior learning adequately. As a result, the time taken to graduate is often a function of the number of institutions attended irrespective of the degree or other qualification sought or obtained. Canadian data on this are not available, but a U.S. study showed that a four-year degree that should have been completed in 44 months actually took 55 on average if the student attended only one institution, 59 months if two institutions were attended, and 67 months if the student went to three or more. Everyone – students, parents and taxpayers – is a loser in this situation. It costs more than it should

and it takes longer to get into the workforce than it should.

**Relevance.** In 2007 I co-authored a report on the future of post-secondary education in New Brunswick (Miner and L’Ecuyer, 2007). One of the recommendations in this report called for more relevant and applied programming. The reaction to this recommendation was not universally positive. At one of our consultations a faculty member came to the microphone and said “It is not my job to help students get a job.” And he went on to say “My job is to educate them, not to train them.” What a sad comment. And what a misunderstanding it reveals as to what learning is all about. There is an arrogance underlying the assumed distinction between education and training that does no credit to those who hold it. Both are essential to the process of learning, and this is as true for the Ph.D. student as for the apprentice.

Stanford University, no slacker when it comes to upholding academic standards, has just released a study of undergraduate education (Stanford, 2012) in which the authors assert that students “...need breadth and depth of knowledge; a range of essential skills and capacities starting with the capacity for effective communication; a deep sense of personal and social responsibility; and the ability to adapt those skills and capacities to new and unforeseen challenges.”

I should emphasize that I am not recommending that we should teach only applied subjects. Obviously a theoretical understanding of the principles underlying a practical application is important. What I am suggesting is that when we teach a subject we also teach students how it is relevant to practical applications. For example, precision tools are now made almost entirely with computers, yet in many cases students are required to learn how to make a tool by hand. This initially struck me as being irrelevant. Yet one instructor justified the practice by telling me “If they cannot feel something by doing it, they will never be able to understand and visualize what they want to tell the computer to do.” Clearly the instructor understood the importance of learning being

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relevant. Universities that offer robust co-op programs are excellent examples of how relevancy can be achieved by blending theory and practice.

**Flexibility.** The final, and important, characteristic of our educational institutions has to be a high degree of flexibility. The more options there are in the program pathways we offer to students, the more students will be assisted in making transitions to new jobs and new careers. Keeping one's options open as much and as long as possible should be a hallmark of post-secondary education. Increasingly, the jobs that are emerging are ones that defy the traditional idea of a life-long career. They combine what are often thought of as diverse elements that are seldom taught as a whole but have to be assembled by the individual from elements of training and experience obtained from a variety of sources. Allowing students to create unique programs, while maintaining academic rigor, will become a valuable characteristic of successful post-secondary institutions of the future.

## SYSTEM DESIGN

**We need systems that are both highly differentiated and highly integrated.** One size fits all is a recipe for failure, especially if students have to be shoe-horned into an institution that does not fit their unique needs. In my view, British Columbia and Alberta are on the right tract in terms of differentiation, but the jury is still out as to whether they can stay the course in terms of integration. We can surely start by assuming that a fundamental objective of the educational system as a whole is that it serve the needs of the nation. And from this perspective, we need a post-secondary system that contains a number of distinct components. We need probably eight to ten internationally recognized research-intensive universities, with robust graduate programs and truly world-class research programs. They need to be well funded

and their contribution to the national interest needs to be recognized. We then need a larger number of regional universities that have clear geographic responsibilities which could span provincial borders. Their research mandates should have direct relevance to the unique circumstances of their regions. Finally, a third set of universities should be primarily devoted to undergraduate teaching, with at best a limited or specialized research function. In order to avoid creating institutional hierarchies, it will be essential for these universities to take as much pride in their teaching excellence as the larger universities take in the research productivity.

A second group of institutions would include institutes of technology and polytechnics. In the ideal, these are institutions that blend applied and theoretical learning, emphasize applied rather than theoretical research and offer a variety of credentials, including apprenticeship, certificates, diplomas, bachelor's degrees, and graduate degrees up to and including doctorates in selected fields. They seek to provide effective pathways to various forms of lifelong learning, not only for their own graduates but also for graduates of other institutions. Polytechnics Canada was formed some years ago to promote and support this general concept. It currently has nine members.

Only Alberta has given formal designation as polytechnics to its Northern and Southern Institutes of Technology (NAIT Polytechnic and SAIT Polytechnic). The British Columbia Institute of Technology, however, is recognized in its governing act as a polytechnic. The other members of Polytechnics Canada are polytechnics in essence if not in formal designation. Some other colleges across Canada are increasingly taking on the characteristics of polytechnics. It must be acknowledged that the name polytechnic on its own to name a new type of institution has not been particularly successful. In BC two options are used (Polytechnic University and Institute of Technology). Likewise Alberta uses the Institute of Technology approach as well. Perhaps a new nomenclature is needed.



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Colleges, often designated as community colleges, make up the third group of post-secondary institutions. They tend to have a regional or community base and concentrate largely on responding to local labour market needs by providing a range of applied programs including diplomas, certificates, apprenticeship training, post graduate certificates and in some cases a small number of bachelor-type programs with a specific regional application. Some also play a feeder role, offering courses that by prior agreement can be transferred for credit to universities and polytechnics.

**What we need to do is shift the existing post-secondary system to reflect more closely the attributes of the ideal system discussed earlier.**

In doing this, greater attention should be paid to the colleges and polytechnics. In my view, they are already closer to embodying the characteristics we need and therefore will need to change less than the universities. It might be useful to review briefly why I believe this to be so.

First of all, the colleges and polytechnics tend to be more applied and skills oriented. With the emergence of the new jobs that will be increasingly common, coupled with more frequent career shifts, this is the type of orientation we need. At the same time, we can anticipate a similar emphasis on the more applied programs in the universities such as engineering, computer science, business, health, etc.

Second, these institutions already have much greater experience with training older and less well academically prepared students who are precisely the type of students we need to attract in larger proportions if we are to meet the challenge of growing our labour force. They are also less expensive to operate, meaning we can train more people at relatively less cost.

Colleges and polytechnics, moreover, already have good working relationships with industry. Indeed this is often built right into their operating structures through their advisory boards. This means they are capable of adapting more rapidly to a changing

employment environment. Closely related to this is the fact that their governance structures allow them to change quickly in response to changing economic and social needs.

Finally, these institutions are more student oriented, which is particularly relevant as we move to educate a larger and larger proportion of our population. In this they are also more accessible not least because of their geographic locations.

There is room for other, specialized, institutions, including universities, but the trend seems to be running against them. If teaching “only” universities can be quickly created this would be a real bonus but I have my doubts. Perhaps profit or not-for-profit institutions are something to consider. We had the opportunity to affirm such new roles and fulfill the needs described here but have instead succumbed to the lure of university status. Ryerson Polytechnic long ago transformed itself into Ryerson University. The Nova Scotia College of Art and Design was designated a university in 2003, and may yet be absorbed into an existing university. The Ontario College of Art and Design similarly became a university in 2010. Thompson Rivers College became a university in 2005. The prevailing pattern is for colleges or community colleges to “move up” to full university status. In the last few years alone, the list has included Emily Carr (2008), Grant MacEwan (2009), Mount Royal (2009), Capilano (2008), Fraser Valley (2008), Vancouver Island (2008) and Cape Breton (2005). One exception to this pattern was the establishment of Kwantlen Polytechnic University in 2008. However, the opportunity which these institutions represented, to create a truly differentiated system, seems to have been lost as the rush continues to become “real” universities, with an increased emphasis on research/graduate programs and less on teaching and learning at the undergraduate level.

There is no suggestion that the universities will not be important players in the post-secondary system we need for the future. Of course they will, especially in their more applied and professional programs and in research and graduate studies.

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But they will need to differentiate themselves more effectively, choosing what they can do best and concentrating on that as their primary mission. We cannot afford, nor do we need, all of our post-secondary institutions to become full-service, research-intensive universities.

The phenomenon of “mandate creep” is by no means confined to Canadian post-secondary institutions. We see it in the U.S., with community colleges seeking to drop “community” from their names and two-year colleges seeking to expand to offer four-year “university” degrees. Australia, which had established a fairly rigid line of demarcation between its universities on the one hand and its vocational education and training institutions on the other, is also witnessing what a recent report described as a blurring of the two sectors “...as a consequence of broader social and economic pressures for a more highly skilled population” (Wheelahan, et.al., 2012). What is happening there is that all institutions, universities as well as vocationally-oriented institutes, are converging towards a pattern in which universities are increasingly offering vocational programs previously thought to be the preserve of the institutes, while the latter are moving to acquire degree-granting authority, and both are being chased by competition from private-sector providers. This has raised concerns that in this transition “...university provision becomes the benchmark (of success)...”

In our focus on post-secondary institutions, we should not neglect the role of high schools in contributing to the relative over emphasis on the liberal arts and sciences in our universities. The fact of the matter is that our high schools have for some time been moving away from hands-on training in applied disciplines. Shops tend to be underutilized if they still exist at all, and students are often encouraged to look to university after graduation. The reasons for this are no doubt varied and complex, but four reasons seem to dominate: money, with applied subjects being the first to be abandoned when funding gets tight; difficulty keeping up with technology so that students are familiar with current applications;

difficulty recruiting qualified teachers (a shop teacher typically must have both teacher training and technical certification) and the fact that the majority of guidance counselors and teachers have little knowledge/experience with the more applied opportunities (apprenticeship, colleges, polytechnics) available to students. It is perhaps understandable that many students whose high school experience is essentially limited to academic subjects will choose to continue this emphasis at the post-secondary level. This is in fact the case given that steaming occurs early in their high school years. As we noted earlier, many of these students will discover only later that they also need more applied skills to prepare them for employment. Increasing numbers of them will then enroll in college, adding to the length and cost of their preparation for the world of work.

Another change that may challenge the traditional structure of post-secondary education, if its potential were ever fully realized, is on-line learning. We turn now to a brief consideration of that underdeveloped mode of delivery.

## **ON-LINE LEARNING**

In a recent controversial article (Christen, et.al., 2011), the authors contend that online learning represents a disruptive innovation because it is a technology enabler with the ability to serve people not normally served and provide an upwardly scalable service without additional costs. As a result, they see an inherent conflict of interest between on-line learning and traditional post-secondary institutions because on-line learning offers greater flexibility, affordability and accessibility. As if to refute that suggestion, the authors point out that post-secondary institutions have been the biggest promoters of on-line learning and are beginning to capture some of its economic benefits.

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The findings of the Babson Survey Research Group (Allan and Seaman, 2011) document the growth of on-line learning in the U.S., both in terms of usage and perceived worth. Based on a sample of 2,512 institutions representing 80% of the total post-secondary enrolment in the country, they found that in 2010 6.1 million students were taking at least one on-line course, an increase of over half a million from the previous year. In total, 31% of all students were taking at least one on-line course, up from 9.8% in 2002.

The perceived quality of on-line learning has also been increasing in recent years. In 2010, just over two-thirds (67.6%) of the respondents in this survey felt that on-line learning was equal or superior to face-to-face instruction. That compared to 56.2% in 2003.

It was also found that positive or negative perception of on-line learning depends on whether one's own institution offers that option. Thus, in institutions offering no on-line learning opportunities, 74.3% believed on-line learning was inferior to face-to-face instruction. But in institutions providing online courses or entire online programs the dissatisfaction fell to just 15.4%.

Unfortunately, comparable data are not available in Canada. There is no reason, however, to suppose that the results would be markedly different here, especially since interest in on-line learning continues to grow across the country. Virtually every province has a consortium of some sort to provide access to on-line learning courses (eCampus Alberta, BCcampus, CampusManitoba, OntarioLearn, Quebec's Comité de liaison interordres en formation à distance, etc.).

**Research indicates that those most likely to take advantage of on-line learning opportunities are students already enrolled in face-to-face programs.** This would seem to confirm that there are significant cost savings possible for the institutions involved as well as the enhanced flexibility for students. The real question, however, is whether on-line learning can be employed to increase participation in post-

secondary education among those not currently enrolled.

One fascinating example of the future possibilities of on-line learning is illustrated by the recent announcement (2012) by the Massachusetts Institute of Technology (MIT) that it has created MITx with a mandate to offer MIT courses through an on-line platform. Initially the technology will be targeted to students registered at MIT, but the intention is to expand the project to a world-wide market. This, in itself, is not particularly remarkable. What is noteworthy is that MIT intends to provide its open-source learning software free of charge to other learning providers (<http://web.mit.edu/newsoffice/2011/mitx-education-initiative-1219.html>). That initiative can be expected to provide a major financial incentive to institutions wishing to expand their online learning offerings.

But the possibilities are not limited to the future. Western Governors University (<http://www.wgu.edu/>) already operates in all fifty states of the U.S., with 30,000 students in four programs (Teachers College, Business, IT and Health Professions). What is unique about this institution is not only that its programs are offered on line, but more importantly that its degrees are based on demonstrated competence, not fixed numbers of courses, credits or years. And students take only the courses and segments they need to demonstrate their competence. Entrance and final examinations measure the gaps in a student's prior learning and maintain standards. Students pay a flat annual fee, currently \$5,780 (which has increased by only \$20 in four years), regardless of the number of courses or credits they enroll in (this obviously creates an incentive to complete the degree quickly). WGU is heavily supported by corporations and foundations.

On-line learning clearly has the potential to be very cost effective. It may carry heavy start-up costs, but as both the MIT and WGU examples illustrates, this can be overcome through distribution agreements able to capture substantial economies of scale and through corporate and foundation support. It also has the potential to improve accessibility, since

students are not confined to campus locations. As American students have already demonstrated, it certainly increases flexibility. Moreover, since it is literally available on demand it can be more responsive and thus assist students in preparing for a job more quickly. As the technology continues to improve the value and attractiveness of on-line learning can only increase. As the U.S. survey revealed, those who now have access to on-line learning confirm its value and utility.

### A BRIEF RECAPITULATION

Table 14 offers a snapshot of where the impact of each of the changes discussed would be felt most directly on the outcomes we are seeking: affordability, relevance, flexibility and timeliness. There are clearly opportunities to accomplish a great deal and to do so quickly.

**Table 14. Desired PSE Educational Characteristics**

Action	Affordability	Relevance	Flexibility	Timeliness
More On-Line Learning	X		X	X
More Credit Recognition	X		X	X
Year around programing	X		X	X
3 year bachelors	X		X	X
More employability skills training		X		X
More articulated programs	X	X	X	X
Delay decision making		X	X	X
Better LMI	X	X		X

### THE NEED FOR NATIONAL LEADERSHIP

There is no question that the Constitution Act, formerly the British North America Act, 1867 assigns responsibility for education to the provinces. But that has to be understood in the context of the time. Education then meant primary, and to some extent secondary, education. Education at that level was heavily imbued with religious values and, indeed, was often provided by the church or the content heavily weighted by religious doctrine. Moreover, the four provinces that then made up Canada were essentially rural societies in which life was lived in local communities with rather simple educational needs or aspirations. We get a glimpse of this from the 1868 Year Book of Canada (Lowe and Harvey, 1867) which includes an occupational breakdown of the Canadian population:

Occupation	Number
Farmer	320,952
Mechanic & Handicraftsman	115,272
Labourer (incl. Lumberman)	209,909
Trade & Commerce	32,619
Mariner & Fisherman	25,009
Miner	1,207
Professional man	10,119
Miscellaneous	30,543
TOTAL	745,630

Circumstances have certainly changed, and changed rather dramatically, since 1867. Mass post-secondary education, the subject of this discussion, was not even on the horizon of public policy at the time of Confederation. We now have nearly 1.4 million students enrolled full time in public post-secondary education, approximately 900,000 in universities and 500,000 in colleges. In all of Canada in 1866 there was a total post-secondary enrolment of 2,591 (Lowe and Chamberlin, 1866). Viewed from a slightly different perspective, 4.1% of the total population is now enrolled full-time in university or college, compared to 0.06% in 1866. **It is something of an understatement to suggest that the Father of Confederation had little idea of how post-**

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**secondary education would grow in numbers and importance since they assigned exclusive jurisdiction to the provinces.** It is surely time that this arrangement was re-examined and brought more fully into line with present realities. A failure to do so could have significant negative social and economic consequences which are within the federal jurisdiction.

## OTHER ACTORS

**Post-secondary education is too important to be left entirely to our publicly funded universities and colleges.** While they, of course, play a central role, others have important contributions to make, including community groups (especially in literacy improvement and language competency), private educational institutions (colleges, institutes and universities), businesses, labour groups and, of course, governments. In a 2012 background report prepared for the Roundtable on Workplace Skills by the Centre for Workplace Skills (Stephens, 2012), the author argued that “Partnerships involving companies, labour unions, training and education providers, government, sector councils and others are crucial to help develop and sustain effective workplace training and maximize available investment in skills”.

**The Role of Business.** What should reasonably be expected of business as a partner in the post-secondary education and training enterprise? As discussed earlier, Canadian businesses invest about 1.5% of their expenditures on salaries in education and training. The comparable figure in the U.S. is between 2.25% and 2.8% (Bailey, 2007 and Campbell and Hughes, 2009) while in Europe the investment is almost always over 3%. **For whatever reason, Canadian businesses do not seem to appreciate the value of education and because of this they are missing a golden opportunity to capture a comparative advantage.**

In expanding its role, businesses should aim to work more closely with universities and colleges. The opportunities are legion, including co-op programs, internships, joint research projects (including especially those involving students), offering curriculum advice and targeted philanthropic contributions. The counter-argument is often that the return on investment is neither obvious nor immediate. This, however, misses the point. As the supply of skilled labour shrinks, as it will, those firms that have established strategic partnerships with post-secondary institutions will be in a far more advantageous competitive situation. Money spent now will represent an investment that will pay substantial rewards in the future.

The advantages go deeper still. Firms that build strategic partnerships will also be in a position to help shape the future demand for their products, through the applied research that they will support and participate in. As the labour shortages grow, we should not be surprised to see larger corporations establishing their own training centres.

Employees and their unions must also share some of the blame for our poor showing in terms of education and training. Too often training that is offered is not taken up. The reasons given for this include time constraints, cost, family commitments, transportation problems, health issues, lack of interest or ability, uncertainty of the value of the training and concerns about the length of time involved (Myers and de Broucker, 2006).

When it comes to new jobs, it is the SMEs and entrepreneurs who play a critical role. Yet, almost by definition, their determination to succeed is usually matched with a shortage of capital. Their most valuable asset is their time, which is also in short supply. This is where community and economic development efforts can be most helpful and can yield real benefits over time. Of course, not all of these investments will pay off. Some will fail outright. But the chances of success are increased with community support and the availability of accurate labour market information. This is another reason why we need a strong

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Statistics Canada capability in order to provide timely and accurate labour market data.

**Community Contributions.** Community groups and agencies have great potential to assist in meeting the challenges posed by a shrinking labour force and increased demand for skilled labour. Unfortunately, their efforts are too often uncoordinated and pursue short-term results resulting from short term funding and political motivations. Almost every community of reasonable size has one or more of these bodies. They are big on economic development plans, strategic plans and SWAT analyses. They also tend to focus more on existing activities than on possible future developments. Their emphasis is often more on recruiting firms than on stimulating new local developments and opportunities, and they do not often address job related issues brought on by such pressures as the aging of the population, security needs, climate change, challenges to our health system, etc.

At the political level, there is much talk about the importance of community, social capital and working together, but this seldom translates into real support for community involvement. **In order to move forward, we must find ways to harness community involvement with political commitment to put all of our available resources into turning economic development plans into effective action.**

**Government Involvement.** The final player, government, must be involved at all levels (federal, provincial, and regional/municipal) and their policies will need more than mere tweaking if we are to meet the challenges about to confront us. When pressed, the federal government too often retreats behind the smokescreen of provincial constitutional jurisdiction when pressed with national training and educational needs. **Is Canada's prosperity to be held hostage to jurisdictional scrabbles? After all, the imperatives of the knowledge economy render jurisdictional boundaries – national and international – largely irrelevant.**

Federal policy has largely abandoned the teaching and learning dimension of post-secondary education, choosing instead to pour millions of dollars into the granting councils and other initiatives that focus on research. In the process they are aiding and abetting the shift in university priorities in favour of research. Is this really in the public interest? Does every university need to be research intensive? I would answer both questions in the negative but at least we should be engaging in an informed discussion of the choices and their implications for public policy and our future well-being.

At the provincial level, at least in Ontario, there is a real danger that we may be sacrificing effectiveness to accountability. Let me be clear, accountability is a necessary characteristic of good public policy and public administration. The problem arises when accountability gets in the way of achieving the goals of a program. A recent episode illustrates what I mean. A couple of years ago the Ontario government established a program to encourage first-generation students to enroll in college or university, whether public or private. This goal was entirely laudable. To achieve this, the government prescribed enrolment targets and set about to measure success against these targets. The trouble was that they neglected to consider why certain groups, like first-generation students, were under-represented in the first place. After all, under-represented groups are usually under-represented for a reason. The reasons usually have to do with academic or social challenges.

Early on in its experience with the program, the government became concerned about what appeared to be a high drop-out rate. As a result, they changed the program's goal. Instead of measuring registrations, the goal became retention: Did the student complete the program? Superficially, this might seem reasonable, except that research demonstrates that the most effective way to increase the representation of hitherto under-represented groups is to get them through the door. With retention as the principal objective, the researcher (Miner, 2011) was told that institutions naturally became less adventuresome

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and focused on the admission of “safer” students. Retention was indeed improved, but it was reported that the overall admission of students from under-represented groups actually declined. Hence, access, the original goal of the program, was sacrificed to the great god accountability. Those with experience know that if we are going to increase access – to invest in future growth – we have to be willing to accept less than 100% success.

Labour market information represents another area where much needs to be done at both the federal and provincial levels. The recent launch of Working in Canada is praiseworthy, but some other decisions raise real concerns. As mentioned earlier, the scrapping the Work-place and Employee Survey, the Youth in Transition program and the long form census represent a real disservice unless they are replaced in some way or other. We need good labour market information if we are to respond effectively to the changing nature of the economy and the labour force. Reducing the information base is not a step in the right direction. Relying on less objective projections that are often short-sighted and self-serving, as we are beginning to see, is not desirable. It is far better to rely on a publicly funded agency that provides reliable, accurate and timely data.

We have to be wary of potentially competing, if not conflicting, interests in the generation of data. Politicians, community agencies, business associations and labour unions all have their own vested interests, and will naturally favour information that works to their advantage. In the previous discussions we have looked at the various players in the mix, but we have yet to consider the glue that would bind them together. We now turn to that consideration.

**The Glue That Binds.** While I have not yet come to a conclusion as to the exact nature of the mechanism we need, I am increasingly convinced that we do need a new type of quasi-volunteer entity that would bring the various actors together in a working relationship. For want of a better name I am calling it a Centre for Research, Economic

Development and Advanced Curriculum Design (CREDAC). I will simply refer to it from here on in as the Centre.

As I have repeatedly emphasized, the city, province or country that can respond quickly to the emerging educational and training demands of the new knowledge economy will have a significant competitive advantage. **The Centre, with a small permanent staff, would be tasked with coordinating the major players in the community (community groups, educational institutions, governments, businesses, labour), helping them to identify long-term strategies working with their educational partners to develop curriculum that would move the community forward.** A significant output of the Centre would be the development of curricula relevant to an economy in transition. This would be available to universities and colleges in both the public and private sectors, and to business. The intention would be to assist our post-secondary institutions, with the help of business, adapt more quickly and more effectively to the changing needs for relevant market-ready graduates.

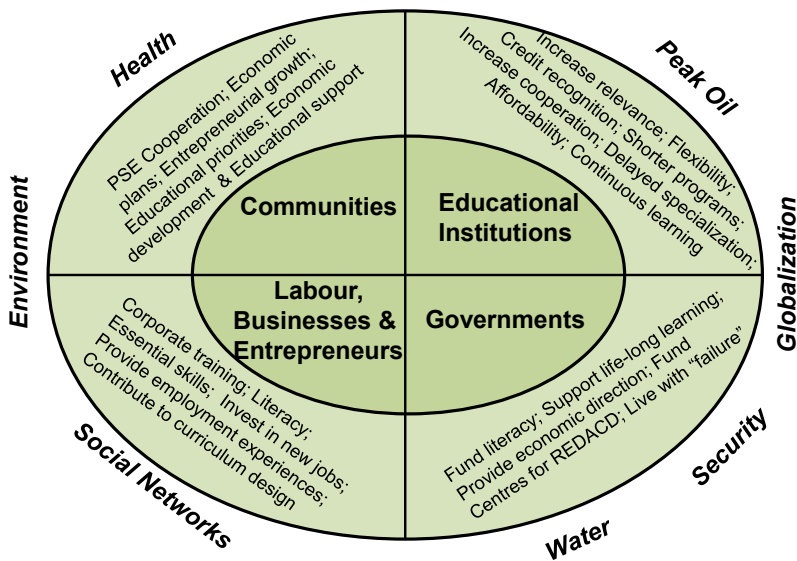
Many communities already have in place the building blocks for these Centres. So, in some cases all that is required is to reconfigure their missions such that they work together for a common purpose, a purpose driven by economic and social imperatives derived from changing demographics economic/social trends and labour markets. The Centre would, in any case, work with existing agencies and government departments to provide research-based data relevant to economic development and labour market adjustment.

Creating these Centres would not be a particularly costly venture. Obviously some public funding would be required, particularly to enable the establishment of the curriculum development component. Start-up funding might also be necessary to get the research program off the ground, but the intention should be to rely as much as possible on existing community and business support. While the heart of the proposal rests on community involvement a national dimension,

especially in curriculum development and labour market information is also necessary.

In Figure 12 we lay out a schematic of how the four main “players” need to work together to address the principal challenges that arise from the surrounding pressures (trends) and changes occurring within our common global environment. It will not necessarily be easy to accomplish this coordination, but it can be done if people who understand the problems and possible solutions have the courage and the conviction to accept the challenges that are before us.

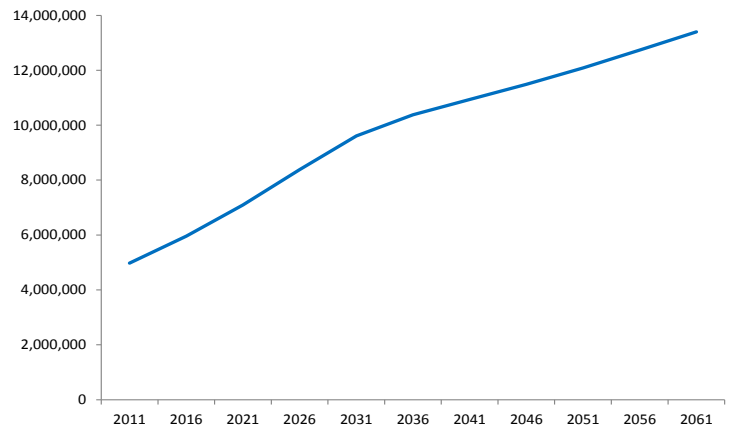
**Figure 12: Model: Centre for Research, Economic Development and Advanced Curriculum Design  
Aging Population**



**AN ILLUSTRATION: AGING**

To bring this discussion closer to home, let us consider a concrete illustration. I pick aging simply because of the eight macro trends identified earlier, this one is closest to my heart. This may be partly because I just turned 65, but it is also because I understand that by 2031 the population over the age of 65 is projected to double in size, from 4.5 million to over 9 million. It will then represent a significant portion of our entire population. These numbers by themselves make it clear that significant change is ahead (Figure 13).

**Figure 13: Canadian Population Growth Estimates, Age 65+**



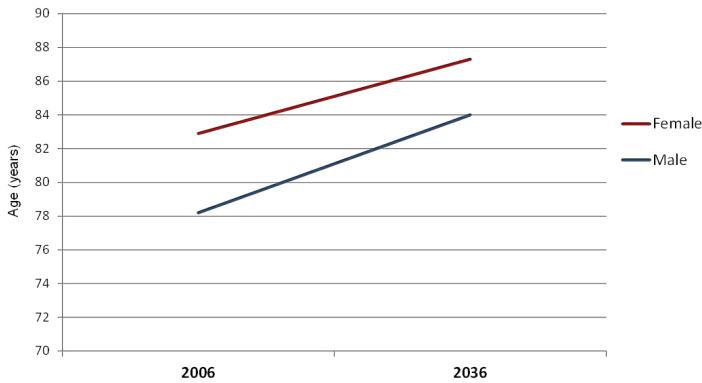
Source: Statistics Canada, Population Projections for Canada, Provinces and Territories 2010 (Tables 11-1 & 17)

The baby boom generation has been the cause of major changes through each stage of its growth, and the changes that will accompany its transition to the age of traditional retirement will prove to be no exception. As but one example, we know that a higher proportion of older people vote in elections. So with approximately a third of the population in “retirement”, where will the interest of political parties centre?

It is not simply that there is a wave of baby boomers moving through to old age. It is also that as this occurs, these same people are living longer. It is these two factors combined that yields the coming surge in the population of retirees. Statistics Canada projects that between 2006 and 2031 the life expectancy for men will increase from 78 to 83 and for women from 84 to 87 (Figure 14). **For the first time in history, we can look forward to a situation in which large numbers of retired people will be looking after their retired parents.** We need to understand the implications of this because they will most certainly impact the jobs of the future.

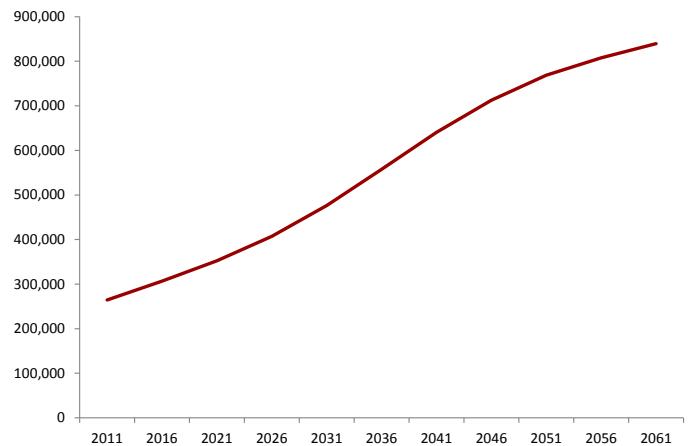


**Figure 14: Canadian Life Expectancies by Gender**



Source: Statistics Canada

**Figure 15: Projected Number of Deaths by Year, Canada**



Source: Statistics Canada, Population Projections for Canada, Provinces and Territories 2010 (Tables 11-1 & 17)

Consider health care, for example. Can our current health care system, including the way it is funded, continue unchanged? Not likely. Remember that there will be fewer and fewer working folk to pay the bills. But remember also that it is precisely these seniors who traditionally vote in proportionately large numbers. So what will be the consequences for social cohesion? The challenges to our health care system will not be easy to resolve. We cannot predict with any confidence how we will deal with these challenges. What we can be certain of, however, is that the changes that will have to be made will impact the employment opportunities that will evolve to deal with them. We can also assume that many of these new jobs will be located in local communities, because that is where people live. But many will also spin off opportunities for business with a national or international reach.

Consider another aspect of aging: death. Even with increasing life expectancy death, like taxes, remains inevitable. As Figure 15 clearly shows, the number of deaths is projected to grow quickly, particularly after about 2025. Obviously the funeral business will benefit from this trend, but it not likely to be the only one to do so. Recent studies have raised concerns about the environmental impact of cremation. What will take its place? Nobel (2011) suggests a number of “body disposal mechanisms” that might include shallow burial in living soil, alkaline, hydrolysis, nitrogen freezing with mechanical vibrations and nitric acid.

On a less macabre subject, the advent of new, personalized technologies such as Facebook, social networking, and Second Life, baby boomers now have access to technologies that will allow them to “live” forever. How long will it be until we create personalized avatars for life, and after life for that matter? Who will create them? How will they be marketed? Who will provide and service the technologies to support them? Pre-recorded death messages and DVDs are already beginning to emerge. They will likely become more common and more sophisticated over time. While cryogenics has not exactly caught on, the prospect of being able to store human genes challenges the imagination. Given the projected rate of deaths in the coming years, the opportunities for new jobs will be plentiful.

Back to the land of the living, where will we be living when so many of us are alive well into our eighties, nineties, or beyond? In retirement homes? If so, who will build and maintain them? On a very practical level, will we be able to save enough to carry us through in reasonable comfort? Will we pass that burden on to our children? That could be a problem when they, themselves, reach retirement.

Here is a possible scenario. Pick a country, preferably a relatively warm one. Cuba perhaps. It has a nice climate, especially during the winter, a

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good health care system, relatively low construction and living costs and low wages. Why not set up retirement communities in Cuba? We could send retired Canadians there at a significantly lower cost than providing for them here. Air Canada and WestJet would no doubt be happy to get the business. We could even through in some annual family visits and still save money.

Does that sound far-fetched? Perhaps, but consider this. In Sydney, Nova Scotia Cambridge Suites has begun to rent its rooms at reduced rates to seniors. This allows them to achieve higher occupancy rates during the fall, winter and spring when there is less demand. Seniors enjoy relatively cheap accommodation, including maid service and complimentary breakfasts, while retaining their independence. The hotel makes money and fills its rooms.

One piece of information should be considered at this point. Many of the boomers who are about to reach retirement age will enter retirement as the most affluent demographic group in our history. According to a Bank of Montreal study, they will collectively inherit over a trillion dollars in the next 20 years. This has to constitute a gold mine for the banking and related financial services industry. Existing jobs in this sector can be expected to grow and new ones created, perhaps ones we cannot even imagine at this point.

The entire service sector is one that can be expected to generate multiple new job opportunities connected with our aging population. To take a personal example, I currently find myself paying an exorbitant amount for the telecommunications devices I use. Between my wife and myself we have two land lines, a cell phone, a Blackberry, a fax line, two internet connections, two cable TV connections, a tablet and a mobility stick for our laptop. We might be able to reduce this list slightly, but between business and personal use in two locations we actually use them all on a regular basis. Despite our efforts to find the cheapest providers, the fees keep increasing. Besides, constantly shopping for price and service advantages is time consuming

and therefore costly in itself. What I really need is someone to manage my telecommunications systems for me on an ongoing basis. Here is a great opportunity for a creative young, or recently retired, entrepreneur: Establish a business to sort out and manage peoples' systems for a fixed monthly fee. I suspect the annual fee would be significantly less than the savings achieved.

**What a considerable number of those beyond 65 desire is to continue to work, but to do so on their own terms, with more flexible schedules, or to engage in volunteer service or personal growth activities.** In a recent Canadian study for the Human Resources Council for the non-profit sector (2010), 57% of baby boomers indicated they want to work beyond retirement as long as they have more control over their work life. So here we have on the one hand a looming labour shortage brought on by the exit from the work force of the baby boomers, and on the other hand a lot of these same baby boomers indicating they want to continue working but in a different fashion. Who or what is emerging to put these two needs together? Existing employment agencies may seek to fill this gap, but it is likely that new organizations will emerge specifically targeting retirees, their unique added advantage being their skill at negotiating pathways between retirees and employers.

We learned earlier that many employers do not even want to discuss post-retirement options with their employees, and most employees (64%) find it difficult to talk with their employer about these issues. It would seem logical to assume from this that these employers will be less enamoured of the prospect of more flexible work arrangements. These attitudes need to change. Again, specialized post-retirement "head hunters" might offer at least a partial solution to this dilemma.

Some corporations are beginning to see the writing on the wall. One particularly progressive executive told me recently that his firm is piloting a new program in which soon-to-be-retired managers will be offered tailor-made retirement opportunities. The approach to a hypothetical manager was described thus:

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Boy do I have a deal for you. We would like to suggest that you stay on for a couple of years on a part-time/occasional basis where you will become a mentor for a few of our emerging managers. You will have a fair degree of control over your time at work. We only ask that you let us know what your schedule will be and how you will help us develop these managers. We will pay you in proportion to the time you spend and will use the savings to hire an extra manager or so. We will also let you keep your corporate identity and access the type of support services you have used in the past few years.

The advantages of such a scheme are obvious. The firm gets employment continuity among its most senior and knowledgeable managers plus training of junior replacements. If this kind of approach is to become the norm, we will also need specialized human relations managers to negotiate these arrangements.

There is a growing body of information about the way in which boomers will change the nature of work. The U.S. retirement firm, Del Webb (2010), for example, frequently surveys both older and younger boomers. The Canadian Newspaper Association (2010) also undertakes surveys of this nature. Here is a sample of what they have found:

- The younger boomers are far more worried about money.
- Both groups feel they are much younger than their chronological age.
- About 40% are into hobbies, with the younger group into more active endeavours (biking, gardening, yoga, etc.) and the older into less demanding activities (computers, fishing, photography, quilting, etc.).
- About a quarter to a third plan to take educational courses with the younger group

taking career-related courses and the older taking personal interest programs.

- Of the older group, at the age of 64 one-quarter will not be partnered.
- About 40% are planning a vacation.
- Older boomers are generally in a buying mood in that a quarter to a third expects to purchase one of the following in the next twelve months: home electronics, furniture, appliances, car, and computer.
- 70% feel they are ignored by advertising.

These and other illustrations point to the emergence of new jobs and careers in the wake of the aging of the boomer generation, that is for those who understand and are prepared to take advantage of this demographic change. Most of these opportunities will emerge within communities especially those that have an older demographic.

**What is certain is that the world of work is changing and will continue to change, perhaps dramatically. If we do not adapt, we will lose the competitive race that is the reality for the developed world.** Looking abroad, we see Japan seemingly betting on technology to solve the human resource problem. They are investing heavily in smart robots to provide services that are now performed by humans. Meanwhile, China is questioning its one-child policy because they understand the long-term consequences in providing the country with the workers it will need.

## CONCLUSION

An aging population is but one of the major trends that will shape the way work will change in the future. For many of us this is probably the change that will affect us most directly and personally. Others will see greater impacts in other, different developments. What seems certain is that to adapt

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successfully significant change will be required on our part.

Major change is required in our educational and training processes and outcomes if we are to adapt successfully to this changing environment. Our educational and training structures must become more affordable, flexible, relevant, responsive, time sensitive and student oriented.

The impact of the trends emerging from the changed environment will differ in different communities, and these communities will need to identify and prepare for the most significant of these trends. Their successful adaptation and the prosperity of these communities will depend on getting this right.

New jobs, indeed new types of jobs and careers will develop, the precise nature of which we cannot predict. We do know there will be a talent shortage for skilled labour and therefore pressure for increased physical and intellectual mobility. Corporate employers will likely respond by seeking to “protect” their labour force. One way of doing this could be to locate in smaller communities, where local attachments are easier to reinforce.

The talent shortage will also have an international reach, with the result that competition for skilled labour will intensify.

Some process, such as the Centres proposed here, will be necessary to promote cooperation among the important elements of our communities (at various levels) in order to chart and exercise effective strategies for dealing with the challenges and dislocations that will occur. Cooperation has not always been the hallmark of how we respond to challenges. Many will hope these changes can be managed with fewer fundamental change on our part. My own view is that “muddling through” will not constitute an effective strategy in this case.

What is interesting is that there have been no challenges of the basic facts of the situation we will face. The aging of the population and the growing imperative of a better trained and educated labour

force are generally accepted as valid projections. What is not so universally accepted, it seems, is the urgency or magnitude of the changes that need to take place. Some argue that simpler solutions will suffice, that increasing immigration, relying on technology and increasing the age of normal retirement will do the trick (e. g. Profit Magazine, 2010). These changes may be necessary but it is unlikely that they will be sufficient.

The key elements in the strategy proposed are the redesign of our post-secondary system and the proposal to create Centres for Research, Economic Development and Advanced Curriculum Design (CREDACD). By their nature these centres would represent a proactive approach rather than the passive or reactive approach that some may consider more in line with the Canadian way of dealing with problems (wait and see). There may be alternative approaches, and we welcome a discussion of these options, but these proposals warrant consideration. **The challenge is ours. We can leave the initiative to others and lose the potential strategic advantage, or we can chart our own future.** The point is we have to decide which way we will turn. Needless to say, I prefer the latter option.

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