

# 3 Colleges and the economy

As the baby boomers retire, Ontario faces a shortage of skilled employees in a variety of sectors throughout the economy. The Conference Board of Canada estimates Ontario will have a shortage of more than 360,000 skilled employees by 2025.

Producing greater numbers of college graduates will play a key part in addressing the skills shortage and strengthening the province's economy over the long term.

## Chapter 3 - Table of contents

1.0	Summary / highlights .....	14	6.1	Adapting to technological change .....	22
2.0	College graduates' role in the economy .....	15	6.2	Responding to rising skills available to our competitors .....	22
3.0	Canada's challenges in the new global economy .....	17	6.3	Shifting to service sector jobs, 'soft' skills and assured competence .....	22
4.0	Renewing Ontario's competitive advantage ....	18	6.4	Boosting lifetime training .....	23
5.0	Addressing Ontario's emerging skills shortage ..	19	6.5	Strengthening workplace innovation across sectors and communities .....	24
6.0	Transforming Ontario workplaces .....	22	6.6	Reducing poverty - shifting from job creation to skills enhancement .....	25
			7.0	Appendices .....	27

## 1.0 Summary / highlights

During the past 40 years, Ontario's college graduates, including tradespersons, have become a unique internationally competitive advantage for the province. Their success in the workplace – nine in 10 find jobs within six months of graduating – has provided Ontario with three critical economic advantages compared to the US:

- A strong Ontario skills advantage for private sector employers.
- A higher Ontario employment rate than in the US.
- A competitive Ontario economy that has shifted to higher skill industries than the US.

Colleges are also opportunity equalizers, drawing students equally from all socioeconomic strata. For example, adults with disabilities and aboriginals have almost the same college completion rate as the general population. Employed graduates are also distributed relatively evenly across communities, and across business sizes, unlike university graduates. As well, more than a third of Ontario's entrepreneurs have college credentials.

College graduates, including tradespersons, will have a key role in supporting Ontario's competitiveness in the new global economy. With a quadrupling of the globally connected workforce during the past two decades, it will be tougher than ever to provide good jobs for those without postsecondary credentials.

Ontario is one of the wealthiest provinces in Canada, but recently, it has faced more challenges from globalization than have several other provinces: it is an energy importer, it has fewer resources per capita than in other provinces, and its large manufacturing sector is facing many challenges. While output and employment have continued to increase, and unemployment is relatively low, Ontario's economic growth has lagged that of the rest of Canada and the US for the past five years.

For the next few years, it will be difficult for Ontario to grow quickly due to its heavy reliance on the US market, which is likely to experience a protracted and difficult recovery. Over the medium to longer term, Ontario's success will be dependent on building and maintaining an even more skilled workforce which can compete through innovation and customer responsiveness. This will require:

- Adapting to technological change.
- Responding to rising skills available to our competitors.
- Shifting to service sector jobs, 'soft' skills and assured competence.
- Boosting lifetime training.
- Strengthening workplace innovation across sectors and communities.

Of greatest importance will be Ontario's response to the prospect that its economic growth will be constrained by skills shortages as 'boomers' retire and a declining number of young adults join the workforce.

For many years, governments tried to attack poverty by creating jobs to reduce a too-high unemployment rate. Now, unemployment is at a relatively low level, and employers will have difficulty in attracting and retaining the talent they need.

Ontario can address both economic opportunity and poverty reduction by shifting government priorities from creating jobs to raising skills, so that employers can hire qualified workers. Ontario's Workforce Shortage Coalition points to two main approaches to addressing skills shortages, which should be implemented in tandem:

- Adding workers: If adults aged 25 to 64 with high school or less had the same employment rate as those with college credentials, 289,000 more would have jobs.
- Raising skills and productivity of workers: 319,000 adults aged 25 to 64 work part-time, but can't find a full-time job, and internationally trained individuals have much more difficulty in finding jobs which make use of their skills than they did a decade ago.

## 2.0 College graduates' role in the economy

*"Investment in human capital, such as education and skills training, is three times as important to economic growth over the long run as investment in physical capital."*

Statistics Canada. "Literacy scores, human capital and growth." *The Daily*, June 22nd 2004

Every economic organization must occupy a unique niche in the economy if it is to survive and grow. This section describes how, over the past 40 years, Ontario's college graduates have become a unique internationally competitive advantage for the province.

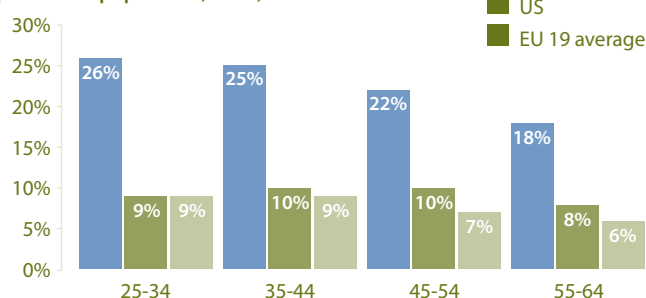
First, a higher share of Canada's workforce has completed applied postsecondary education than is the case for any major industrial country (figure 1). In Ontario, college-credentialed workers, including those with trades certificates, have grown from 24 per cent of the workforce in 1991 to 33 per cent in 2006 and now represent the largest portion of the workforce (F1).

The success of Ontario's college graduates in the workplace – nine in 10 find jobs within six months of graduating – has provided Ontario with three critical economic advantages compared to the US:

Figure 1

F1

College graduates: Canada vs US vs Europe  
(per cent of population, 2005)

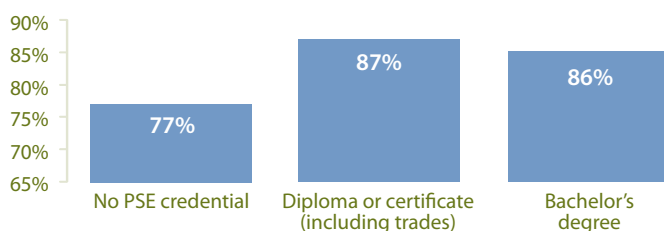


Source: OECD, "Education at a Glance 2007", Table A.1.3a.

Figure 2

F2

Employment rate of the population aged 25-44 with and without postsecondary certification (Ontario, 2001-2005 average)



- **A strong Ontario skills advantage for employers.** Ontario employers have a slightly higher proportion of university graduates (30.9 per cent, aged 25 to 44) than their US competitors (30.5 per cent). They have three times as many college/trades graduates: in Ontario, 34.7 per cent of the workforce, aged 25 to 44, has a college credential compared with 9.6 per cent in the US. In contrast, only 34.4 per cent of Ontario's workforce, aged 25 to 44, lacks a postsecondary college credential, compared with 59.9 in the US.
- **A higher Ontario employment rate.** As figure 2 shows, both university and college/trades graduates (86 and 87 per cent, respectively, of Ontarians aged 25 to 44) are far more likely to be working than those without PSE credentials in Ontario and in the US (about 75 per cent in each case). But since there are proportionately far more college graduates in Ontario, a higher proportion of the overall Ontario population is working (F2).
- **A competitive Ontario economy that has shifted to higher skill industries than the US.** Industries requiring higher skills (and that pay more) comprise a higher share of Ontario's total private sector.

Ontario's unique college system is encouraging industries in Ontario which require high skills. One can conclude from the exceptionally high employment rate of college graduates, and from the high level of skills required by Ontario employers, that Ontario can continue to expand its skill base and create more skilled jobs.

Turning to sectors, college/trades and university graduates are, of course, found across all sectors of the economy (figure 3a). But there are noticeable differences (F3a).

- Half the workers in our cost-effective health care system are college graduates, as are half the energy workers.
- One-third of Ontario manufacturing workers have college credentials, compared with one-tenth in the U.S.
- College graduates, including the trades, are also the backbone of construction, transportation and local government.

There are also differences in where skilled employees work by size of business (figure 3b) (F3b).

- College graduates and tradespersons are distributed relatively evenly across all sized businesses.
- Ontario has 254,300 entrepreneurs with college or trades credentials, almost half with employees.
- University graduates are found mainly in large businesses, in head office and related occupations.
- Half the employees of small businesses do not have post-secondary credentials, compared to a third for large firms.

In addition, college graduates (including tradespersons) are widely distributed across the province, largely because colleges are mandated to emphasize skills required by local employers (figure 3c) (F3c).

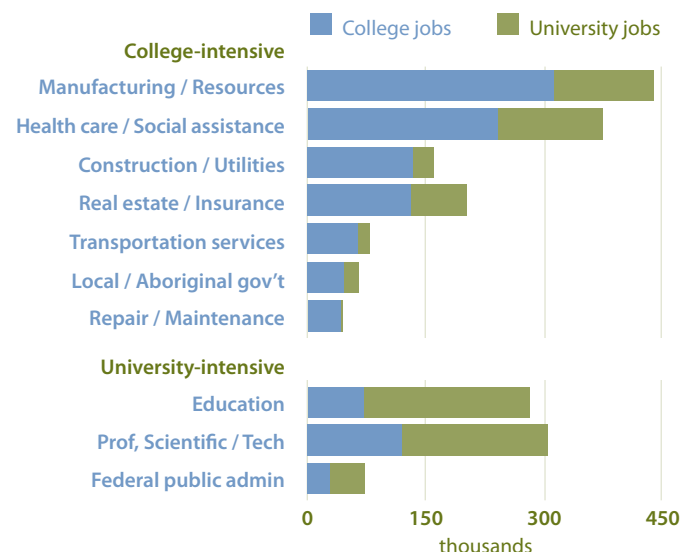
As well, colleges are opportunity equalizers, drawing students equally from all socioeconomic strata: Aboriginal Peoples; people with disabilities; immigrants; youth and adults with low literacy skills; and Ontarians living in rural or remote areas. For example, as shown in figure 4, adults with disabilities and aboriginals have almost the same college completion rate as the general population. And “close to 90 per cent of post-secondary certificates obtained by adult students were from institutions such as community colleges, and trade or vocational schools... Workers who participated in adult education and obtained a postsecondary certificate generally registered higher earnings gains than their non-participating counterparts.”<sup>1</sup> (F4)

Finally, colleges provide an excellent return on investment for students and government. College students benefit from a nine per cent rate of return on their educational investment, and recover all costs (including wages foregone while attending) in 14.4 years. In comparison, long-term Canada bonds returned 4.3 per cent in 2006. Government costs are fully recovered in 10.7 years, in the form of higher tax receipts and avoided social costs, with a 12.1 per cent rate of return. Put another way, for every \$1 appropriated, taxpayers will see a cumulative return of \$2.31 over the next 30 years. [Christophersen & Robison, 2004].

<sup>1</sup> Boris Palameta and Xuelin Zhang. “Does it pay to go back to school?” *March 2006 Perspectives*. Statistics Canada — Catalogue no. 75-001-XIE. Page 3.

**Figure 3a** F3a

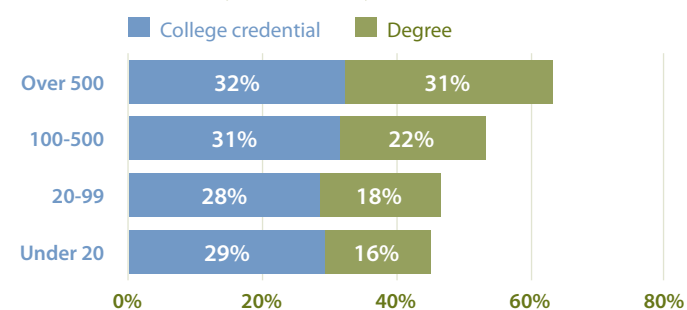
**College and university graduates are concentrated in different sectors (number of jobs)**



Source: Statistics Canada, *Census 2001* and Colleges Ontario.

**Figure 3b** F3b

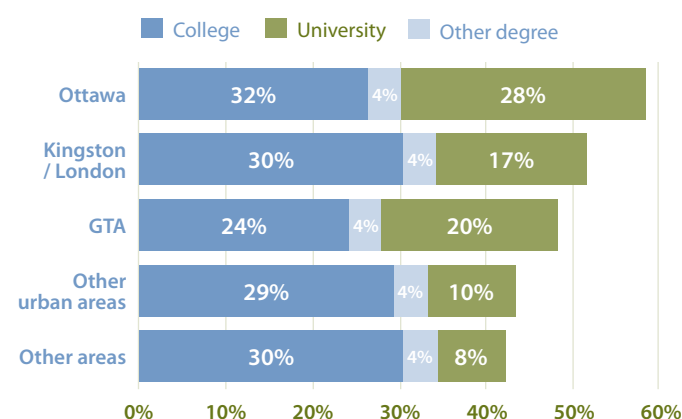
**College and university graduates by firm size**



Source: Statistics Canada, 2001 Census special tabulation, and Colleges Ontario. Private sector employers, excluding professional and scientific services.

**Figure 3c** F3c

**Employment of college and university graduates (selected geographic areas, 2001)**



Source: Statistics Canada, *Census 2001* and Colleges Ontario.

### 3.0 Canada's challenges in the new global economy

No one predicted that the Soviet Empire could have collapsed so fast and that all its parts would eagerly join the world economy. Nor did anyone predict that resolutely Communist China would become one of the world's fastest growing exporters, with an economy which may rival the US in size within a decade.

Virtually every country is eager to participate in the global economy. The International Monetary Fund estimates, "The effective global labour force has risen fourfold over the past two decades." Ben Bernanke, chair, US Federal Reserve Board, adds: "There are no historical antecedents for this development."

New technologies are helping emerging countries leapfrog over infrastructure barriers that inhibit their competitiveness. Asia now has almost twice as many Internet users as North America. India is adding more than six million cell phones every month – equal to Ontario's total workforce – and they are used primarily to enhance business productivity. A small businessman uses a cell phone to set up a meeting rather than send someone on a bicycle to sort out a time. A farmer can phone about crop prices, rather than hope for the best as he sets out for market. As the World Bank says, "The capacity to harness these technologies has enabled countries to quickly advance up the technology ladder" (World Bank 07).

According to Suzanne Rosselet-McCauley, deputy director, IMD World Competitiveness Center (April, 2007), "India has progressively improved its ability to compete globally, jump-

ing from 42nd position in 2003 to 27th place in 2007 (out of 55 economies). This progress parallels the ranking improvement gained by China over the same period, from 27th position to 15th."

The impact on advanced economies has been substantial, and the trends are expected to continue:

- Manufacturers in all advanced economies are facing tough competition from low-cost jurisdictions. Major buyers frequently require suppliers to work with them on product improvements while continually reducing their prices. Low-skilled manufacturing jobs have shifted abroad and the trend is continuing as new competitors move up the value chain.
- Services are also shifting – information technology and back office service jobs are now increasingly moving to India, and from India to other Asian countries.
- Accenture reports, for example, that it has 35,000 employees in India, and that the heads of procurement for GE and IBM have moved to China.

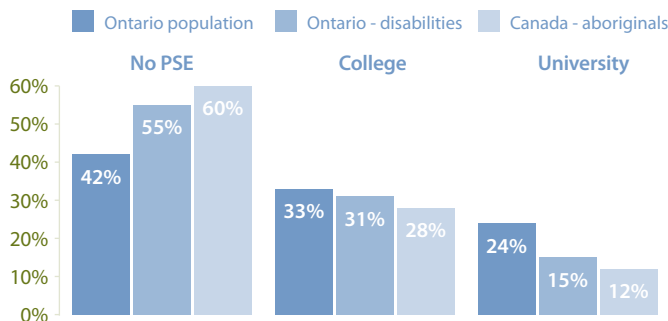
At the same time, rapid growth in emerging economies is offering new opportunities for advanced economies:

- Energy, resource and food demand and prices are escalating due to rapid growth in China and India.
- To modernize their economies, rapidly growing countries are on a buying spree for sophisticated machinery and equipment from aircraft to machine tools; customized business software and telecommunications equipment; and finance, technical and management skills to design, build and operate infrastructure projects.
- They are also rapidly growing customers for postsecondary education. Countries such as Australia are world leaders in attracting students who can pay the full, unsubsidized costs of education.

Advanced economies are rapidly strengthening their abilities to compete. The European Union, for example, expanded by 10 countries in 2004, and an additional two countries in 2007. Its 27 members, with almost 500 million people, have a larger GDP than the US. It has taken many steps toward the free movement of goods, services, workers and capital in order to benefit from competition, specialization and economies of scale.

Figure 4 F4

#### Education of under-represented groups, ages 25-54, 2001



Note: Percentages do not add up due to roundoff.

Sources: Statistics Canada 282-0004 and *Participation and Activity Limitation Survey, 2001*; Sharpe 2007; Colleges Ontario.

## 4.0 Renewing Ontario's competitive advantage

Canadians have been generally successful in comparison with other advanced countries. Its employment to population ratio (ages 15-64) is the seventh highest in the Organization for Economic Co-operation and Development (OECD), above that for major countries like the US, France and Germany.

For a decade, Canada's low dollar supported manufacturing expansion and 'near-sourcing' of service sector jobs from the US. Now, high energy and resource prices are offsetting much of the impact of a high dollar, especially in Newfoundland and western Canada. In addition, the federal and provincial governments have implemented policies designed to encourage investment in Canada. The Bank of Canada maintains a low inflation rate, government budgets are now balanced, debt is declining as a share of GDP, exports typically exceed imports, business taxes are now generally trending lower than in the US, and personal taxes on investment income and saving have been lowered.

Nevertheless, there is some evidence that Canadian competitiveness is starting to slip. Canada, once first in the UN's Human Development Index, slipped to 4th position in 2007. The IMD World Competitiveness Scorecard 2007 shows Canada in 10th place, down from 7th place in 2006. As well, Canada declined from 10th place in 2002-03 to 13th place in 2007-08 on the Global Competitiveness Index of the World Economic Forum. Canada's score on "efficiency enhancers" – of higher education and training, labour market efficiency, and technological readiness – are at 13th, 8th, and 13th, respectively.

And several researchers have expressed concern about Canada's competitiveness. For example:

*"In 2006, the Canada–United States multifactor productivity level gap expanded by 30 percentage points relative to its value in 1961."*

Baldwin & Gu [2007] *Long-term Productivity Growth in Canada and the United States – 1961 to 2006*. Statistics Canada.

*"Canada achieves uneven results in The Conference Board of Canada's new report card that benchmarks Canada's socioeconomic performance against the performance of 16 other top Organisation for Economic Co-operation and Development countries across six domains. The report card paints a portrait of a mediocre performance that will not be good enough to meet the fundamental goal of a high and sustainable quality of life for all Canadians."*

"How Canada Performs: A Report Card on Canada." 2007

Ontario is one of the wealthiest provinces in Canada and one of the wealthiest jurisdictions in the world, but recently, it has faced more challenges from globalization than have several other provinces:

- It is an energy importer: high energy prices reduce Ontario's growth potential.
- It has fewer resources per capita than other provinces. While mining communities are benefiting from high prices, much of Ontario is facing higher costs for food and metals.
- Ontario is a manufacturing powerhouse in North America, with employment exceeding that in any other province or in any U.S. state except for California. However, it has lost over 75,000 manufacturing jobs in the past five years, due to a higher Canadian dollar and fierce competition from developing countries. In addition:
  - It is heavily reliant on the auto sector, at a time when US sales growth is slow because there are now more vehicles than drivers in the US.
  - The demand for newsprint continues to fall, as US newspaper sales have now fallen well below their 1970 peak, and continue to decline at one per cent annually.
  - Its chemical industry benefits from a superb location in North America, but is vulnerable to high-cost energy – and investment is shifting to Alberta and other energy producing jurisdictions around the world.

While output and employment have continued to increase, and unemployment is relatively low, these pressures have contributed to Ontario's overall economic growth lagging that of the rest of Canada and the US for the past five years (2001-2006) (See figures 5a, 5b, 5c, 5d). This has led to speculation that Ontario could become a have-not province, eligible for equalization payments from Ottawa unless its growth rebounds. Over the past five years **F5**:

- Overall growth in GDP, averaging 2.3 per cent, was seventh among provinces and well below the 2.9 per cent average for the rest of Canada or the 2.7 per cent for the US.

- Employment growth, averaging 1.8 per cent, was also below the 2.1 per cent for the rest of Canada, although it exceeded US employment growth of one per cent annually. Ontario was the only province in which employment grew slower than the population (over age 15).
- Economic growth per employee was half the rate of the rest of Canada, a quarter the rate of the US, and ninth among provinces. Real earnings per employee (adjusted for inflation) fell 0.5 per cent in Ontario, compared to an increase of 1.5 per cent in the rest of Canada.
- Investment has also been weak. Private sector investment per employee fell below the Canadian average in the past five years, although it had been higher in previous years. Ontario businesses have invested less than their counterparts in the US, so that their equipment is not as modern, and their employees have less access to skills upgrading. The Ontario government has also invested less than its US counterparts. One consequence is that investment in college students is in 10th place among provinces, even with recent enhancements.

For the next few years, it will be difficult for Ontario to grow quickly due to its heavy reliance on the US market (much heavier than other provinces). The US is almost certainly in a recession now, and is likely to experience a protracted and difficult recovery. The US federal government has a large deficit and a growing debt to GDP ratio; the US imports far more than it exports, its financial and housing sectors are under pressure, and there are signs that inflation is resurgent.

Over the medium to longer term, Ontario's growth will strengthen as the US economy recovers, as Ontario adjusts to higher energy costs, and as its manufacturing sector adjusts to a higher Canadian dollar.

Whether Ontario's growth will then be mediocre, as the Conference Board of Canada fears, or it will reach its full potential, will depend in large part on effectively addressing a series of challenges enumerated in the following sections.

In particular, since Ontario has fewer resources per capita than several other provinces, its success will be more dependent on building and maintaining a skilled workforce that can compete through innovation and customer responsiveness.

## 5.0 Addressing Ontario's emerging skills shortage

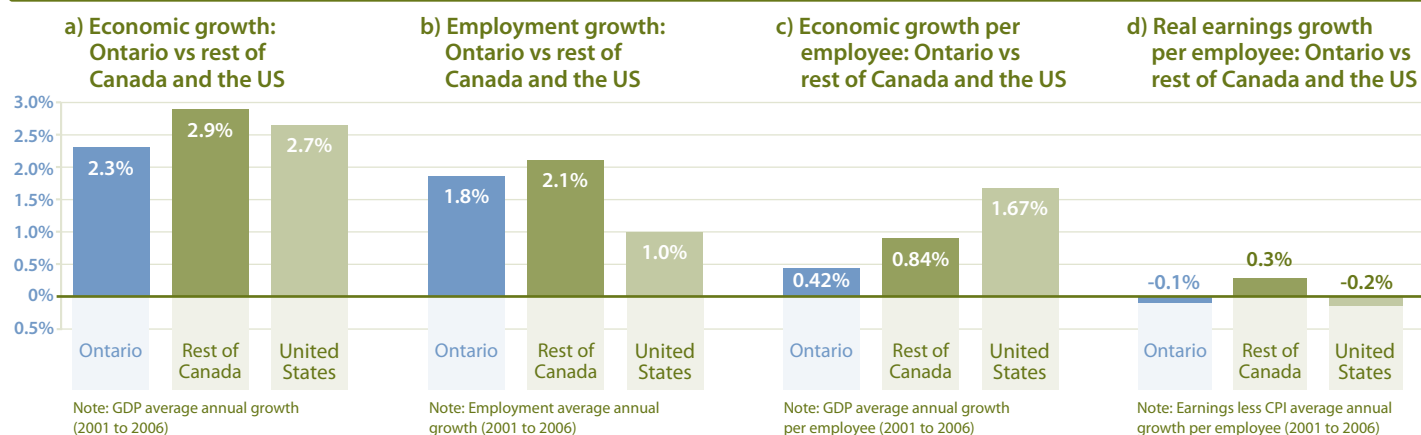
*"Canada is midway through a profound demographic shift. In the 1990s, the central challenge in economic policy was how to generate enough jobs for our people. A decade from now, the focus will be on ensuring that Canada has enough skilled people for the work that still needs doing."*

Canadian Council of Chief Executives. *From Bronze to Gold*. 2006.

*"We are facing a significant shortage of workers across the country... Estimates are that ... Ontario will face a shortage of 560,000 workers by 2030. I hear about shortages in every city I visit from coast to coast. The crux of our problem is that we have too few workers and too few skills to meet demand. I know that it is still difficult for many Canadians to accept that we have a labour shortage."*

The Honourable Monte Solberg, Minister of Human Resources and Social Development. November 16, 2007.

Figure 5a,b,c,d



Sources: Statistics Canada, US Bureau of Labor Statistics; US Bureau of Economic Analysis; Colleges Ontario.

Over the past 25 years, the Canadian labour force grew by 48 per cent. In the next 25 years, it will grow by only 16 per cent.<sup>2</sup> There will be many baby boomers retiring, and relatively few young adults entering the workforce. Each person working will have to support more people not working – especially more retired people with high health care and pension costs. It will be harder than ever to strive for economic growth and higher incomes per capita.

Ontario's employment rate (ratio of employment to population) is at near record levels, albeit lower than in western provinces, especially Alberta. The Ontario Ministry of Finance anticipates gradually tightening labour markets. Unemployment is expected to trend down from an average of 6.4 per cent over the next five years to 4.1 per cent in 2020-25. Bottlenecks that inhibit economic growth will become more common un-

less employers and governments work effectively together to raise workforce skills and integrate under-represented groups and immigrants more effectively into the workforce.

Key industry groups across the province are already experiencing growing shortages of qualified workers. Ontario's Workforce Shortage Coalition (with 20 members representing a broad range of industries) reports that skills bottlenecks are now cutting our economic potential and transferring opportunity and momentum to our competitors.

- **Skill requirements are rising:** Ontario employers have 1.6 million more employees with postsecondary credentials than they had 15 years ago. But they have 400,000 fewer employees without postsecondary credentials (figure 6a) [F6a](#).
- **There is a shortage of skilled workers:** Experienced baby boomers are starting to retire – up 20 per cent now and up a further 14 per cent in the next five years – compared with only a four per cent increase in the prime working-age population, followed by three per cent growth in the next five years (figure 6b). A huge amount of experience is being lost, and employers are scrambling to find replacements. As well, within seven years, the number of young adults joining the workforce will flat-line, and then drop quickly (figure 6c) [F6b](#) [F6c](#).
- **Many sectors already face skill shortages:** mining, manufacturing, construction, hospitality and food services, retail, etc.
- **Government priorities are at risk:** delivery of health care, environmental priorities, and strategic infrastructure such as electric power generation and distribution, and urban transit expansion, will all be affected by skill shortages.

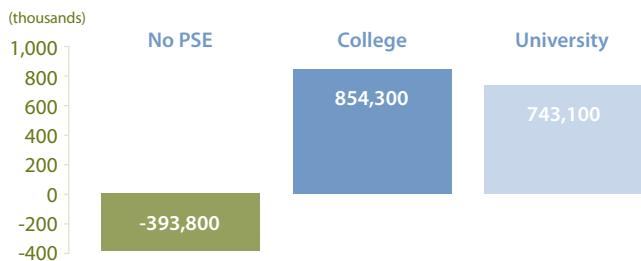
The skills shortage will hit small businesses first as a quarter of small business employees are soon-to-be scarce young workers (compared to a tenth of large business employees), and small and medium-sized enterprises (SMEs) employ 94 per cent of young workers (figure 7). On a sectoral basis, half of accommodation and food service workers are young, as are 40 per cent of those in information and culture and over one-third of those in retail [F7](#).

<sup>2</sup> TechCanada Roundtable 2007. Canadian Council of Technicians and Technologists.

Figure 6a,b,c

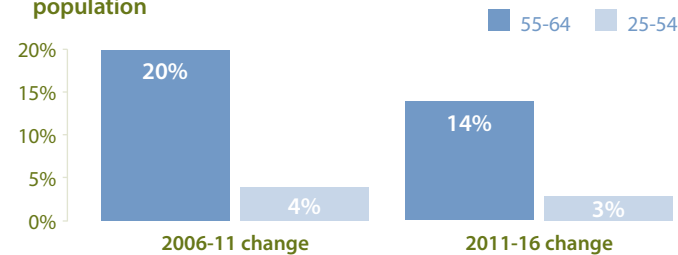
F6

**a) Ontario employers hired 1.6 million more skilled workers but 400,000 fewer unskilled workers over 15 years**



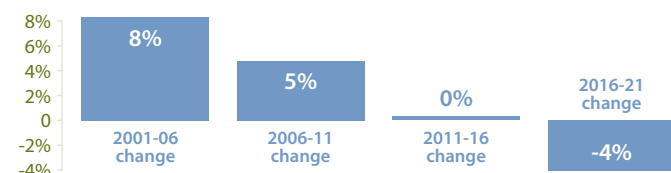
Note: Change in employed Ontarians, by educational attainment, 1990-2005. Source: Statistics Canada, Table 282-0004.

**b) Retirements growing much faster than prime working-age population**



Source: Ontario Ministry of Finance (2006 demographic projections) and Colleges Ontario.

**c) Change in Ontario population aged 15-24**



Source: Ontario Ministry of Finance (2006 demographic projections)

It will also hit business investment. For example, investors have expressed interest in building hotels in Toronto and Niagara Falls – but are holding back because they are worried about whether they will be able to find enough employees to staff them. Employers facing chronic shortages may be more inclined to outsource labour-intensive activities to developing countries.

While employment has been trending down in the manufacturing and resource sectors, the pressures to hire skilled employees are so strong that manufacturing employers have increased the number of college graduates they have hired for the past few years. Moreover, with an average age exceeding 50 in many sub-industries, there is a growing concern among industry groups such as the Electricity Sector Council, the Canadian Automotive Partnerships Council, the Canadian Aerospace Council and the Canadian Steel Partnership about replacing experienced retiring workers in the next few years.

Taking a broader perspective, The Conference Board of Canada forecasts a shortfall of 364,000 workers by 2025 (figure 8a). It concludes: “Ontario needs to act proactively to mitigate future labour market pressures. One important way in which Ontario can help to relieve these pressures is to continue to

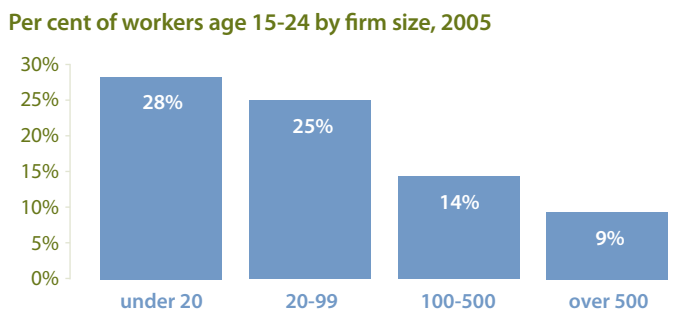
develop and implement strategies and initiatives that develop skills and encourage higher labour force participation, especially by underrepresented populations.” **F8a**

That result is essentially the same as the gap found by the Ontario Ministry of Finance between its ‘base growth’ forecast for Ontario through 2025 and its ‘high growth’ scenario. What the Ministry of Finance is saying, essentially, is that if Ontario sets in place policies for high growth, it must ensure they include policies to attract 360,000 more people into the workforce. The Finance forecast shows that a high growth economy has other benefits: seven per cent higher output per worker, and about \$2 billion more a year to spend on health care (figure 8b) **F8b**.

Ontario’s future economic growth is substantially dependent on its success in raising access to postsecondary education and supporting new educational approaches to improve retention. At a recent summit, “Ontario economic leaders clearly considered human capital to be the primary issue to focus on”<sup>3</sup>

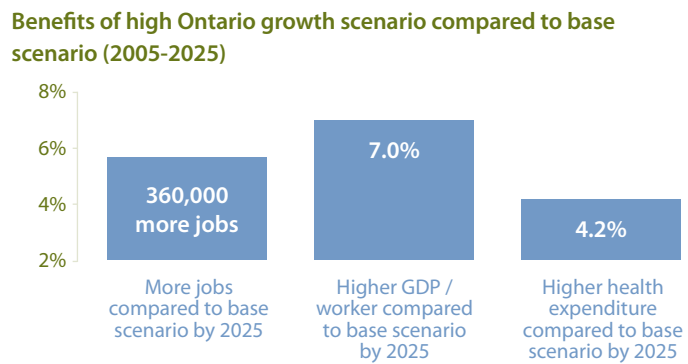
<sup>3</sup> Ontario Chamber of Commerce and the Ontario Economic Leadership Summit. *Keeping Ontario Competitive*. Oct. 2006. p.6.

**Figure 7** F7



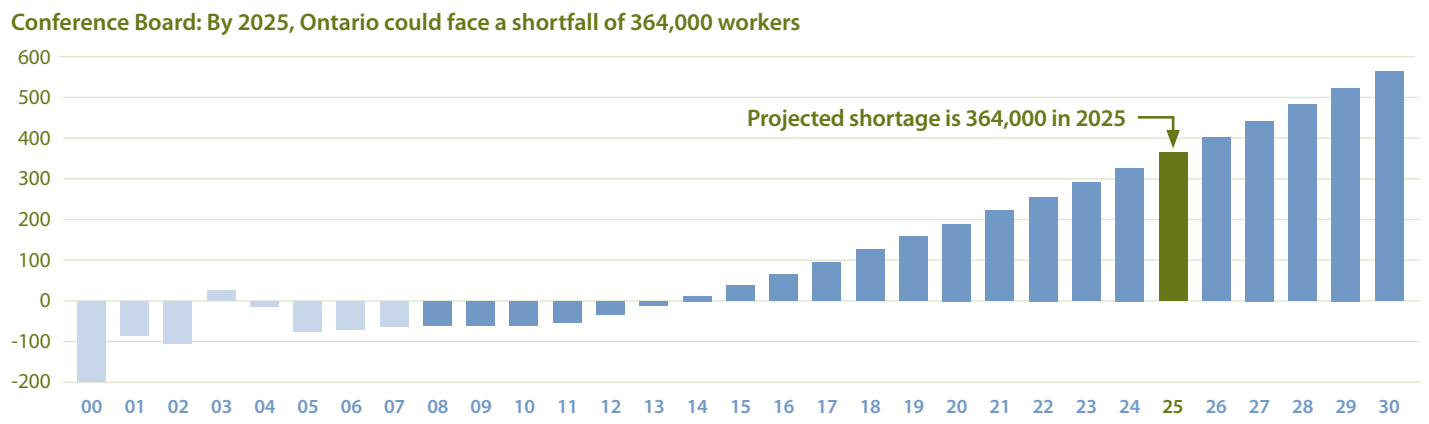
Source: Statistics Canada, table 282-0076 and Colleges Ontario.

**Figure 8b** F8b



Source: Ontario Ministry of Finance. *Toward 2025: Assessing Ontario's Long-Term Outlook, 2005*; Colleges Ontario.

**Figure 8a** F8a



Source: Conference Board of Canada, 2007.

A key consideration in achieving that growth will be change in societal attitudes. Many studies on societal attitudes to the skilled trades and college programs as an occupational choice have found that both students and their parents express strong positive feelings, but neither group feels it is a likely choice for them.

## 6.0 Transforming Ontario workplaces

### 6.1 Adapting to technological change

*“Productivity growth ...is affected by small, incremental changes in a host of factors that occur on the plant floor and other parts of a firm. These include new production techniques, changes in plant size and changes in organization, as well as other factors that are associated with acquiring and creating new knowledge.*

*“These changes are generally not cataclysmic. Even momentous changes involving new technologies take time to implement. The changes are relatively steady, when measured over long cycles.”*

Baldwin & Gu [2007] *Long-term Productivity Growth in Canada and the United States – 1961 to 2006*.  
Statistics Canada.

Ontario’s economic growth will increasingly depend on workplace skills as innovation and the use of increasingly complex technology demand adaptability and higher skills. For example, research shows that “it is not whether an employer adopts a particular work practice but rather how that work practice is actually implemented within the establishment that is associated with higher productivity.... Plant productivity is higher in businesses with more-educated workers or greater computer usage by non-managerial employees.”<sup>4</sup>

The evidence also shows that technological change raises skill requirements more often than it lowers them. As well, higher engineering and production standards, e-commerce, communications, and quality, safety and environmental regulation are leading to new skills and occupations. Half of the jobs in the next 15 years will require the ability to use technol-

4 Sandra E. Black and Lisa M. Lynch. “How to Compete: The Impact of Workplace Practices and Information Technology on Productivity,” *Review of Economics and Statistics*, August 1, 2001, Vol. 83, No. 3, Pages 434-445.

ogy not yet invented. Moreover, “It is expected that there will be more advancement in technology in the next four to five decades than in the past 450 years.” (Kevin Kelly. *Speculation on the Future of Science*).

Additional pressure to adapt to technological change is coming from competition abroad. For example, China already provides 25 per cent of US high-tech imports, vs. Canada’s five per cent. Samsung (Korea) has 39,000 researchers compared to 60,000 for all businesses in Ontario: it introduced 30,000 new products in 2002 alone. The US National Science Board ranks Canada 12th behind China and South Korea in ‘technological competitiveness’.

### 6.2 Responding to rising skills available to our competitors

Ontario employers have a strong competitive advantage through their access to one of the world’s highest skilled workforce.

However, many other countries have identified workforce skills as a critical competitive issue and are working steadily to close the gap with Canada. Most critically, there are now 94 million postsecondary students in developing countries, 70 per cent of the world’s total. And 69 per cent of engineers and science graduates are also coming from developing countries (figure 9) [\[F9\]](#).

### 6.3 Shifting to service sector jobs, ‘soft’ skills and assured competence

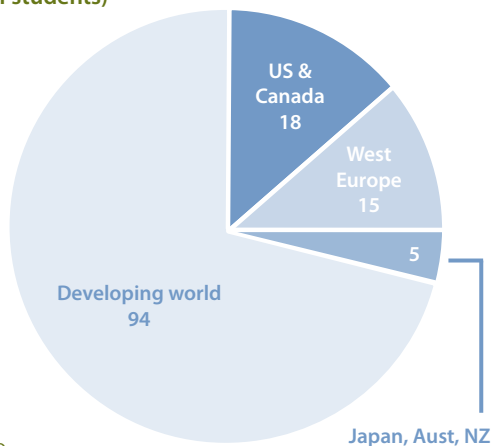
It is an environment that demands that business focus on innovative recruiting, training and retention of staff, on customer relationship management, and on working with suppliers to improve designs and processes, optimize costs and reduce lead times while meeting or exceeding the needs of the customer. Businesses are facing unprecedented pressure to provide their customers with a cost-effective, but personalized and positive experience:

They have responded with a major shift to service sector jobs. In the past 15 years, employment increased by 1.5 million in Ontario, and almost 90 per cent of the growth was in the service sector. The focus of most employees is shifting from ‘doing things’ to using ‘soft skills’ to respond to customer expectations and to ‘educate’ them to buy superior, ‘high-margin’ goods and services.

Figure 9

F9

70% of postsecondary students in the developing world (millions of students)



Source: UNESCO.

As employers decentralize, strip out managers, require more employee initiative, and strengthen delegation and accountability, assured employee competence becomes increasingly important for business success. This is leading to an increasing reliance on the use of certified employees. And as governments set new reporting and performance standards for public services and for private sector activities, there will be rising pressure to ensure that employees meet defined competence standards. For example, students in Ontario college business programs can now begin or complete industry-approved certificates in more than 25 areas (appendix 1) (A1).

Similarly, multi-professional teams are more successful when each member has specific assured skills. In the health sector, for example:

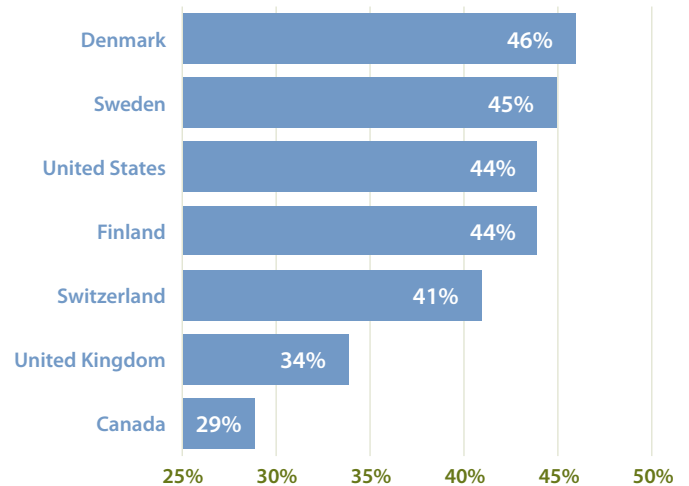
- In 2006: regulation of Acupuncture and Traditional Chinese Medicine.
- In 2007: updated or new regulation of naturopathy; homeopathy; kinesiology; psychotherapy; and pharmacy technicians as a class under pharmacists.
- The government has asked the Health Professions Regulatory Advisory Council for an opinion on:
  - the regulation of diagnostic sonographers, dental assistants, paramedics and emergency medical attendants.
  - consideration of an association model for personal support workers.

Furthermore, certification leads to a quantifiable and substantial increase in annual compensation, according to the find-

Figure 10

F10

Share of labour force participation in continuing education (2003)



Source: "OECD Education at a Glance, 2005"; Chart C6.1

ings of a recent survey of its membership conducted by the Ontario Association of Engineering Technicians and Technologists (OACETT). Results show OACETT certification can produce a \$10,000 annual increase in base salary for engineering technology professionals."

#### 6.4 Boosting lifetime training

Nevertheless, Canada's record on lifetime training is disappointing. The Conference Board of Canada reports that per-employee spending on training, learning and development has dropped 17 per cent in a decade, and that almost half of training spending is on management. The US and the UK each register a higher share of the labour force participating in continuing education than Canada. And in the US, employers spend 50 per cent more on training than their Canadian counterparts (figure 10) (F10).

The most commonly cited reasons for not training are the costs, and concerns that the trained employee will leave, thereby benefiting other employers at the expense of the training employer. For example,

- The burden of workplace training falls disproportionately on establishments with fewer than 100 employees, which have 69 per cent of employees without postsecondary credentials. As a result, "Workers employed in large firms are almost twice as likely to participate in training as workers in small companies." (Allan Bailey. *Connecting the Dots... Linking Training Investment to Business Outcomes and the Economy*. Canadian Council on Learning. April 2007. p5.).

- Over one-third of small business owners themselves do not have a postsecondary credential (figure 11). And more than half of new SMEs disappear within their first five years, necessitating employee job change (F11).
- Many workers, and a higher proportion of young workers, are in 'non-standard' positions: 14 per cent are self-employed, another 18 per cent are part-time, and 13 per cent are temporary. For youth, aged 15 to 24, 48 per cent are part-time, and 32 per cent are temporary.
- Business is taking a narrower view of its responsibility for employees: for example, in the private sector, defined benefit plans, which once represented a long-term employment relationship, have fallen from 27.4 per cent of the workforce in 1982 to 16.5 per cent in 2006.

### 6.5 Strengthening workplace innovation across sectors and communities

Ontario employers also need to increase productivity to flourish in fiercely competitive world markets and improve the quality of life of Ontarians. While some Ontario companies can and do assume the risks inherent in global new product development, virtually all Ontario companies rely on a steady stream of small, incremental innovations to their business, organization and manufacturing processes and practices to remain competitive. Their investment in new machinery and equipment at \$43 billion in 2006 annually, is more than three times Ontario's investment in R&D annually, at \$13 billion (half funded by the private sector), or the province's investment in postsecondary education, also \$13 billion annually.

For Ontario, and its diverse range of industries, the largest source of productivity growth and higher incomes is based on technology transfer and business process engineering. In Ontario, investment in computers, communications equipment and software grew an astounding 15 times in two decades. The Ontario Ministry of Finance anticipates that business investment in machinery and equipment will increase by a further 37 per cent over the next two decades, compared with the growth in the overall economy.

It is this high-technology equipment that allows companies to develop and improve products, but also, through business process engineering, to reduce costs. It is transforming the workplace and making continuous productivity improvement possible.

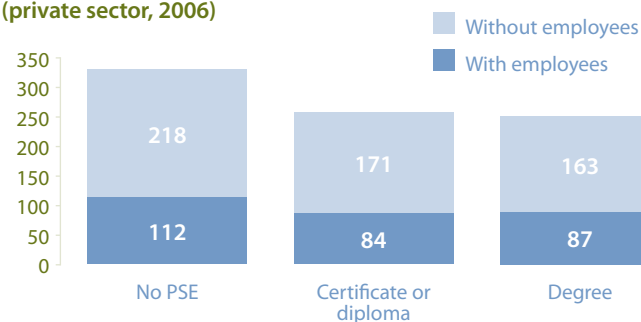
Even so, "Ontario businesses have under invested in machinery, equipment and software relative to their counterparts in the United States so that the capital base that supports workers is not as modern,"<sup>5</sup> and "Canadian firms generally trail their U.S. counterparts in the adoption of advanced technology. This result occurs in part because Canada has a higher proportion of small and medium enterprises than the United States. Smaller firms tend to be slower adopters."<sup>6</sup>

Ontario produces only one per cent of the world's research and development, and only 5,000 of 350,000 Ontario employers do any R&D in spite of significant financial incentives, low costs for research personnel and high levels of support for government and university research. Concern has also been expressed about:

- Ontario's narrow industrial R&D focus (primarily information and communications technology and biotechnology) which misses many industries central to Ontario's future development. Seven small industries totalling 2.5 per cent of Canadian employment conduct half of industry R&D.
- Many SMEs have low productivity, export little and cannot do R&D.
- Ontario's industrial R&D is concentrated in a few large cities. Many communities and regions require help stimulating innovation across sectors, firms and organizations if they are to prosper in the face of global competition, and
- Public investment in research is primarily earmarked for basic, investigator-initiated research intended to discover new knowledge.

Figure 11 F11

#### Ontario entrepreneurs by educational attainment (private sector, 2006)



Source: Statistics Canada, special tabulation, 2007.

<sup>5</sup>Task Force on Competitiveness, "Productivity and Economic Progress. Agenda for our prosperity." *Fifth Annual Report*, November 2006. p.28.

<sup>6</sup>Gafni, E, A. Sharpe. *The Diffusion and Adoption of Advanced Technologies in Canada: An Overview of the Issues*. Centre for the Study of Living Standards. December, 2005. p.3.

Successful workplace innovation will require a willingness not just to fully utilize Ontario's own best ideas, but to aggressively adopt and adapt good ideas from around the world. Ontario's economic growth will depend not just on leading edge research and the small number of explosive-growth firms of interest to venture capital firms, but on more innovation, often based on technology transfer, from firms who are more likely to have steady than explosive growth.

## 6.6 Reducing poverty - shifting from job creation to skills enhancement

*"A country's literacy scores rising by one per cent relative to the international average is associated with an eventual 2.5 per cent relative rise in labour productivity and a 1.5 per cent rise in GDP per head. These effects are three times as great as for investment in physical capital. Moreover, the results indicate that raising literacy and numeracy for people at the bottom of the skills distribution is more important to economic growth than producing more highly skilled graduates ....Raising the skills level of people who have left the school system should not be neglected. Policy incentives for job-related training and lifelong learning, particularly measures targeted at people with very low skills, would likely generate substantial economic rewards."*

Serge Coulombe and Jean-François Tremblay. *Public Investment in Skills: Are Canadian Governments Doing Enough?* C.D. Howe Institute. No. 217, October 2005.

For many years, governments tried to attack poverty by creating jobs to reduce a too-high unemployment rate. Now, unemployment is at a relatively low level, and employers have difficulty in attracting and retaining the talent they need. This serious and growing skills mismatch is cutting Ontario's growth and contributing to poverty. Without a concerted effort, Ontario's unskilled workers will see their opportunities drop even faster, while potential investment shifts to other jurisdictions.

Premier Dalton McGuinty has stated that poverty reduction is a key goal of the Ontario government. The report on post-secondary education done by former premier Bob Rae states: "Education is the bedrock of opportunity." Ontario can address both economic opportunity and poverty reduction by shifting government priorities from creating jobs, to raising skills so that employers can hire qualified workers.

As figure 2 has shown, those with postsecondary credentials are more likely to be working than those without: 87 per cent of those with college credentials, aged 25 to 44, are working, compared to 77 per cent without postsecondary credentials. Not surprisingly, it is worst for those who have not completed high school, as only 64 per cent are working (F2).

Moreover, if people who have not completed high school are working, they earn half as much as those with college credentials make (figure 12). And they are often not far from the poverty line. Their average incomes are 77 per cent of Statistics Canada low income cutoffs for an urban single parent with two children, but still above the cutoff for a single individual in a rural area. Unskilled workers also have a far higher accident rate than other employees. "When labour is tight, safety and quality concerns are top of mind."<sup>7</sup> (F12)

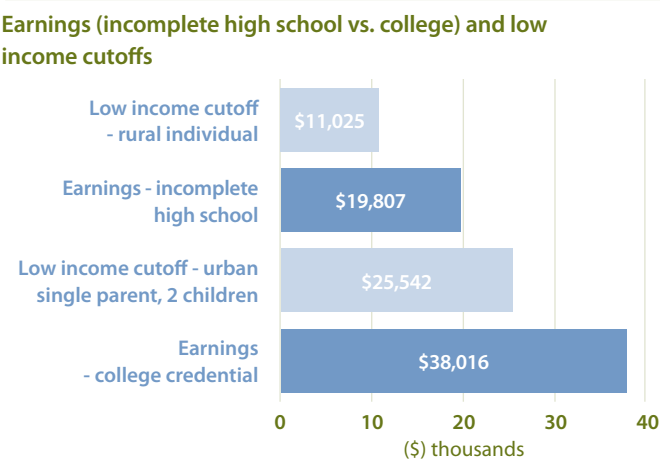
In addition, members of under-represented groups, such as recent immigrants, aboriginals or those with disabilities, without postsecondary credentials, are much less likely to be working than those who have postsecondary credentials (figures 13a, 13b, 13c) (F13).

Ontario's Workforce Shortage Coalition points to two main approaches to addressing skills shortages, which should be implemented in tandem:

### 1. Adding workers

- *Unskilled youth unemployment* (no PSE credential) was 14.7 per cent, compared to 14.1 per cent in the rest of the country and 7.8 per cent for Ontario college graduates (2001-06). If their employment rate were the same as the rest of the country, 12,000 more young adults would have jobs.

Figure 12 Earnings (incomplete high school vs. college) and low income cutoffs

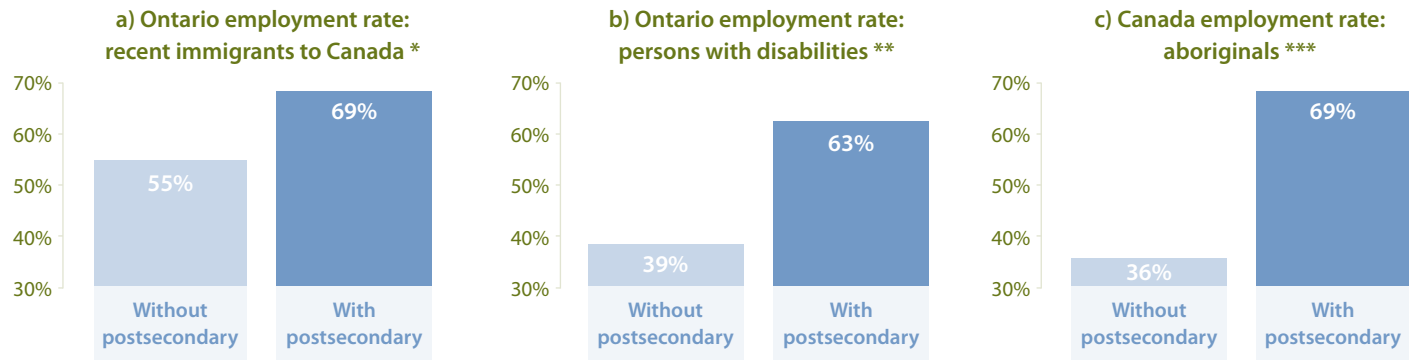


Source: Statistics Canada table 282-0048 and low income cut-off data, Colleges Ontario, 2004 data.

<sup>7</sup> Ron McGillis, Manager - Safety, Compliance & Contractor Quality at Ontario Power Generation. June 20, 2006.

Figure 13a,b,c

F13



\* Ontario 2007, immigrants 0 to 5 years in Canada, ages 25-54 Sources: Statistics Canada labour force special tabulation, Colleges Ontario.  
 \*\* 2001, ages 25-54 Source: Statistics Canada: 282-0004 and special tabulation (PALS) and Colleges Ontario.  
 \*\*\* 2001, Canada, ages 15+ Sources: CSLs Research Report No. 2007-04 and Colleges Ontario.

- *Unskilled adults:* Adult literacy rates are not improving: 40 per cent lack the literacy and numeracy skills they need. If adults aged 25 to 64 with high school or less had the same employment rate as those with college credentials, 289,000 more would have jobs.

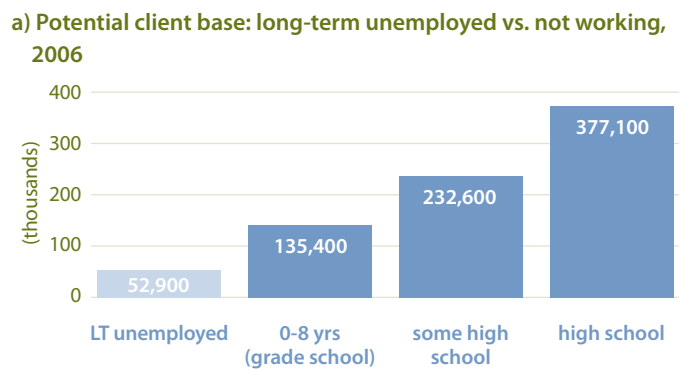
2. Raising skills and productivity of workers

- *Adult involuntary part-timers:* 319,000 adults aged 25 to 64 work part time, but can't find a full-time job. Ontario's involuntary part-time rate is higher than for peer states.
- *Internationally trained individuals* have much more difficulty in finding jobs which make use of their skills than a decade ago. A recent survey indicated that 66 per cent planned to pursue further education or training upon arrival in Canada, and that 43 per cent had enrolled in at least one training program in Ontario, including language training (68 per cent), postsecondary courses (23 per cent) and job related courses (nine per cent) (figures 14a, 14b)

F14.

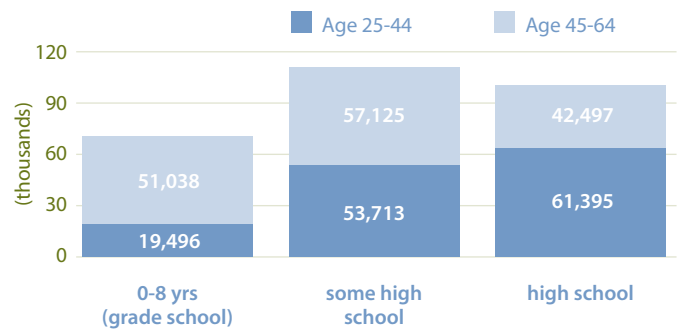
Figure 14a,b

F14



Source: Statistics Canada, table 282-0004, 282-0048, Colleges Ontario.

b) Ontario's net skills-based employment gap



Note: Employment gap for each group is based on the difference between its employment rate and the comparable employment rate for those with college certification.

Source: Statistics Canada, 282-0004, Colleges Ontario.

## 7.0 Appendices

### Appendix 1

A 1

#### Ontario college business certifications

Students in Ontario college business programs can begin or complete industry-approved certificates in over 25 areas:

Finance
Certified Financial Planner (CFP)*
Fellow Life Management Institute (FLMI)*
Associate Institute of Canadian Bankers (AICB)
Chartered Accountant (CA)
Certified General Accountant (CGA)
Certified Fraud Examiner (CFE)
Financial Management Advisor (FMA)
Canadian Securities Course (CSC)
Life Licence Qualification Program (LLQP)
Business-Insurance Diploma Chartered Insurance Professional (CIP)
International Business
Certified International Trade Professional (CITP)*
Certified in Production and Inventory Management (CPIM)*
Certified Supply Chain Professional (CSCP)*

Marketing
Certified CRM Professional*
Graduate of the Canadian Institute of Marketing (G.C.Inst.M.)
Certified Sales Professional
Certified Purchasing Practitioner
Human Resources
Certified Human Resources Professional (CHRP)
Certified Training and Development Professional (CTDP)
Certified Employee Benefits Specialist (CEBS)*
Payroll Compliance Practitioner (PCP)
Certified Payroll Manager (CPM)
Management and Governance
Certified in Management (CIM)
Certified Municipal Officers (CMO)
Associate (ACIS) from the ICSA Institute of Chartered Secretaries and Administrators*
Conduct and Practices Handbook Course
Partners Directors and Senior Offices Course

\* Internationally recognized

Source: Colleges Ontario.

### Appendix 2

A 2

#### Ontario economy: performance and prospects

	Actual *		Projected *			Long term outlook *		
	2006	2007	2008	2009	2010	2010-14	2015-19	2020-25
Nominal Gross Domestic Product (GDP)	3.9	5.1e	2.8	3.9	4.6	4.8	4.8	4.7
Consumer price index	1.8	1.8	1.4	1.9	2	1.8	2	2.1
Real Gross Domestic Product (GDP)	2.1	2.1e	1.1	2.1	2.7	3	2.6	2.3
Employment	1.5	1.6	1	1.1	1.3	1.4	1.3	0.9
Job creation (000s)	95	101	68	76	87			
Housing starts (000s)	73.4	68.1	64	63	66	78.3	77.7	76.1
Personal consumption	3.5	3.4c	2.5	2.6	2.6	2.7	2.5	2.3
Residential construction	1.1	0.6e	-0.5	1.3	2.5	1.6	1.9	1.6
Non-residential construction	10.4	4.6e	2.5	2	2.9	3.9	1.8	2.6
Machinery and equipment	11.2	8.4e	6	4.1	4.6	4.3	2.5	2.8

\* Average annual per cent increase unless otherwise specified

Source: Ontario Ministry of Finance. 2008 Ontario Budget and Toward 2025: Assessing Ontario's Long-Term Outlook (2005) (base case scenario).