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GRADUATES IN THE ECONOMY18

ENVIRONMENTAL SCAN 2018

GRADUATES IN THE ECONOMY 18

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GRADUATES IN THE ECONOMY 18

1. HIGHLIGHTS

Over the past 25 years, rising Ontario employer skill requirements have led to an increase of over 900,000 more jobs for adults aged 25 to 44 with post-secondary credentials, largely offset by a drop of 700,000 jobs for those without post-secondary credentials.

Every sector now employs fewer young adults without post-secondary credentials. The largest per cent drops are in 'traditional' industries such as manufacturing, accommodation and food services.

Ontario's experience is consistent with other jurisdictions: employment rates for young adults without post-secondary education are now typically at least 25 percentage points lower than for post-secondary graduates.

Ontario's exceptional level of post-secondary completion rates is a key competitive advantage. Measured by the per cent of 'tertiary' graduates only (i.e., excluding tradespersons), Ontario ranks far above the U.S. and Europe. But when tradespersons are included, leading European countries score much higher.

Within North America, Ontario has three times as many college graduates as the U.S., per capita. The graduates contribute to exports per capita at twice the U.S. level. Ontario competes with high post-secondary educational attainment states, such as Massachusetts and New York, in financial services, technology and entertainment, and with mid-level post-secondary educational attainment states, such as Michigan and Ohio, in manufacturing. Surprisingly, some southern U.S. states have post-secondary educational attainment levels lower than Chile or Turkey.

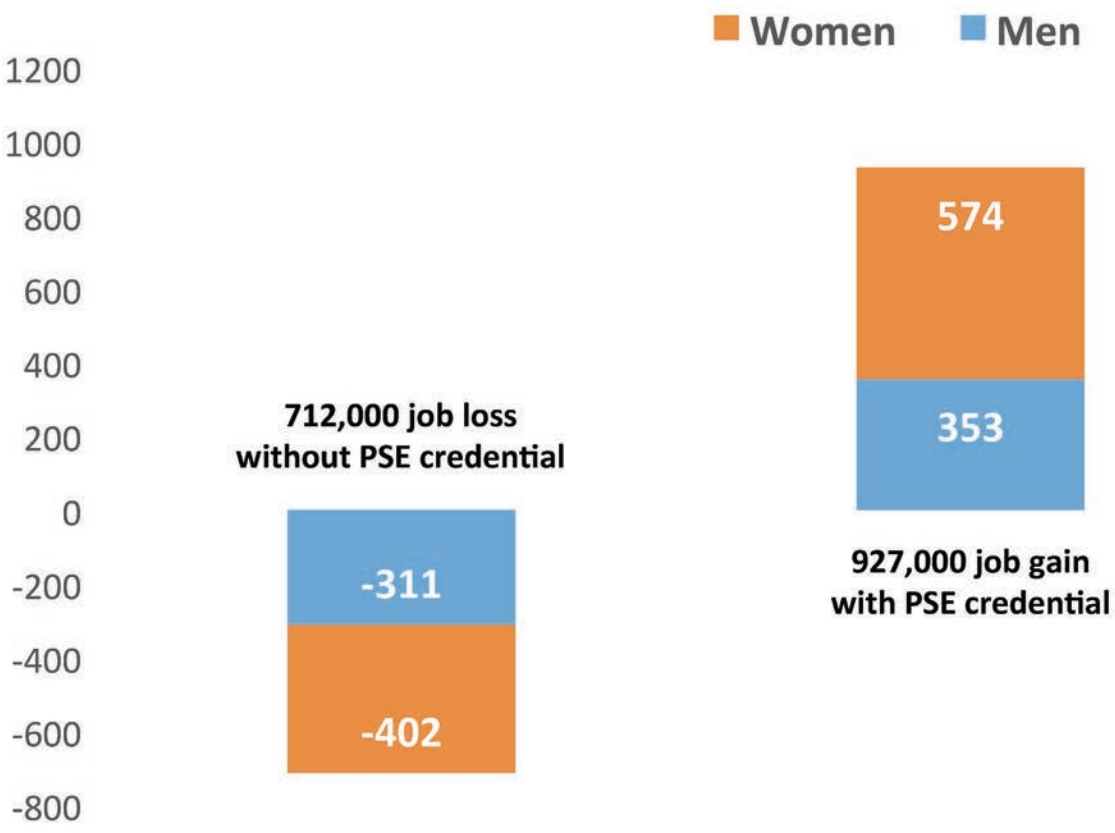
Ontario's skills advantage is weakening. China, Japan, Korea and Indonesia now have three times as many young adults with post-secondary credentials as does the U.S. And some leading European countries have higher employment levels than Ontario. They typically pursue employer-defined quality, including apprenticeships, technology programs, international credential transferability and often, adult skills training, to boost employment, sustain high exports per capita (three to six times the U.S. level), and to reduce income inequality.

In Ontario, access to post-secondary education continues to be a challenge for underrepresented groups, including Indigenous peoples and those with disabilities, resulting in lower employment prospects. Recent immigrants also experience employment challenges, especially if their first language is not English or French. As well, Canada's record in providing employability skills training for adults with low literacy levels is much worse than Nordic countries, and even than the U.S.

Finally, both individuals and governments in Canada benefit from a high return on investment from post-secondary education: incomes of graduates are significantly higher than for high school graduates and governments benefit from higher tax revenues.

2. FEWER JOBS FOR YOUNG ADULTS WITHOUT POST-SECONDARY CREDENTIALS

2.1 Ontario employment change: with and without a post-secondary education (PSE) credential

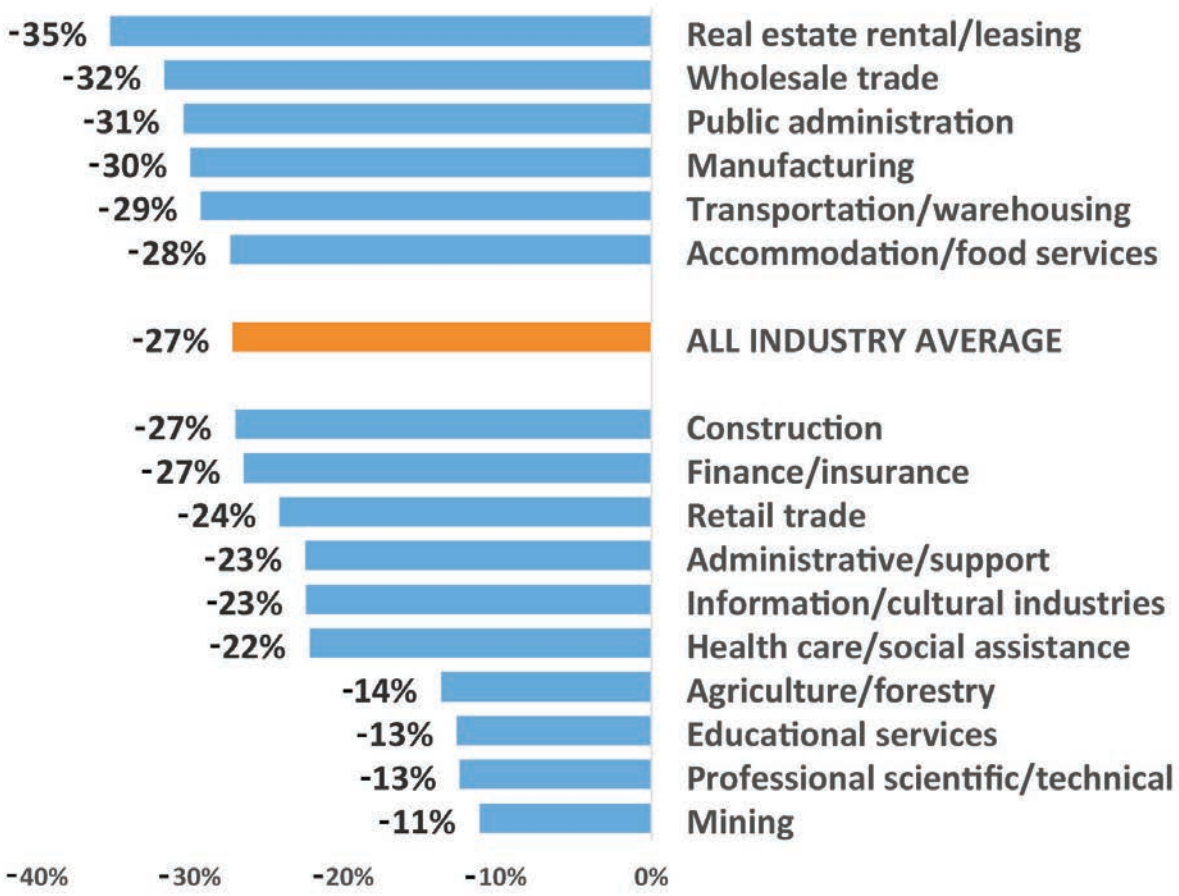


Note: Ages 25 to 44, '000, 1990-2017.
Source: Statistics Canada Labour Force Survey, Table 282-0004.
Prepared by Colleges Ontario.

Over the past quarter century, there has been considerable change in the educational attainment of Ontario's workforce, and that of many advanced economies.

Rising employer expectations have especially impacted opportunities for young adults aged 25 to 44. Compared to 1990, in Ontario alone, there has been a drop of over 700,000 jobs for those without post-secondary credentials, with an increase of over 900,000 jobs for those who have completed at least one post-secondary credential.

2.2 Ontario industry employment decline for those without a post-secondary credential



Note: Per cent employment change by industry, ages 25 to 34, '000, 1990-2015.
Source: Statistics Canada Labour Force Survey special tabulation.
Prepared by Colleges Ontario.

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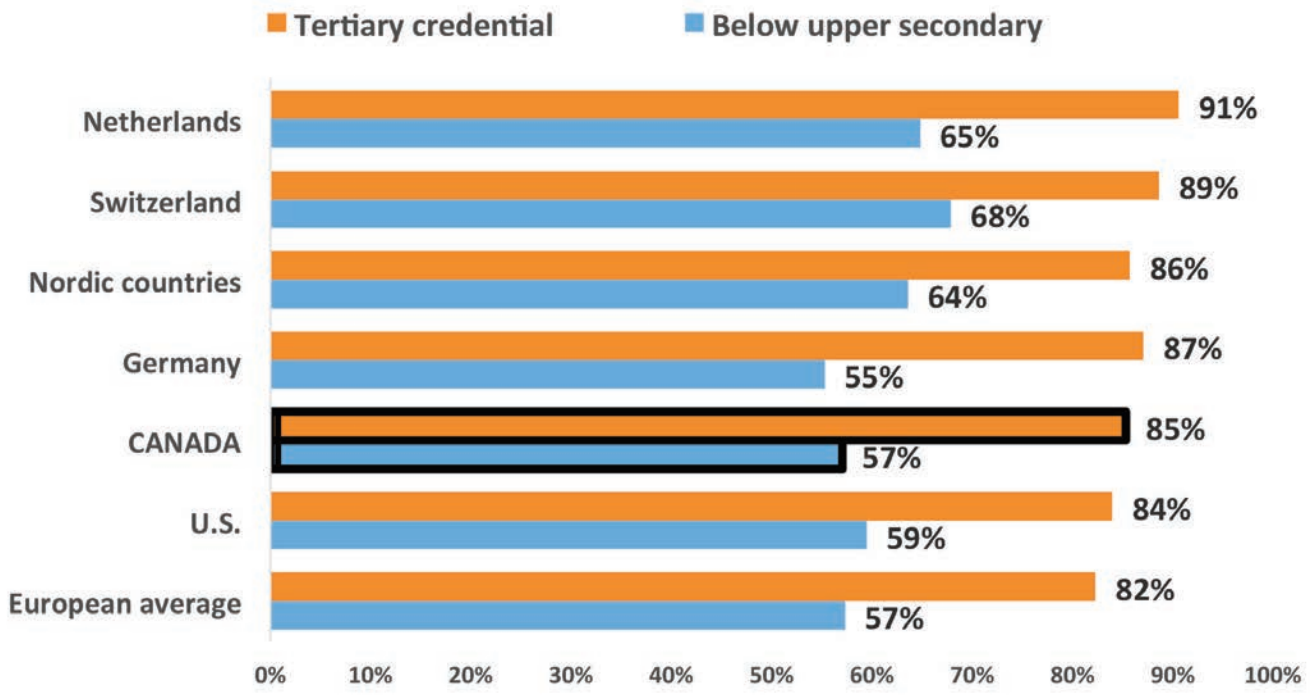
Every industry in Ontario employs fewer young adults, aged 25 to 34, without post-secondary education credentials than 25 years ago.

On average, the drop is 27 per cent, with higher percentage declines in formerly 'traditional' industries such as manufacturing, accommodation and food services.

2.3 Employment rates with and without tertiary credentials, selected jurisdiction



Note 1: Selected jurisdictions, ages 25 to 34, 2016.
Note 2: Nordic countries include Denmark, Finland, Iceland, Norway and Sweden.
Note 3: Europe includes Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, the Slovak Republic, Spain, Sweden and the United Kingdom.
Source: *Education at a Glance 2017*: OECD Indicators, OECD Publishing, Paris. Table A5.2, Trends in employment rates of 25-to-34-year-olds, by educational attainment (2000, 2005, 2010, 2015 and 2016).
Prepared by Colleges Ontario.

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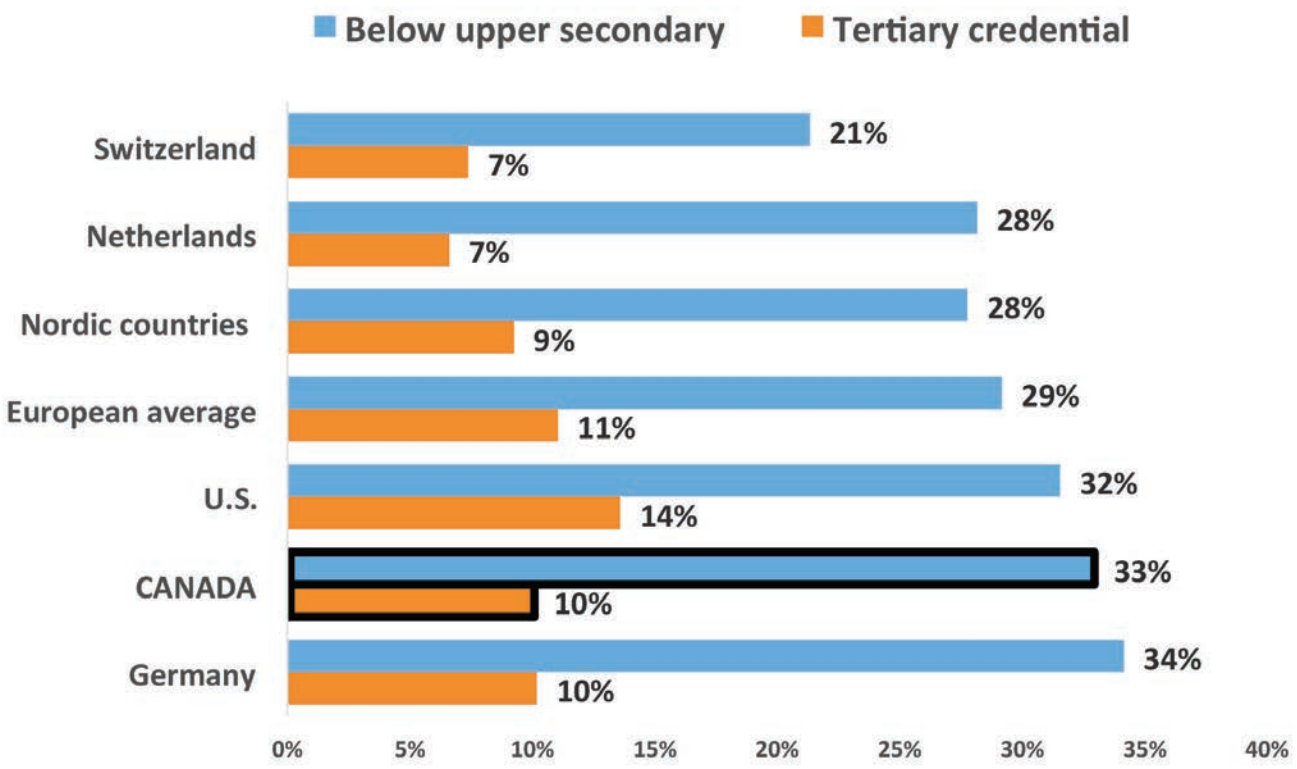
Workplaces have become more complex, requiring ever more sophisticated and specific skill sets. As a result, in many advanced economies, there is a 25 to 35 percentage point difference in employment rates between young adults, aged 25 to 34, with and without post-secondary credentials.

In Canada, while 85 per cent of those with a post-secondary credential are employed, only 57 per cent of those without post-secondary credentials are employed.

2.4 Inactivity rates, with and without tertiary credentials, selected jurisdictions



Note 1: Selected jurisdictions, ages 25 to 34, 2017.
Note 2: Nordic countries include Denmark, Finland, Iceland, Norway and Sweden.
Note 3: Europe includes Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, the Slovak Republic, Spain, Sweden and the United Kingdom.
Source: *Education at a Glance 2017*: OECD Indicators, OECD Publishing, Paris. Table A5.4, Employment, unemployment and inactivity rates of 25-34 year-olds, by educational attainment (2016).
Prepared by Colleges Ontario.

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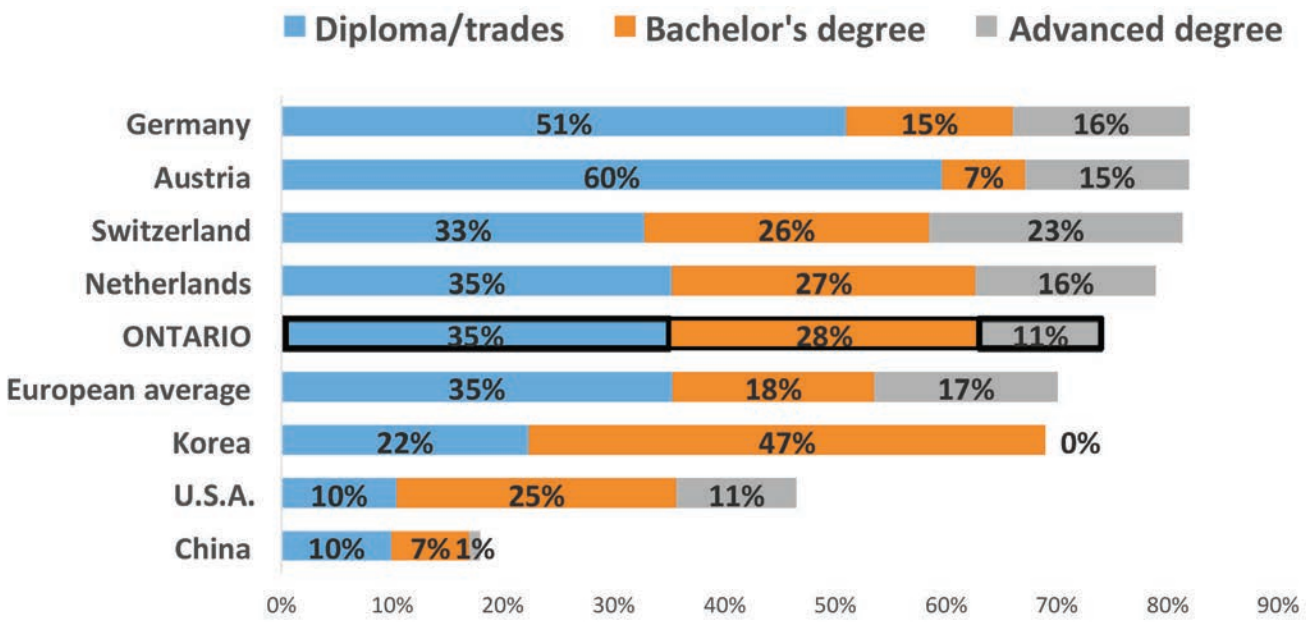
The huge difference in employment rates between those with and without post-secondary credentials is explained not by differing unemployment rates, but mainly by those who are inactive: neither working nor seeking a job.

In Canada, while 10 per cent of those with a post-secondary credential are inactive, a full one-third of those without post-secondary credentials are inactive.

3. MATCHING CREDENTIALS TO EMPLOYER NEEDS: AN INTERNATIONAL COMPARISON

3.1 Post-secondary educational attainment: Ontario and selected jurisdiction

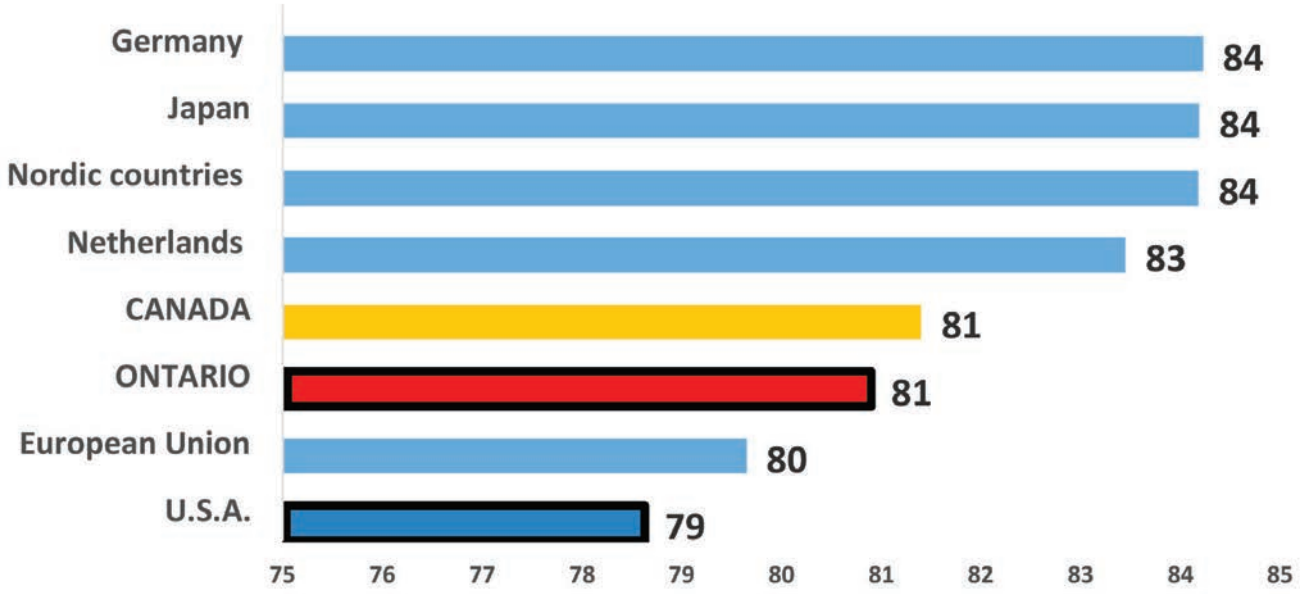


Note 1: Selected jurisdictions, ages 25 to 34, 2015.
Note 2: Diploma/trades includes both OECD-defined "post-secondary non-tertiary - vocational" (mainly apprenticeship programs) and "short-cycle tertiary programs" (mainly two-to-three-year diplomas).
Sources: *Education at a Glance 2016*: OECD Indicators, OECD Publishing, Paris. Table A1.2, Percentage of adults who have attained tertiary education, by type of program and age group (2015); Table A1.4, Educational attainment of 25- to 34-year-olds, by programme orientation (2015); Table A1.4, Educational attainment of 25- to 34-year-olds, by programme orientation (2015); and Colleges Ontario estimates adjusted from a Statistics Canada Labour Force Survey 2014 special tabulation.
Prepared by Colleges Ontario.

When trades credentials are added to the OECD's "tertiary" education rates for people 25- to 34-years-old, Ontario's position falls from second to 11th place, just ahead of the European average. In contrast to Europe, Korea and Japan, the U.S. lags in this broader measure of post-secondary educational attainment, at 30th place.

Moreover, both Europeans and North Americans must look to rapid changes in Asia. In comparison with the United States' 10 million post-secondary graduates aged 25 to 34, China now has 20 million graduates, and Japan, Korea and Indonesia together have nine million graduates.

3.2 Employment rates, selected jurisdictions



Note 1: Selected jurisdictions, ages 25 to 54, 2016
Note 2: Nordic countries include Denmark, Finland, Iceland, Norway and Sweden.
Sources: OECD, Employment rate by age group, 25- to 54-year-olds, per cent in same age group, 2016, https://data.oecd.org/emp/employment-rate-by-age-group.htm, and Statistics Canada, Table 282-0002, Labour Force Survey estimates (LFS), by sex and detailed age group, annual.
Prepared by Colleges Ontario.

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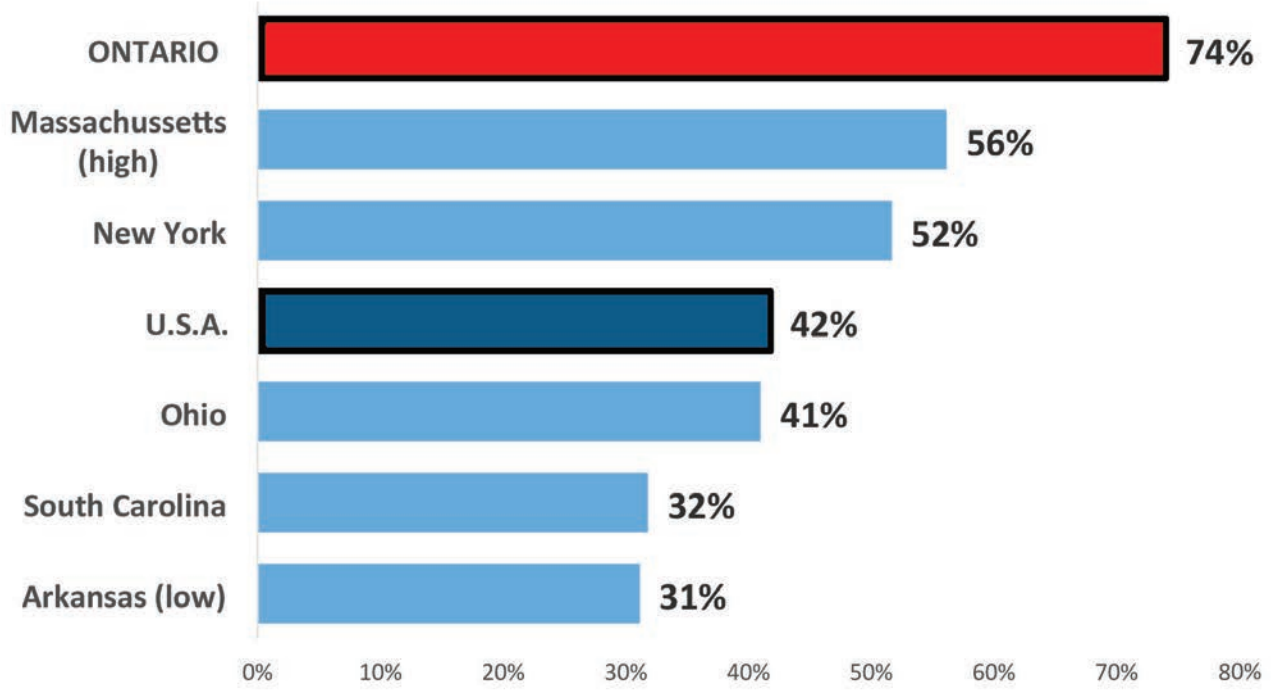
By focusing on employer-defined quality, including apprenticeships, emphasis on technology programs, international transferability of credentials, and retraining older workers without educational credentials, leading European countries and Japan have been able to boost employment rates, sustain high exports per capita[1], and maintain less inequality than the U.S., and to a lesser extent, Canada and Ontario.[2]

[1]2014 exports per capita for the US were $5,057; for Ontario ($11,780); Germany ($18,316); the Nordic countries ($19,273); and the Netherlands ($33,652). Sources: https://en.wikipedia.org/wiki/List_of_countries_by_exports_per_capita; http://www.sourcefromontario.com/tradefactsheet/en/page/tradefactsheet_ontario.php; and http://www.canadianforex.ca/forex-tools/historical-rate-tools/yearly-average-rates.

[2]"Income inequality in Canada exceeded that in most European countries, including France, Germany, Denmark, Sweden, Norway and Finland (where the Gini coefficient ranged from 0.248 to 0.295); was similar to that in Japan, New Zealand and Australia; and was below that in the United Kingdom (0.345) and the United States (0.378)." David A. Green, W. Craig Riddell and France St-Hilaire, editors, *Income Inequality: The Canadian Story.* The Institute for Research on Public Policy (IRPP), 2016, Page 6.

3.3 Post-secondary educational attainment: Ontario, U.S.A. and selected U.S. states



Note: Ages 25 to 34.
Sources: U.S. Census Bureau, 2015 American Community Survey Table 15001, 1-Year Estimates and Statistics Canada Labour Force Survey 2015 special tabulation.
Prepared by Colleges Ontario.

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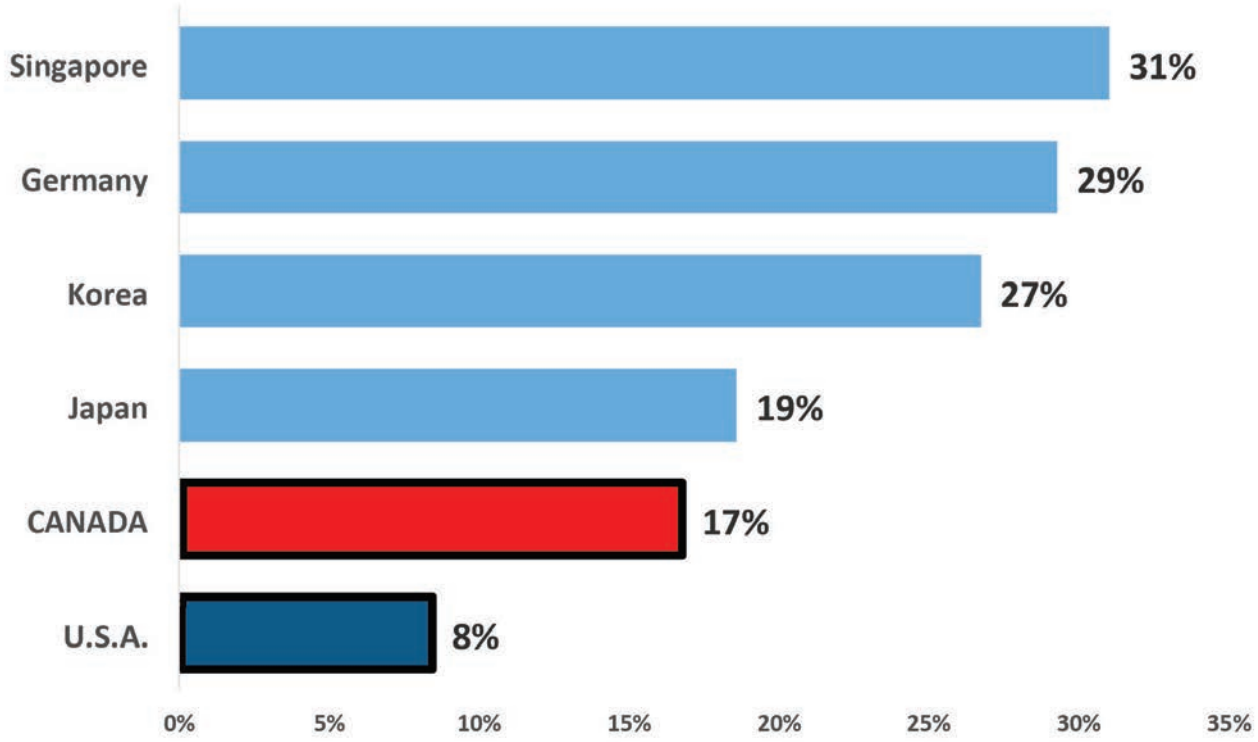
Ontario's educational attainment compares well with the U.S. average. However, there is huge variation by state. Massachusetts has a moderately high attainment rate by advanced economy standards, with high levels of advanced degrees.

Arkansas' rate (31 per cent) is the lowest in the U.S., and is lower than Chile or Turkey (each at 39 per cent) and only modestly better than Mexico (21 per cent) or China (18 per cent).

3.4 Engineering, manufacturing and construction credentials, selected jurisdictions

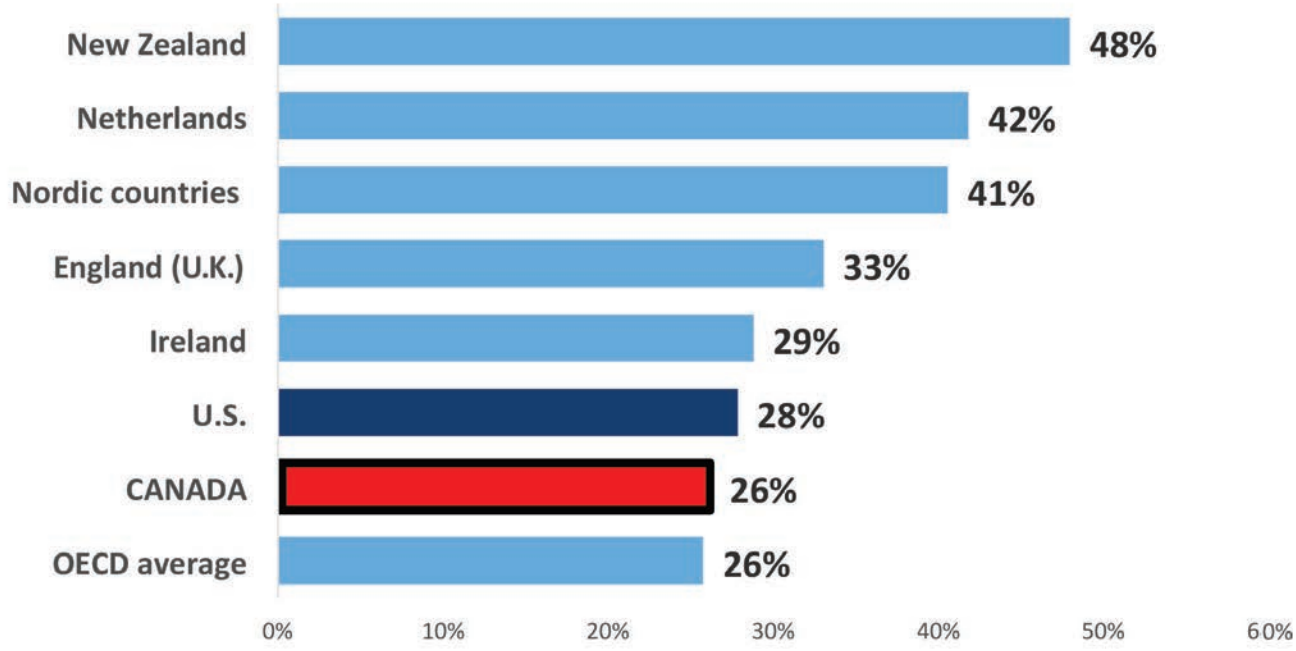


Note: Per cent of all graduates, ages 25 to 34, 2015.
Source: Education at a Glance 2016: OECD Indicators, OECD Publishing, Paris.
Figure A1.5, Field of education studied among tertiary-educated adults, by gender (2012 or 2015).
Prepared by Colleges Ontario.

According to the OECD, the Canadian post-secondary system is about average among advanced economies in graduating engineering, manufacturing and construction credentials.

Countries such as Singapore, Germany and Korea are far above average while the U.S. is far below average.

3.5 Job-related education for adults without upper secondary credentials, selected jurisdictions



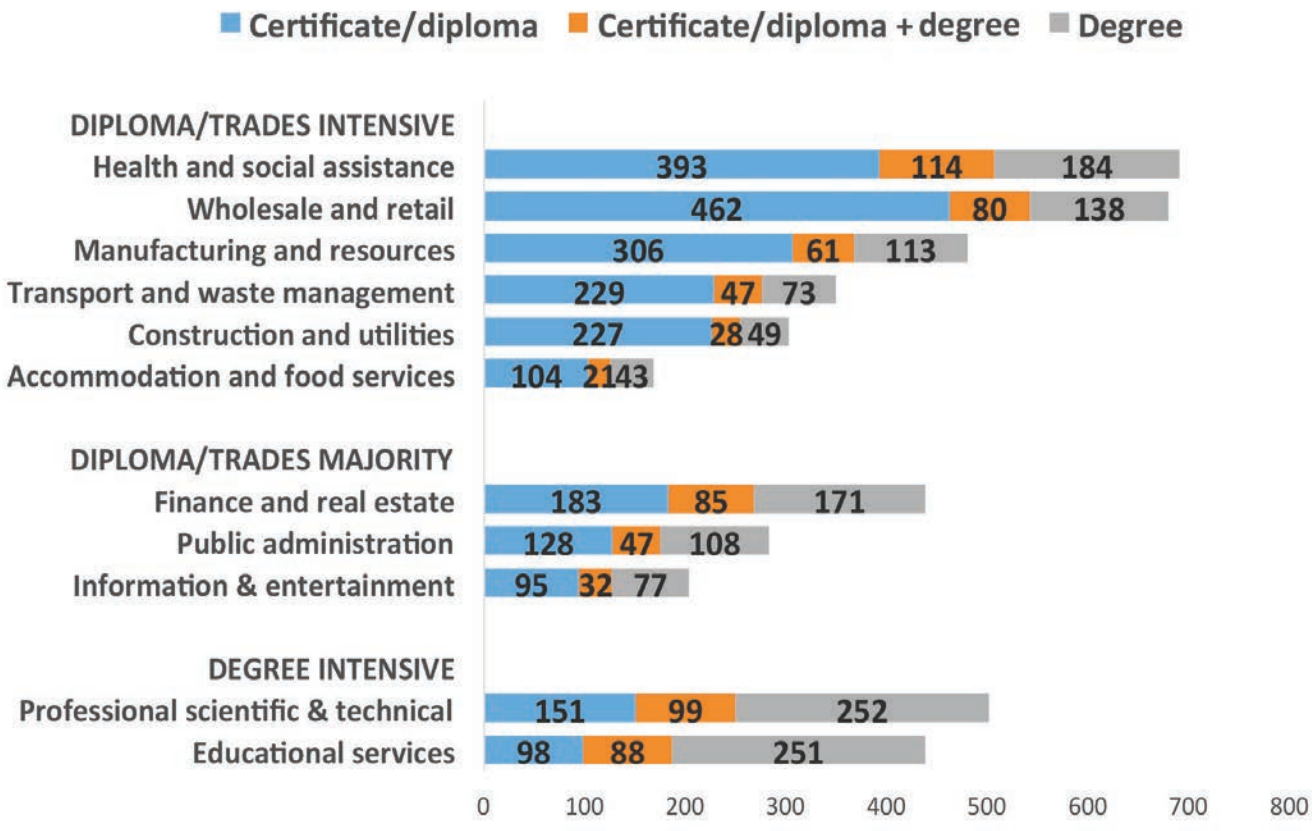
Note 1: Annual participation rates, selected jurisdictions.
Note 2: Nordic countries include Denmark, Finland, Norway and Sweden.
Source: *Education at a Glance* 2016: OECD Indicators, OECD Publishing, Paris, Table C6.3 (web only). Participation in formal and/or non-formal education, by literacy proficiency level and educational attainment (2012 or 2015).
Prepared by Colleges Ontario.

Several countries, notably New Zealand, the Netherlands and the Nordic countries, are well ahead of other advanced economies in providing retraining to older workers without post-secondary educational credentials.

In comparison, the U.S. and Canada are at the OECD average.

4. MATCHING CREDENTIALS TO EMPLOYER NEEDS: INDUSTRY, ENTREPRENEURSHIP, AND INNOVATION

4.1 Post-secondary graduates employed in Ontario industries



Note: Thousands of jobs, 2015.
Source: Colleges Ontario, based on a Statistics Canada Labour Force Survey 2015 special tabulation and National Housing Survey 2011 special tabulation.
Prepared by Colleges Ontario.

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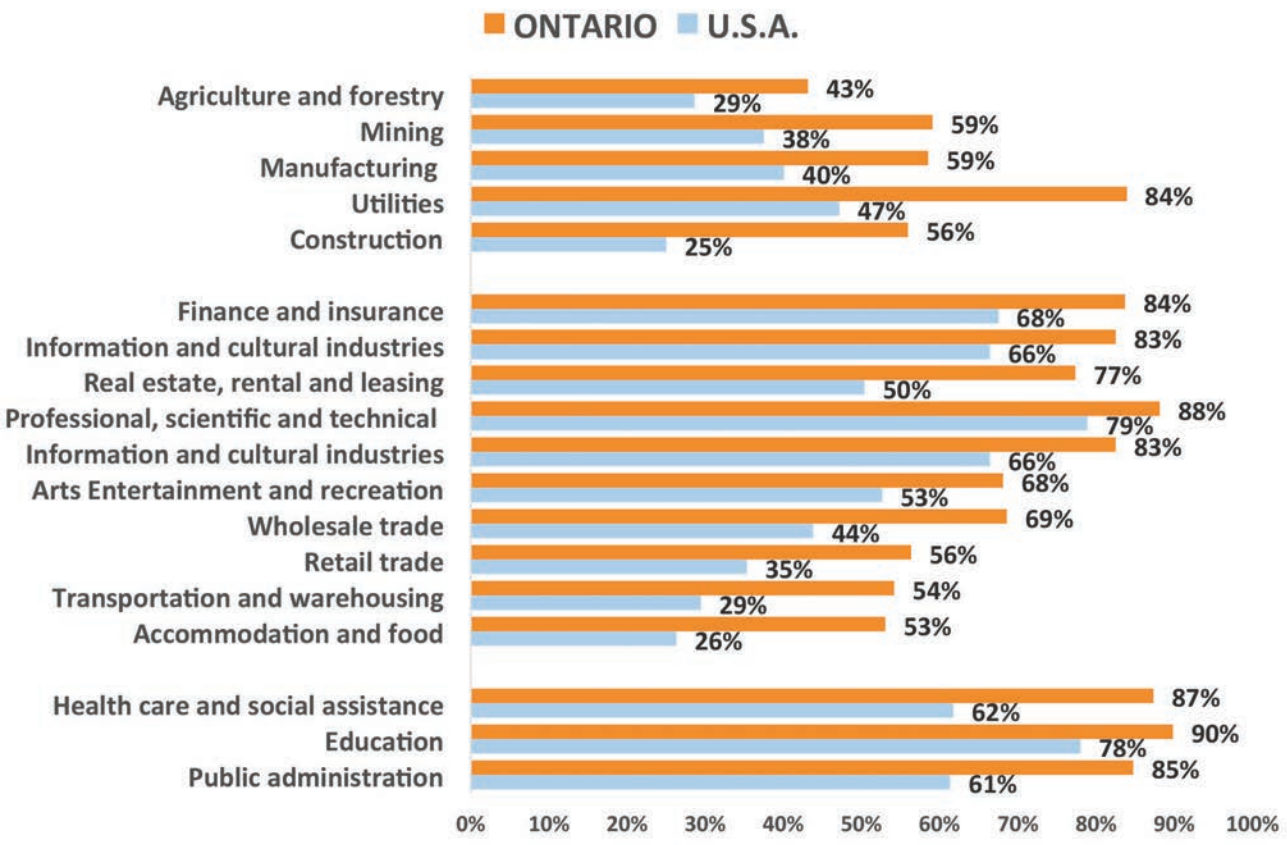
Ontario's diploma and trades graduates play a critical role in export industries (manufacturing, resources and tourism), electric power generation and transmission, infrastructure, real estate, insurance, and health care.

A recent survey of more than 1,500 employers, which employ 13.5 per cent of Ontario's workforce, found that "smaller firms (one to 19 employees) have the greatest need for two- or three-year college diplomas, followed by trades and four-year degrees."[3]

The broader public sector (educational services, health and social services, and public administration) and the professional, scientific and technical services sector each employ twice the concentration of degrees as the private sector.

[3] The Conference Board of Canada, *The Need to Make Skills Work: The Cost of Ontario's Skills Gap*, 2013, Page 20.

4.2 Post-secondary graduates as a share of Ontario/U.S. industry



Source: US Bureau of Labor Statistics. Table 13, Employed persons by detailed industry and educational attainment (25 years and over), Annual Average 2015 (Source: Current Population Survey) and Statistics Canada Labour Force Survey 2015 special tabulation.
Prepared by Colleges Ontario.

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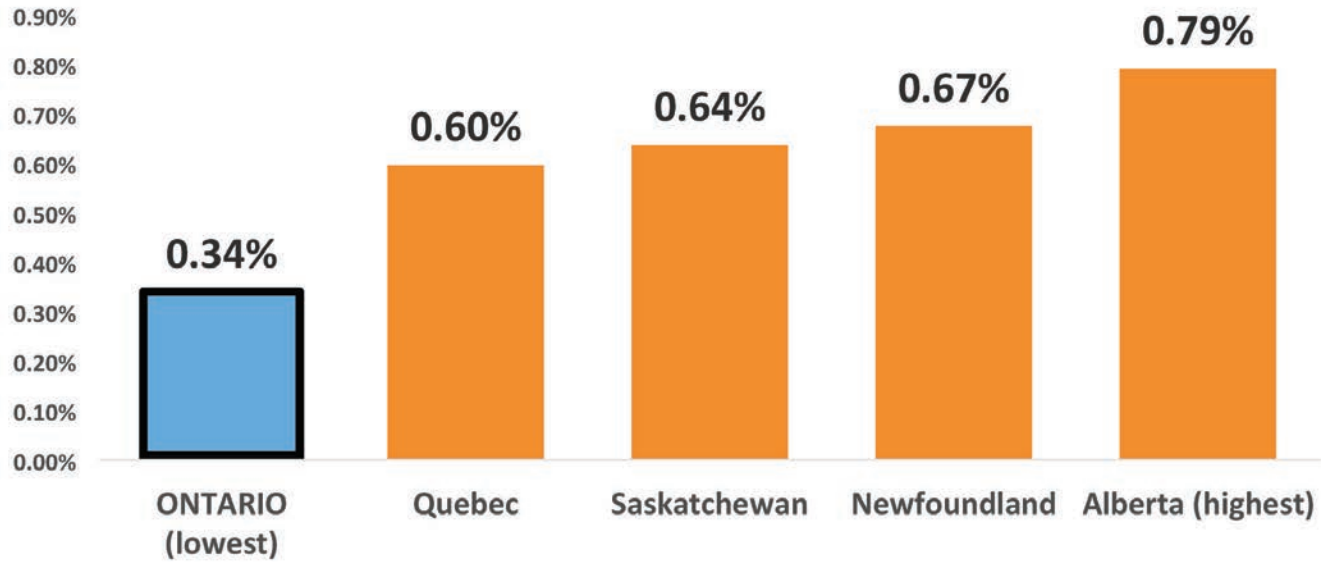
Ontario's strong post-secondary education system enables every Ontario industry to employ a significantly more skilled workforce than its U.S. counterpart industry.

Ontario manufacturers employ 19 percentage points more post-secondary graduates (i.e., 59 per cent less 40 per cent); Ontario information and cultural industries employ 17 percentage points more post-secondary graduates, and in finance and insurance, 16 percentage points more.

4.3 Certification of tradespersons, Ontario vs. selected provinces



Note 1: Apprentices who passed their certificates of qualification examinations in 2015.
Note 2: Newly certified tradespersons as a per cent of total employment, ages 25 to 44.
Prepared by Colleges Ontario, based on Statistics Canada tables 282-0004 and 477-0054.

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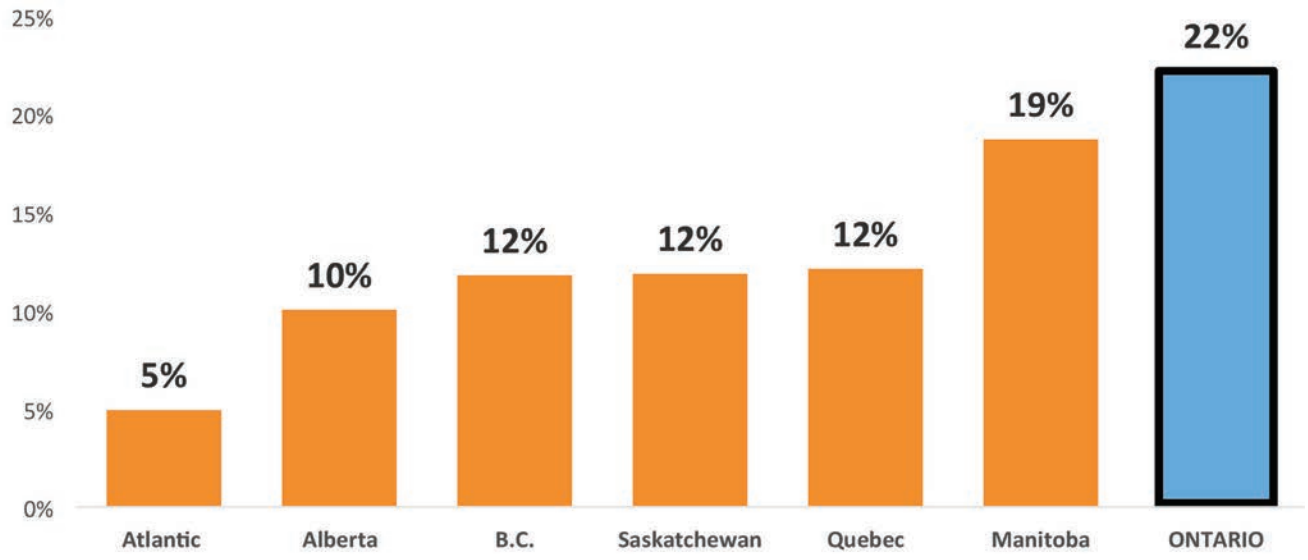
In 2015, other provinces had twice as many apprentices who succeeded in passing their certificate of qualification examinations (after completing both educational and workplace training requirements) to qualify as tradespersons as compared to Ontario, when measured against the size of the provincial workforce ages 25 to 44.

Apprenticeship completions were especially high in Quebec, and the western provinces.

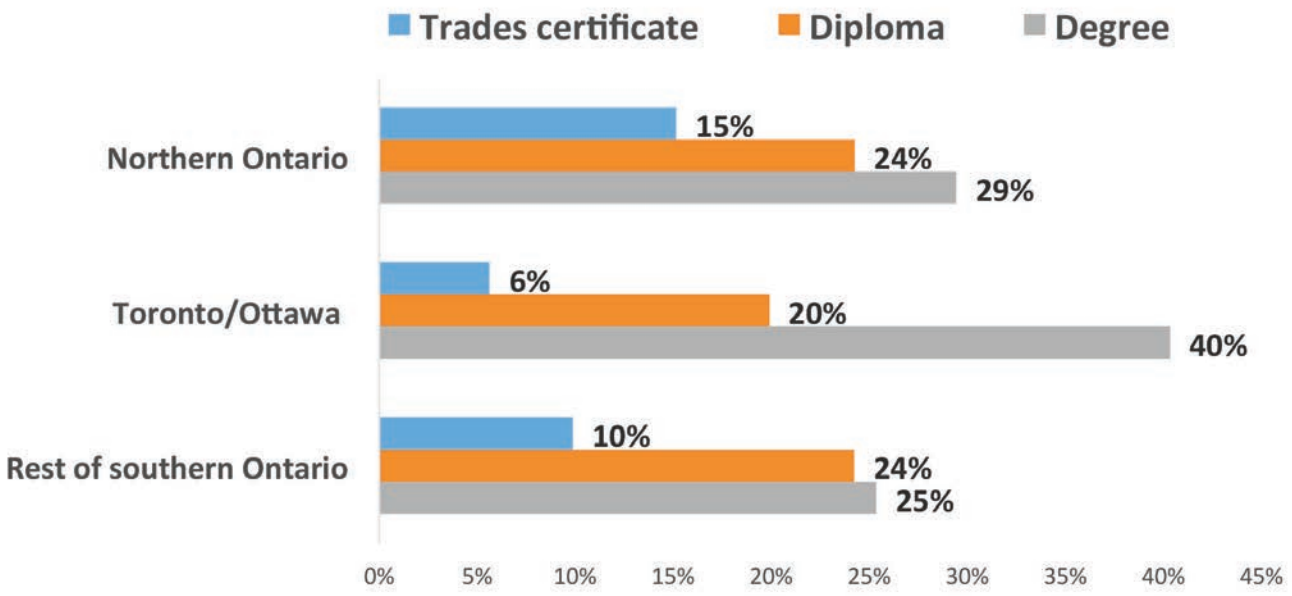
4.4 Certification of women tradespersons, Ontario vs. selected provinces



Note: Women apprentices who passed their certificates of qualification examinations in 2015, as a percentage of total.
Source: Statistics Canada table 477-0054.
Prepared by Colleges Ontario.

However, Ontario led in the share of women completing their apprenticeships in 2015.

4.5 Post-secondary credentials held by entrepreneurs in Ontario communities

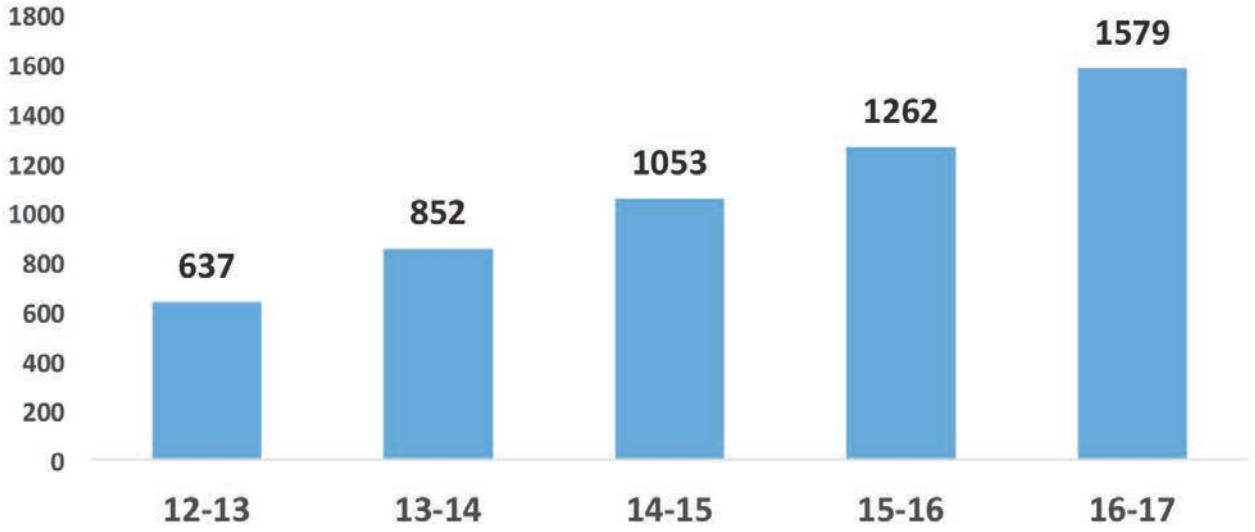


Note 1: "Entrepreneurs" includes only self-employed with employees.
Note 2: Per cent of total self-employed with employees, 2016.
Source: Colleges Ontario, Statistics Canada 2016 census special tabulation.

Educational attainment of entrepreneurs with employees tends to vary by the size of the community:

- In Toronto, due to its concentration of head offices, professional services and post-secondary institutions, a higher share of entrepreneurs have degrees.
- Typically, smaller communities rely more heavily on diploma and trades certificate holders.
    - Northern Ontario, especially, has a very high concentration of tradespersons with employees.
    - In most communities in Ontario, about a quarter of employers with employees have a college diploma.

4.6 Ontario college applied research projects



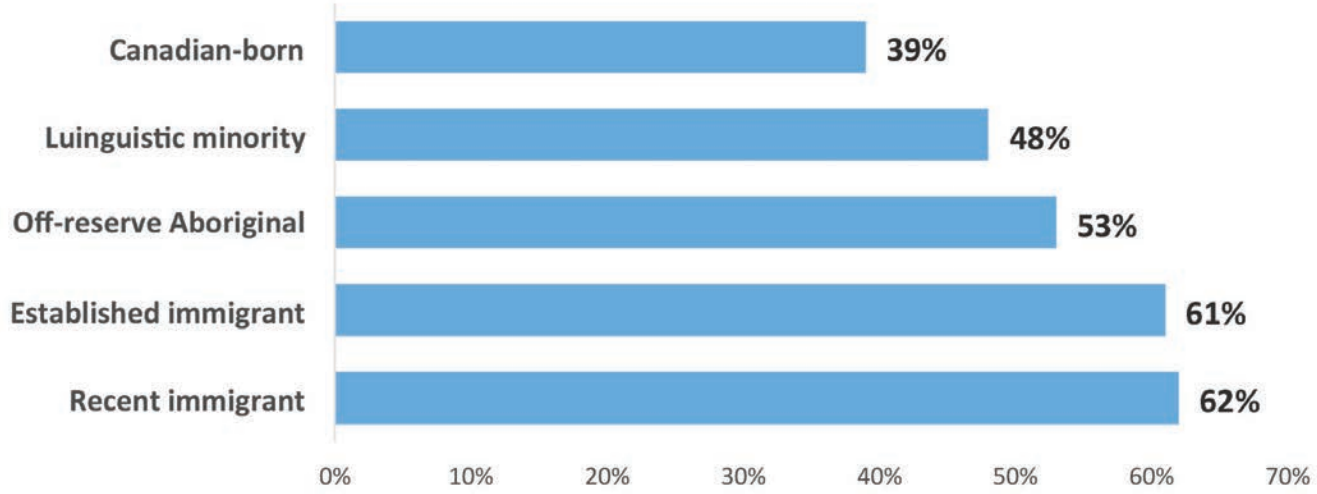
Source: Colleges and Institutes Canada, annual survey of applied research.
Prepared by Colleges Ontario.

College applied research is focused almost entirely on client-driven requirements to innovate to improve their competitive positions.

Over the past five years, applied research in Ontario has grown quickly. The number of clients is up almost 150 per cent, to almost 1,600 in 2016-17.

5. ACCESS TO POST-SECONDARY EDUCATION IN ONTARIO

5.1 Low adult literacy and numeracy rating for selected Ontario populations



Note: Per cent scoring at or below level 2 in literacy and numeracy, 2012.
Source: Statistics Canada. Table 477-0087, Literacy and numeracy, average scores and distribution of proficiency levels, by Aboriginal (off-reserve), immigrant or minority language status, by sex, population aged 16 to 65, selected provinces and Territories, 2012.
Prepared by Colleges Ontario.

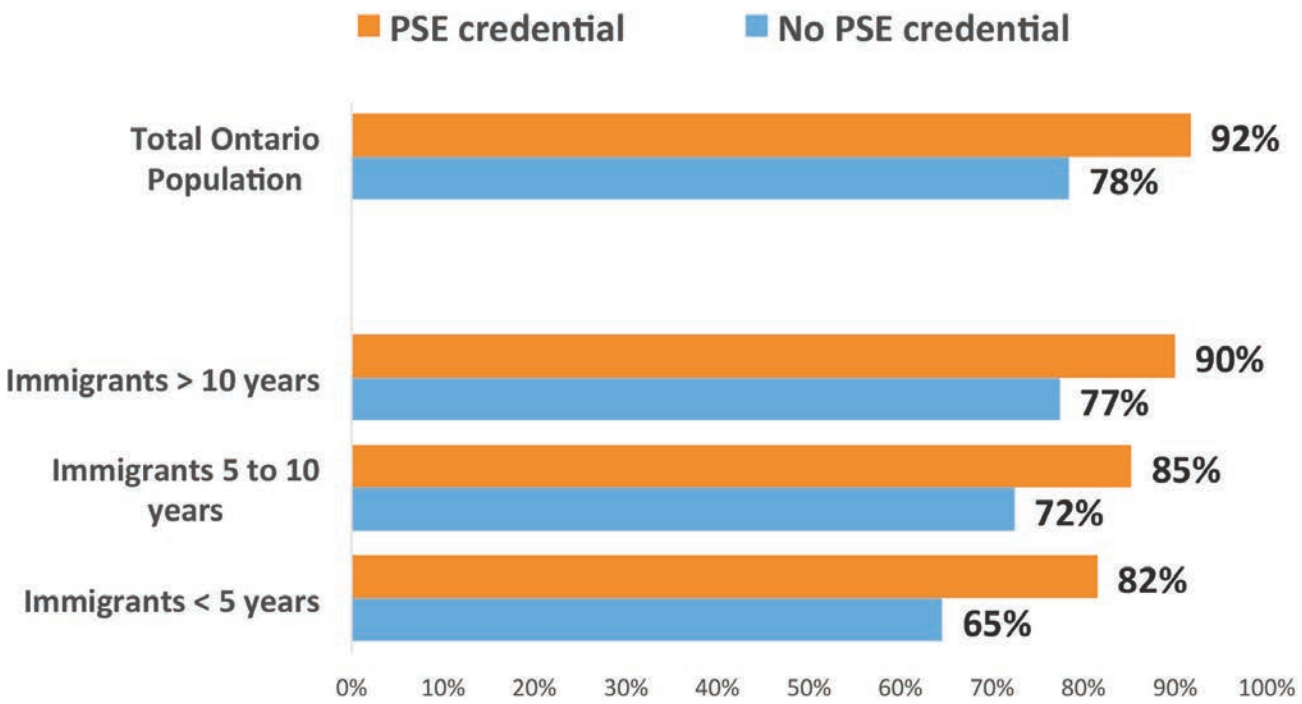
In Canada, close to half the population score at or below level 2 in literacy and numeracy, a level considered minimal for success in the workforce.

About two in five Canadian-born adults have only level 2 or lower levels of literacy and numeracy[4]. Many of these individuals may experience difficulties in their careers.

However, adults from underrepresented groups are much more likely than Canadian-born adults to have lower levels of literacy and numeracy than are often required for effective participation in today's workforce.

[4] At level 2 in numeracy, for example, students can interpret and recognize situations in contexts that require no more than direct inference. They can extract relevant information from a single source and make use of a single representational mode. Students at this level can employ basic algorithms, formulae, procedures, or conventions. They are capable of direct reasoning and making literal interpretations of the results.

5.2 Employment rates for immigrants by educational attainment



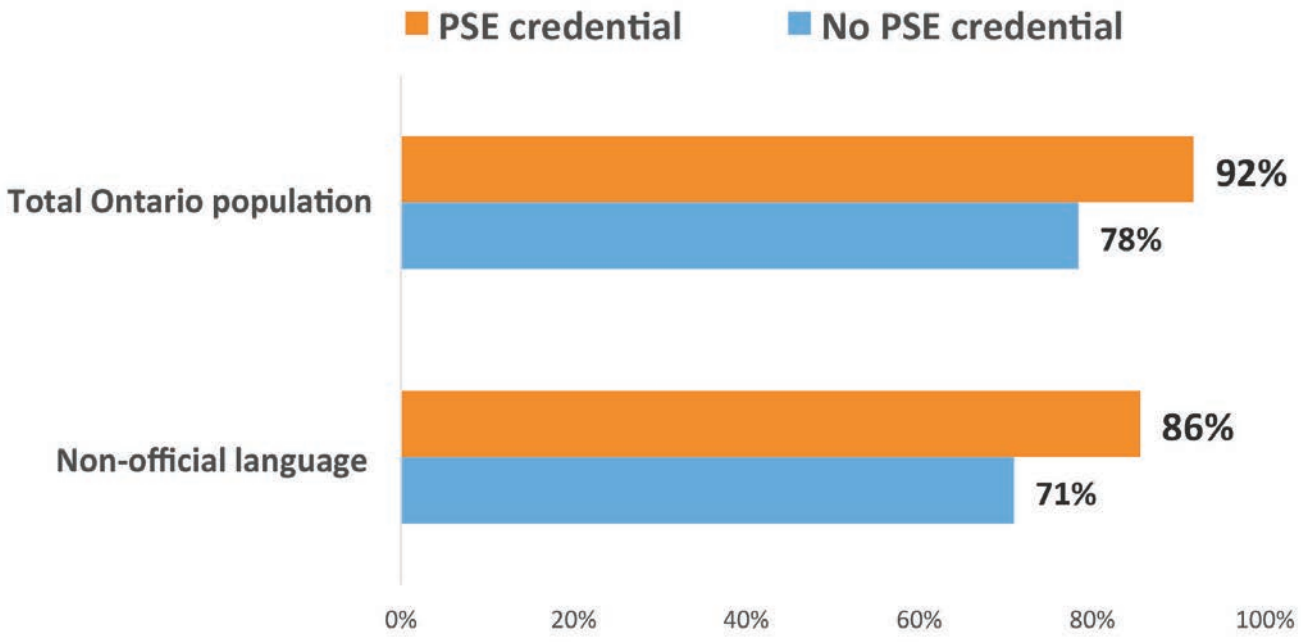
Note: Ontario, ages 25 to 34.
Source: Statistics Canada 2016 census special tabulation.

Immigrants (ages 25 to 34) generally experience lower employment rates than the general Ontario population, even when educational attainment is taken into account.

The difference is especially great for immigrants who have been in Canada less than five years.

However, once they have been in Canada at least 10 years, employment rates are almost the same as for all Ontarians with comparable post-secondary credentials.

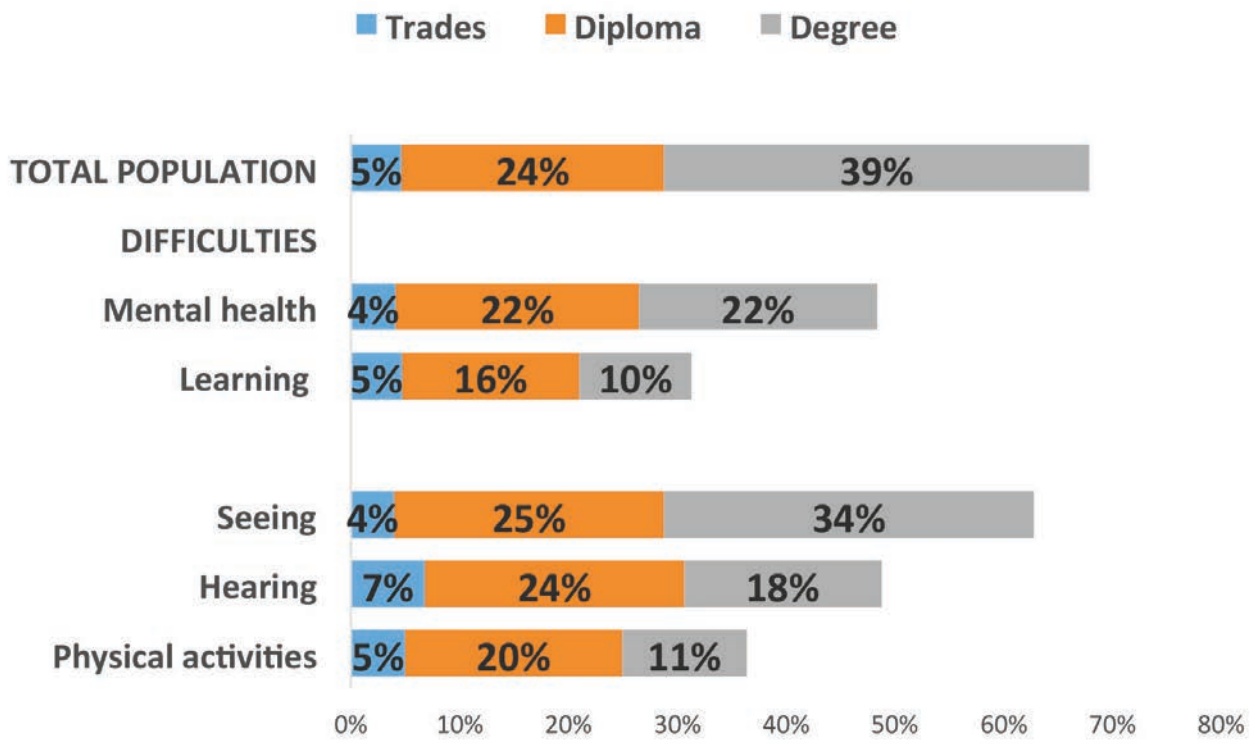
5.3 Employment rates by educational attainment for those with a non-official mother tongue



Note: Ontario, ages 25 to 34.
Source: Statistics Canada 2016 census special tabulation.

Young adults (ages 25 to 34) whose mother tongue is not English or French are less likely to be working than those with comparable educational attainment whose mother tongue is an official language.

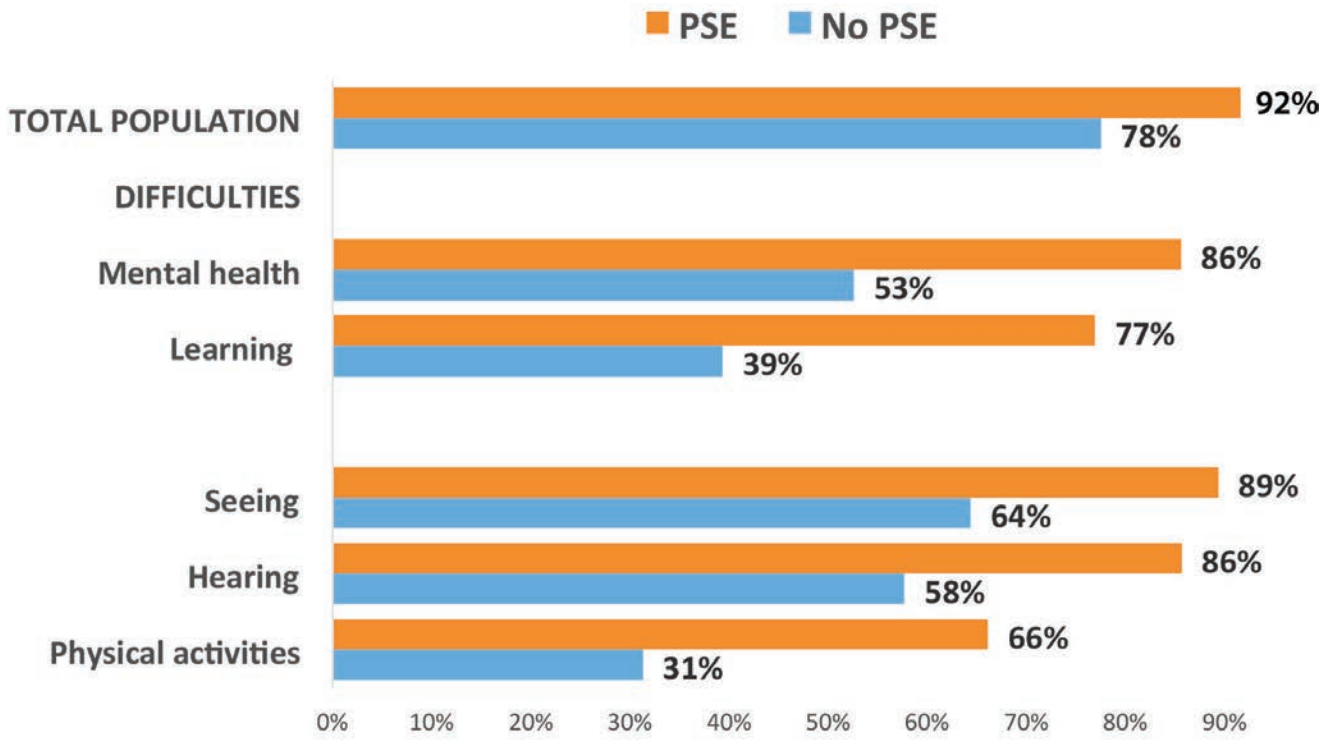
5.4 Educational attainment of individuals with and without disabilities



Note: Ontario, ages 25 to 34.
Source: Statistics Canada 2016 census special tabulation.

Young adults (ages 25 to 34) with disabilities are significantly less likely to have completed a post-secondary credential, especially a degree, than those without reported disabilities. The data include individuals who reported experiencing one of the listed difficulties 'often' or 'always.'

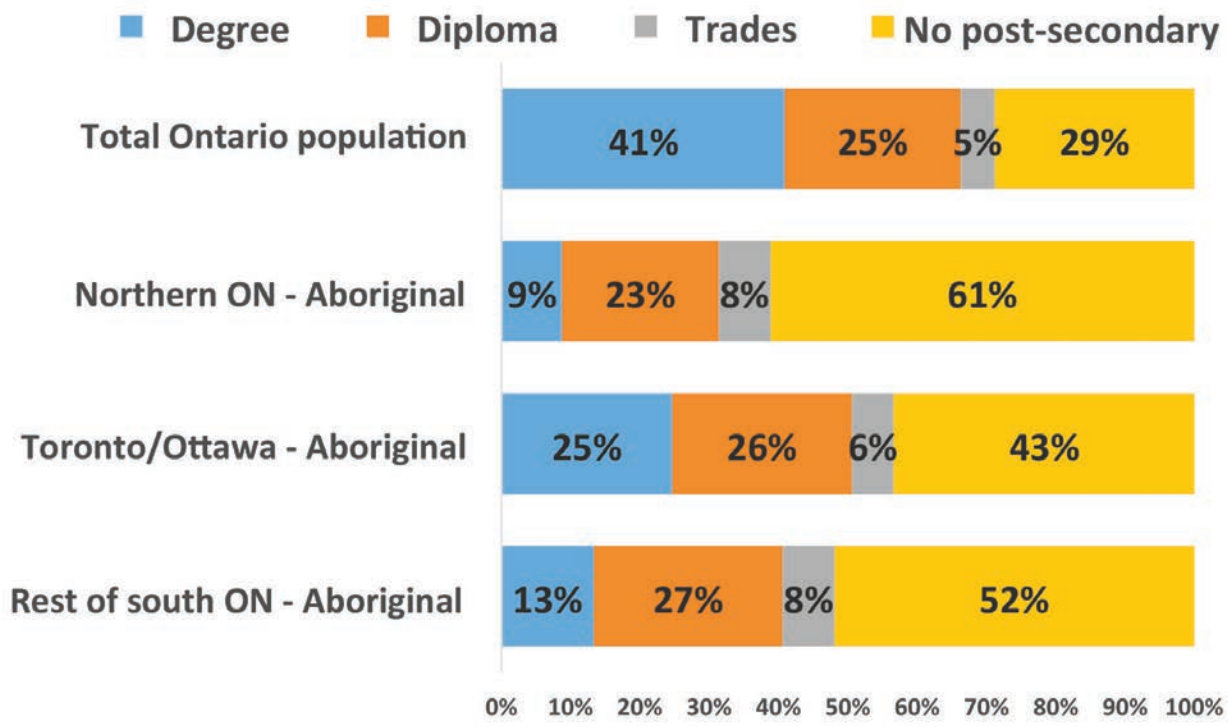
5.5 Employment rates for individuals with disabilities



Note: Ontario, ages 25 to 34.
Source: Statistics Canada 2016 census special tabulation.

Young adults (ages 25 to 34) with disabilities are also less likely to be employed than those with comparable educational attainment, but without disabilities.

5.6 Educational attainment of Aboriginals compared to total population



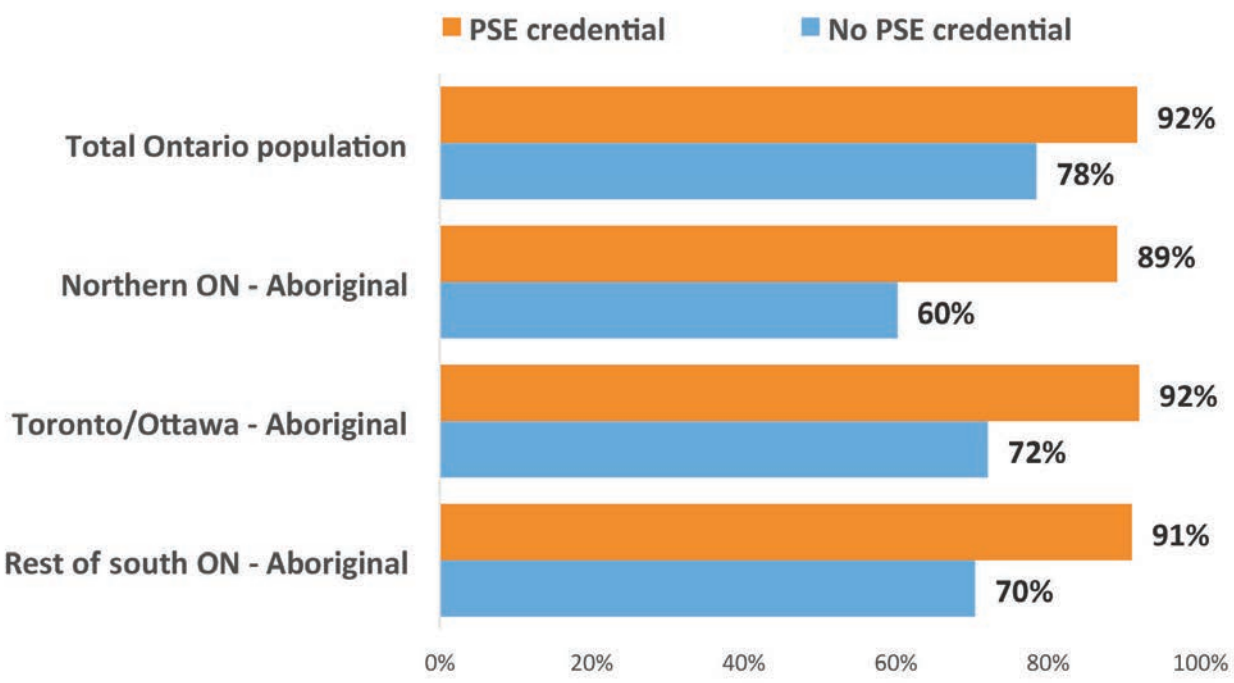
Note: Ontario, ages 25 to 34.
Source: Statistics Canada 2016 census special tabulation.

Young adults reporting as Aboriginal are as likely as other young Ontarians to have completed a post-secondary diploma or a trade certificate.

However, they are much less likely to have completed a degree. As a result, many more do not have a post-secondary credential.

Young adults reporting as Aboriginal located in Toronto or Ottawa have higher educational attainment compared with the rest of southern Ontario or of northern Ontario.

5.7 Employment rates for Aboriginals with and without post-secondary credentials



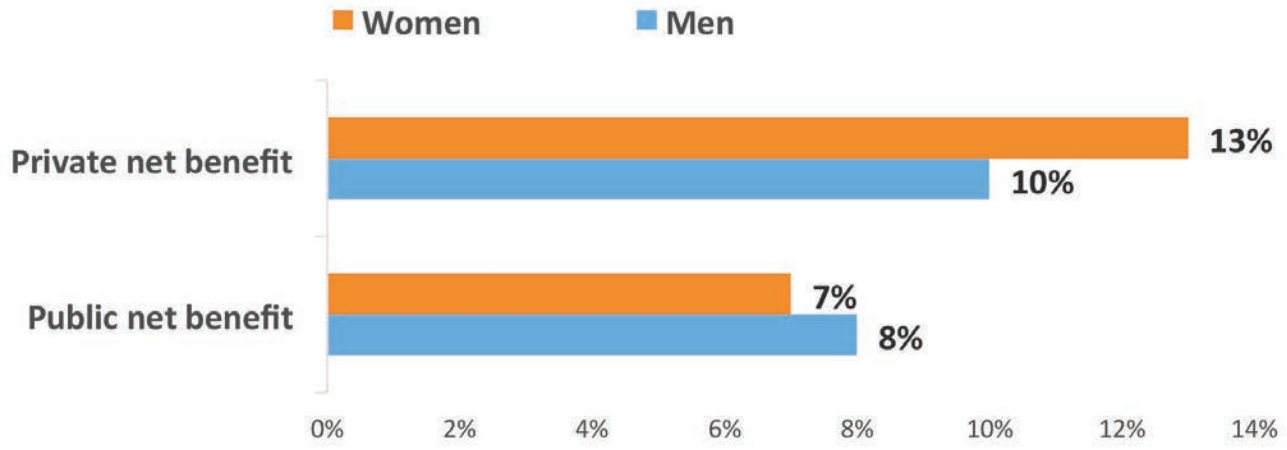
Note: Ontario, ages 25 to 34.
Source: Statistics Canada 2016 census special tabulation.

Young adults reporting as Aboriginal with post-secondary credentials are almost as likely as other young Ontarians to be employed.

However, those who do not have a post-secondary credential are significantly less likely to be employed, especially in northern Ontario.

6. RETURN ON INVESTMENTS IN POST-SECONDARY EDUCATION

6.1 Net benefits for Canadians attaining tertiary education



Note 1: Net benefits are calculated as an internal rate of return, per cent, 2013.
Note 2: This data excludes OECD-defined "post-secondary non-tertiary," i.e., post-secondary programs of one year or less, primarily apprenticeship programs, which are included in Statistics Canada post-secondary data.
Source: *Education at a Glance 2017*: OECD Indicators, OECD Publishing, Paris. Tables A7.1a, A7.1b, A7.2a and A7.2b.
Prepared by Colleges Ontario.

The OECD states that[5]:

- "Individuals completing tertiary education benefit from substantial returns on investment: they are more likely to be employed and earn more than individuals without tertiary education do."
- "The public also benefits from a large proportion of tertiary-educated individuals through greater tax revenues and social contributions."

For Canada as a whole, the OECD calculates that individuals receive roughly a 10 per cent rate of return while governments receive six per cent on their investments in post-secondary education.

Another study[6] concluded that Ontario college students receive an internal rate of return of 14 per cent for the time and money they invest in an education, while the Ontario government receives an internal rate of return of 20 per cent. A third study[7], which focused on special programs for Ontario college students at risk, concluded that the returns to students and the Ontario government, respectively, were 11 and 14 per cent for these programs alone.

[5] *Education at a Glance* 2014: OECD Indicators, OECD Publishing, Paris, Page 150.
[6] Economic Modeling Specialists Intl., *Demonstrating the Value of the Ontario College Sector: Analysis of the Economic Impact and Return on Investment of Education*, 2014, Page 11.
[7] Deloitte, *Breaking Down Barriers to Student Success: Expanding a High-Performance Workforce*, 2012, Page 2.