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Postsecondary Education Attainment and Participation in Ontario

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Introduction

The Ontario government is developing a new postsecondary education strategy with the aim of ensuring that the province is able to compete and prosper in a global, knowledge-based economy. Postsecondary education (PSE) is a key component of this strategy. This pride of place is appropriate because higher education is the primary means whereby societies add to their stock of human capital; success in the new economy will be directly related to the available supply of human capital¹.

Will Ontario have the human capital it needs to compete in the new economy? Most of the human capital available to the province over the next decade is already in place, represented by the educational attainment of the current population. The remaining supply will come through the PSE achievements of new entrants to the labour force². This increase in the labour force, in turn, depends upon both the proportion of Ontario secondary school students who complete one or more PSE programs and the education profiles of those who settle in the province from other countries as well as from other provinces and territories.

The Higher Education Quality Council of Ontario's *Second Annual Review and Research Plan* (2009) provided a snapshot of Ontario's PSE attainment, participation and completion rates. It offered a reasonably optimistic assessment of the province's *potential* to have in place the human capital needed to compete in the new economy. Educational attainment and PSE participation rates compare favourably to those in other provinces and OECD nations, and Ontario is a favoured destination for educated immigrants. The stress is on "potential," however, for success is far from assured.

The head start that Ontario has for meeting its human capital needs is not well understood, however. In a recent report, *Ontario in the Creative Age* (2009), Roger Martin and Richard Florida cite Canadian and American estimates that at least two-thirds of all new jobs created between 2006 and 2016 will require some postsecondary education. They compare this figure to the reported 40 per cent of Ontarians aged 18 to 24 and registered in college or university in 2007 and conclude that the province needs to step up significantly the participation rates in postsecondary education.

The point was repeated in a *Toronto Star* editorial on February 28, 2009. Speaking about opportunities in the 2009 Ontario budget, the editors advocate making it easier for

¹ Success will depend on the quality as well as the quantity of human capital. Quality issues will be dealt with in a future research note.

² Upgrading the knowledge and skills of the population currently in the labour force will also strengthen the province's competitiveness. This is also a topic for a future research note.

Ontarians to get a postsecondary education, claiming, parenthetically, that only 40 per cent do so now.

This research note addresses the confusion regarding Ontario's performance in postsecondary education compared to its future requirements in human capital. It shows that the more pessimistic interpretation stems from erroneously equating the PSE participation rate with the PSE attainment rate.

Our resolution of this confusion offers positive news for the province: in the province today, the rate of attainment of postsecondary education aligns with projected needs. However, our paper ends on a cautionary note, arguing that although the province is currently situated favourably, its future success in this area is far from assured.

PSE Attainment

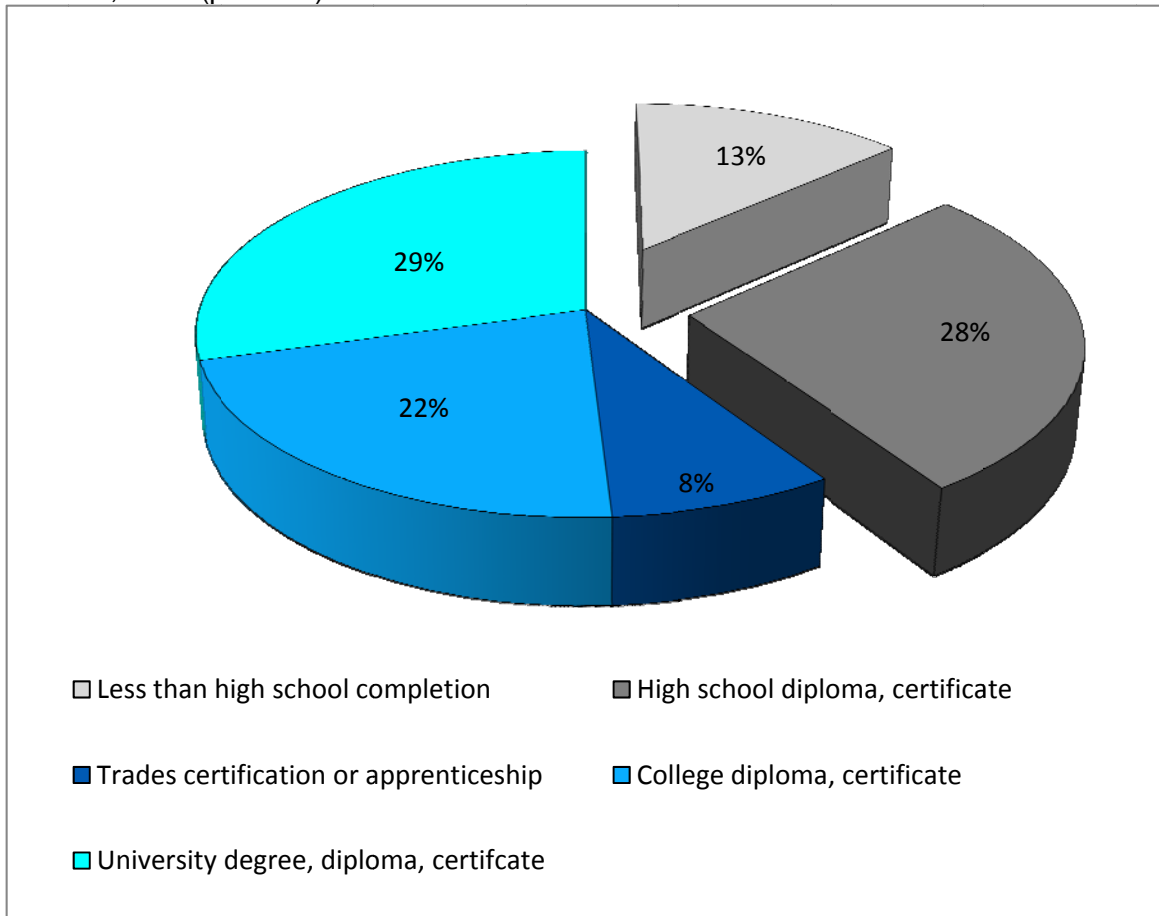
Ontario's current stock of human capital can be represented by the aggregate PSE attainment of the population of labour force age. Ideally, this figure would include all reported PSE attainment, including multiple credentials of, for example, those individuals who have earned both a college diploma and a university degree. However, most data sets available include only the highest education credential.

Figure 1 shows the PSE attainment for the province's population aged 20 to 64 in 2006. This age range is chosen from the available census categories to approximate the population of working age.

In this age cohort, 41 per cent of Ontarians reported no postsecondary education credential: 13 per cent had less than a high school education and 28 per cent had graduated high school but had earned no further education credentials.

Stated differently, 59 per cent of Ontarians of working age had completed some form of postsecondary education: Eight per cent listed a trade or apprenticeship certificate as their highest attainment, 22 per cent reported college diplomas or certificates as their highest attainment, and 29 per cent reported a university certificate, diploma, or degree.

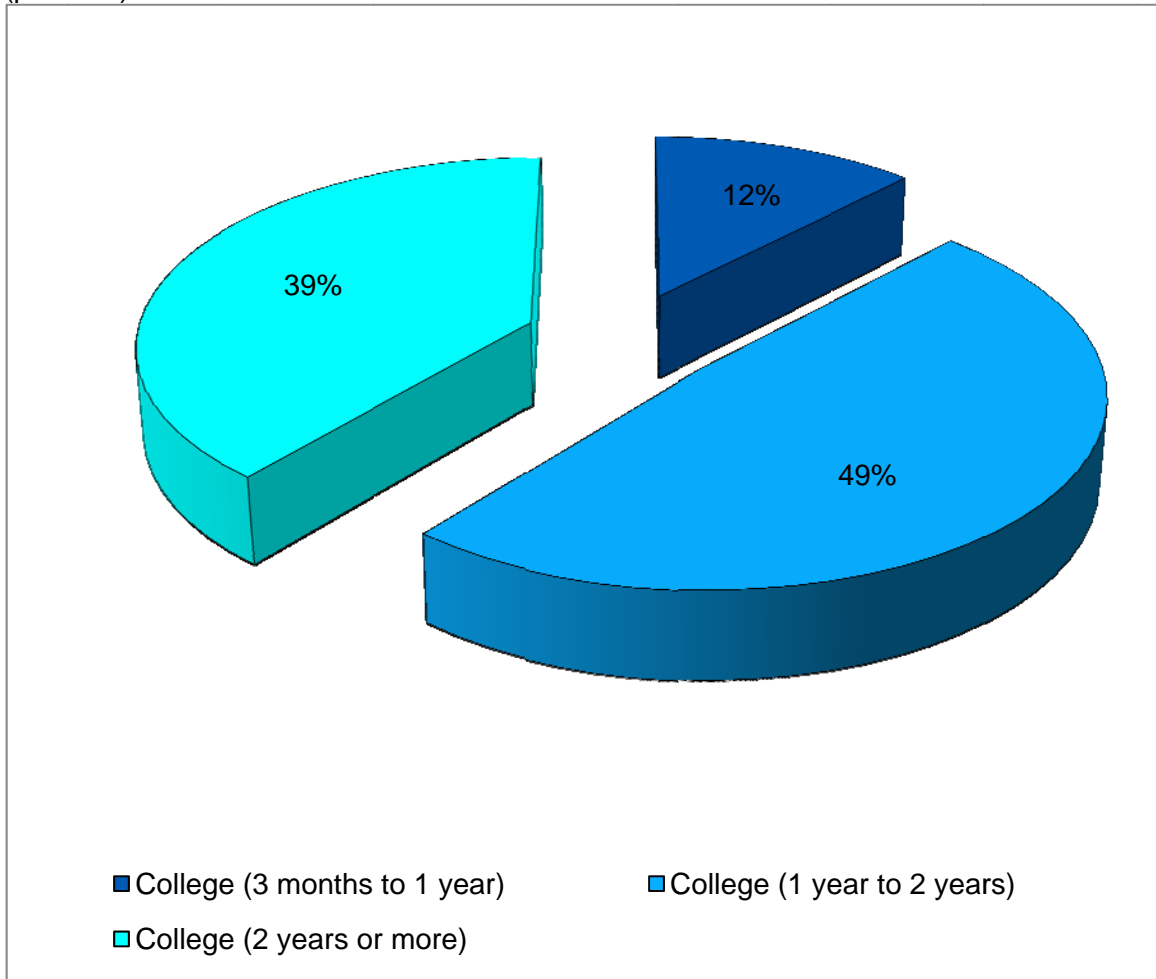
Figure 1. Highest level of educational attainment for the Ontario population aged 20 to 64, 2006 (per cent)



Source: Statistics Canada 2006 Census of Population

It is useful to disaggregate the data in Figure 1 to show, in Figure 2, the distribution of college diplomas or certificates by length of program. Nearly half of the credentials were awarded for programs of one to two years in length, and 39 per cent were for programs of two years or more and 12 per cent were for programs that lasted from three months to one year. The bulk of these credentials were acquired from public colleges, although credentials from private colleges are included as well.

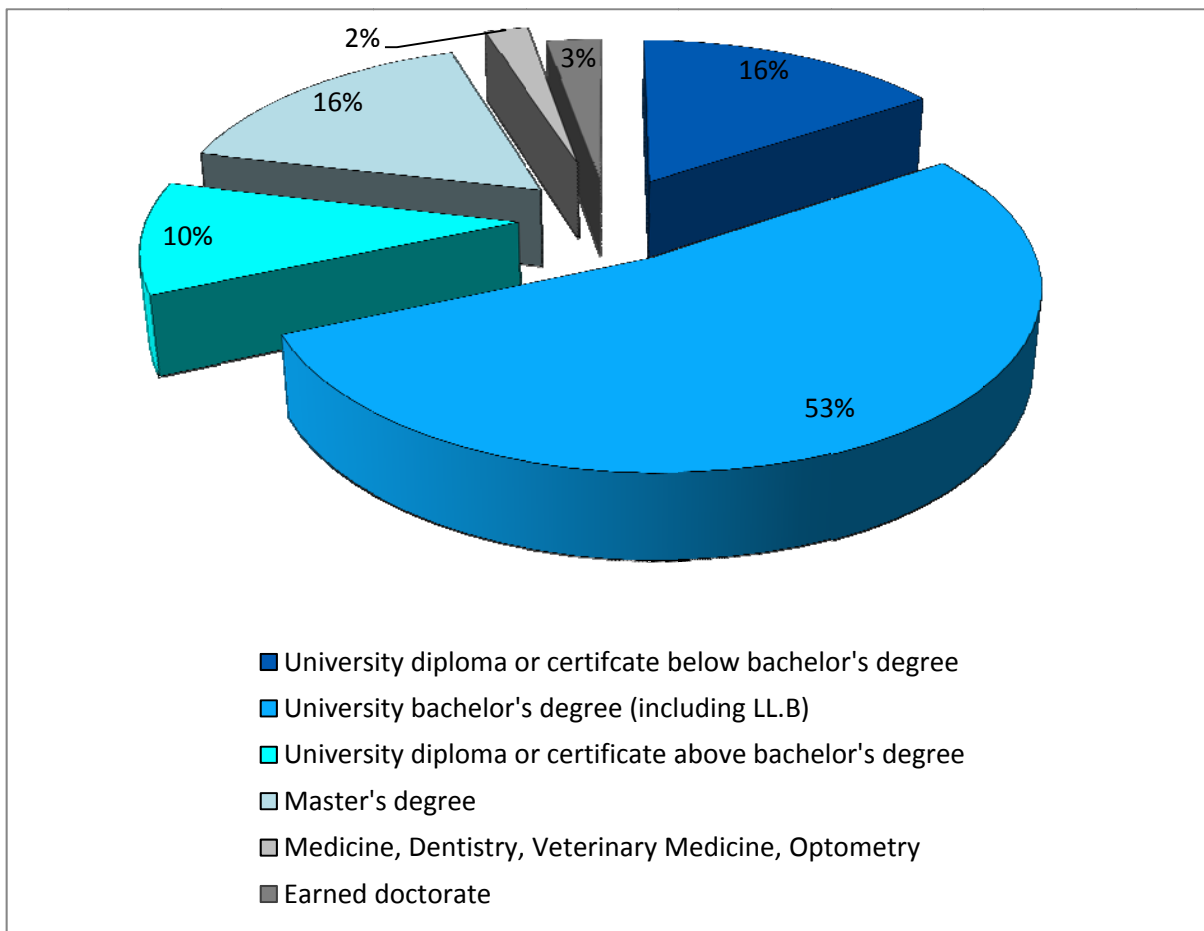
Figure 2. Distribution of college diplomas and certificates by length of program, 2006 (per cent)



Source: Statistics Canada 2006 Census of Population

Figure 3 shows the distribution of university certificates, diplomas and degrees. The largest group, understandably, is the bachelor's degree (including Law) at nearly 53 per cent of all university credentials. The next largest group at 16 per cent of the total is the master's degree, which is matched by the group attaining university certificates or diplomas below the bachelor's. Certificates or diplomas above the bachelor's degree account for 10 per cent of the total. Ontarians with an earned doctorate account for 3 per cent of this age cohort, and those with credentials in medicine, dentistry, veterinary medicine, or optometry make up 2 per cent.

Figure 3. Distribution of university certificates, diplomas and degrees by type, 2006 (per cent)



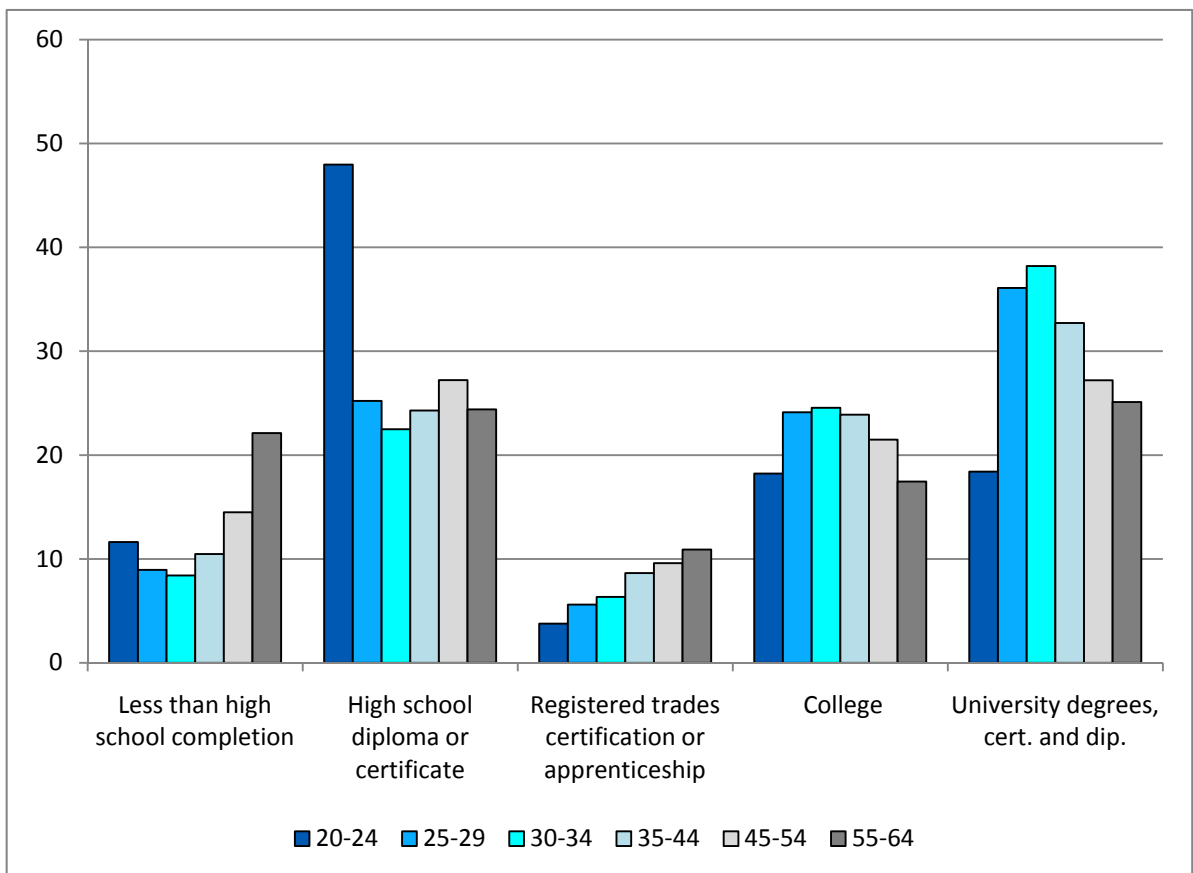
Source: Statistics Canada 2006 Census of Population

Figure 4 shows that, with one exception, PSE attainment rates have risen significantly over time. All population cohorts in the 25 to 54 age range have higher university

attainment rates than does the oldest group aged 55 to 64. For colleges, this statement also applies to those aged 20 to 24. The implication is that, all else being equal, Ontario's stock of human capital will grow automatically as older workers retire over the next decade.

The exception to this pattern is in the trades and apprenticeships, where attainment rates are highest for the oldest population cohort and decline steadily in the lower age ranges. Thus, as the older workers in the trades retire, all else being equal, the percentage of the working force with trades and apprenticeship credentials will be lower.

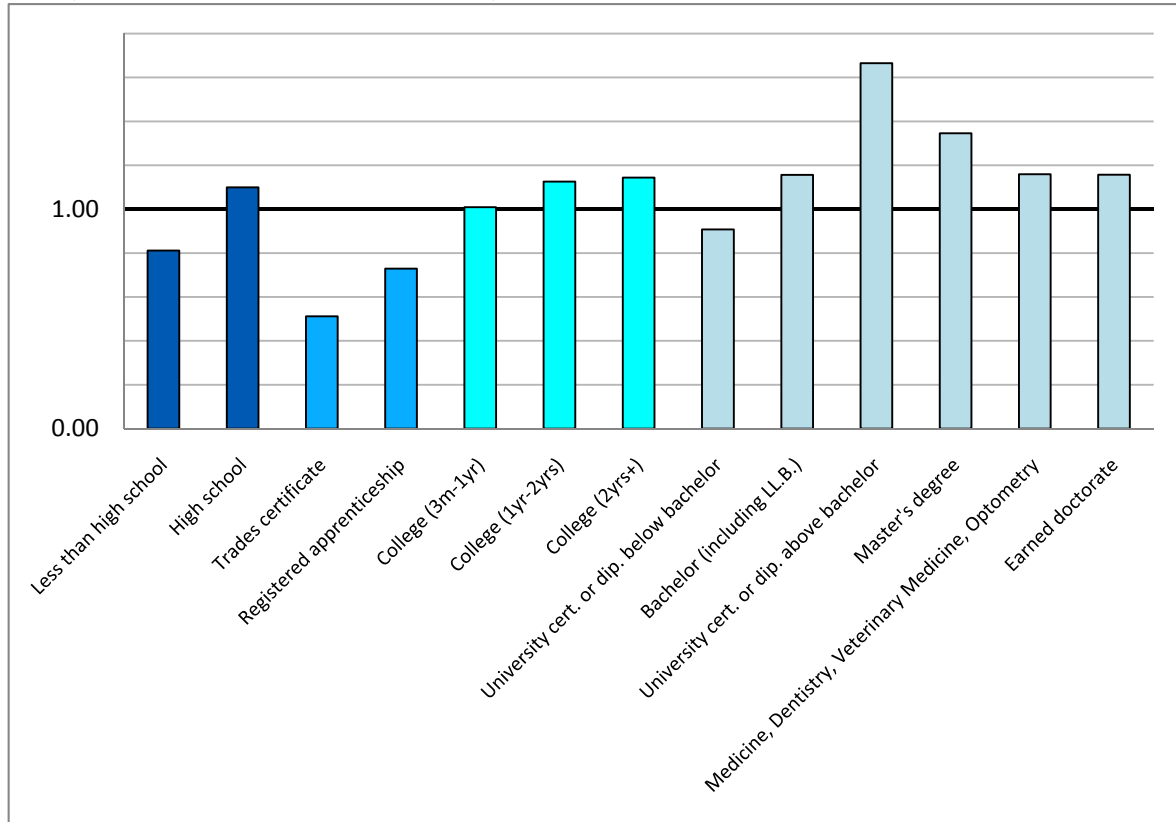
Figure 4. Highest level of educational attainment for Ontario population, various age cohorts, 2006 (per cent)



Source: Statistics Canada 2006 Census of Population

These data by themselves are not particularly informative, but they are more revealing when put in comparative perspective. Figure 5 gives highest educational attainment for the population aged 20 to 64 for Ontario relative to the rest of Canada in 2006. A value of 1.0 implies no difference in that category; a value less than 1.0 implies relatively lower attainment for Ontario; and a value greater than 1.0 implies relatively higher attainment.

Figure 5. Ratio of the highest level of educational attainment for the population aged 20 to 64, Ontario and the rest of Canada, 2006



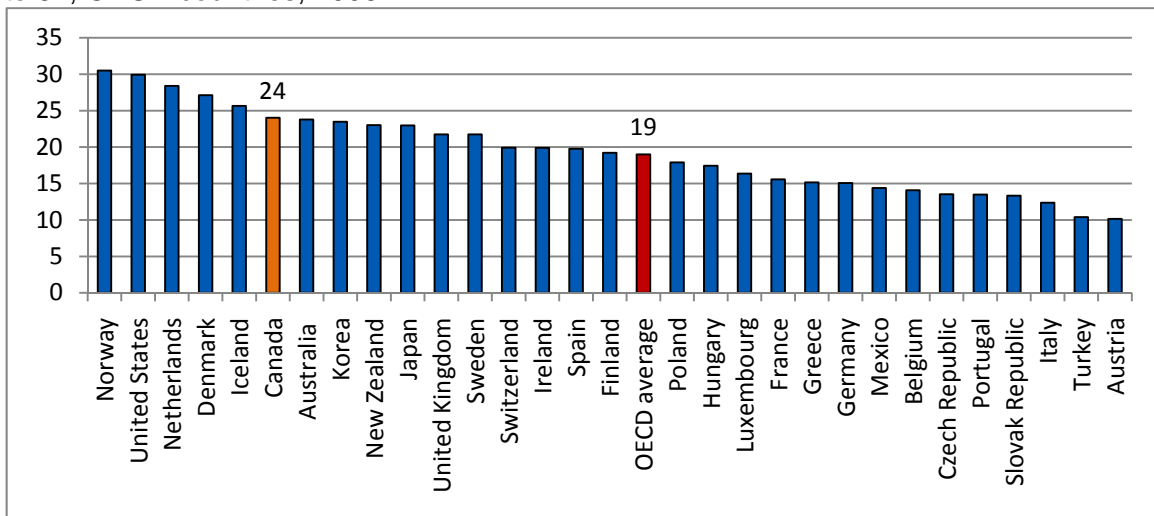
Source: Calculated from Statistics Canada 2006 Census of Population

Educational attainment in Ontario, for all university categories other than certificates or diplomas below the level of bachelor's degree, is higher than that in the rest of Canada. The largest gap is for the relatively small category of university certificates or diplomas above the bachelor's degree, followed by the master's degree. College attainment in Ontario is somewhat higher for programs of 1 to 2 years in length and for those programs over 2 years. There is no appreciable difference for the college programs of shorter duration. The exceptions are for persons holding a certificate in the trades or a registered apprenticeship: the proportion of Ontarians holding these certificates as their highest educational attainment is below the proportion in the rest of Canada.

Because Ontario must compete in a global economy, it is useful to view the province's record in an international context. Providing such a view becomes a complex task, however, because of the difficulties in making comparisons among nations and education systems³.

University data are arguably more comparable among nations. Figure 6 shows university attainment for the population aged 25 to 64 in a number of OECD countries in 2006, which shows Canada in a group with Australia, Korea, New Zealand, and Japan, but lagging behind Norway, the USA, the Netherlands, Denmark, and Iceland. As the leading province in Canada in terms of university attainment, Ontario compares favourably to these OECD nations.

Figure 6. Tertiary-A (university credential) educational attainment for population aged 25 to 64, OECD countries, 2006



Source: OECD *Education at a Glance (2006)*

In addition, OECD data indicate that Canada leads all other OECD nations in non-university educational attainment. This category includes a wide variety of educational activities, however, and most observers feel international comparisons with these data are not meaningful. Work is under way to make these data more comparable internationally, and it is best to suspend evaluation until the work is complete.

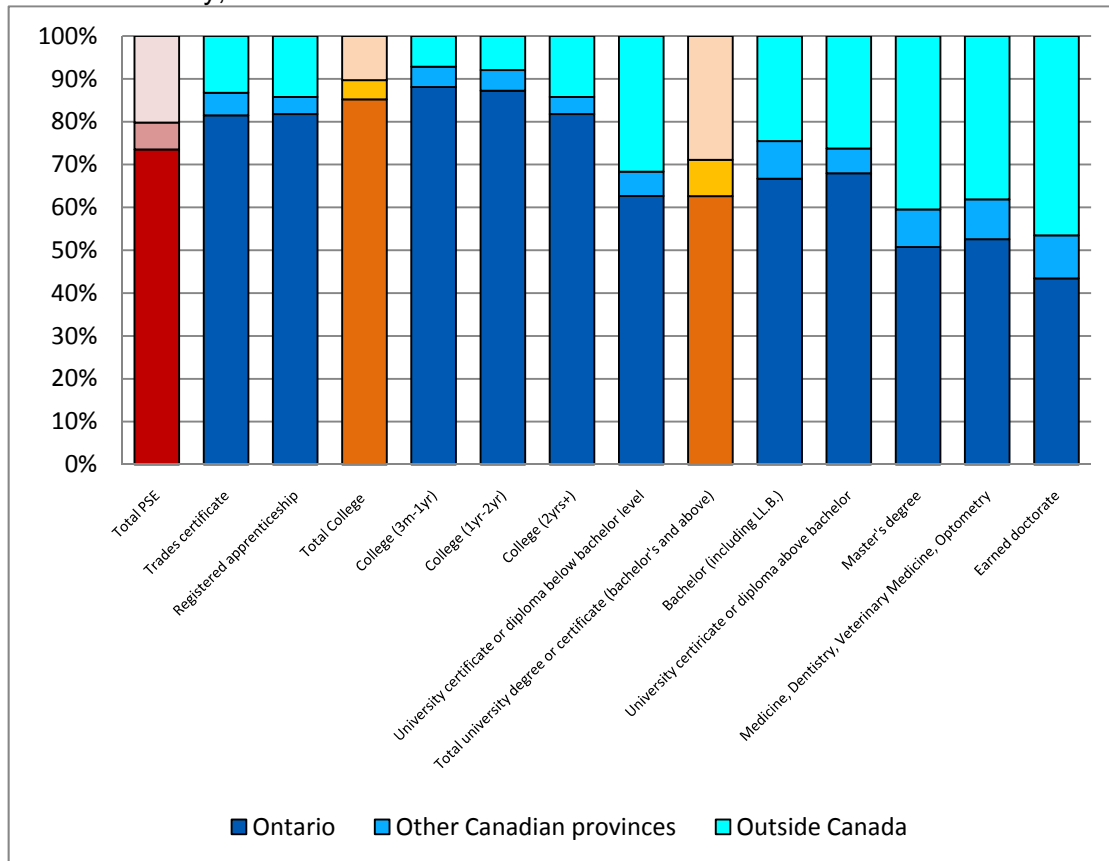
A significant portion of Ontario's human capital is imported. In 2006, 21 per cent of Ontario residents reported that they had earned their PSE credentials from institutions

³ See AUCC (2007, pp. 21-22) for a discussion of the limitations of using OECD data for comparative purposes.

outside Canada, and 7 per cent earned their credentials from institutions in other provinces. BC rivals Ontario in the contribution of immigration to Canada’s human capital, and both provinces have a substantially higher number of immigrants than the other eight provinces (HEQCO, 2009, Figure 1.1, p. 24).

Predictably, the location of study varies notably by type of postsecondary education. Figure 7 shows that credentials earned outside Canada are least significant for both the trades and apprenticeships and for college certificates and diplomas. For university degrees, particularly for longer programs of study, the credential was more likely received from an institution outside Canada. Nearly half of the people in Ontario who hold a PhD in 2006 earned that credential in other countries.

Figure 7. Highest educational attainment for Ontario population aged 20 to 64 by location of study, 2006



Source: Statistics Canada *Census of Population 2006*

Importing human capital in the form of new immigrants provides Ontario with an educated population greater than would be possible if all had to be produced internally, but it does raise different policy issues. Most obviously, PSE policy development is

inextricably linked to immigration policy. Further, it raises the issue of whether the PSE credentials of immigrants are equivalent in quality to those earned in Ontario. This issue does not arise for those with PSE credentials received in other Canadian provinces, but it often does arise for immigrants from other countries. Whether the differences in quality are actual or just perceived as such by employers, the effect is the same: persons holding foreign credentials would tend disproportionately to be unemployed or under-employed. We shall address this issue in future research.

In sum, Ontario enters the next decade with a relatively favourable supply of educated human capital already in place. It leads all provinces in terms of aggregate educational attainment, and ranks favourably with OECD nations. Further, the fact that PSE attainment is higher in younger cohorts means that, all else being equal, the proportion of the population of working age with postsecondary education will rise automatically.

But attainment is only part of the story. Over the next decade, the other source of human capital available to Ontario will be embodied in new entrants to the labour force. Assuming no major change in immigration policy, a significant portion of this new supply will come from persons educated elsewhere. But the bulk will come from Ontarians who complete PSE programs within the province.

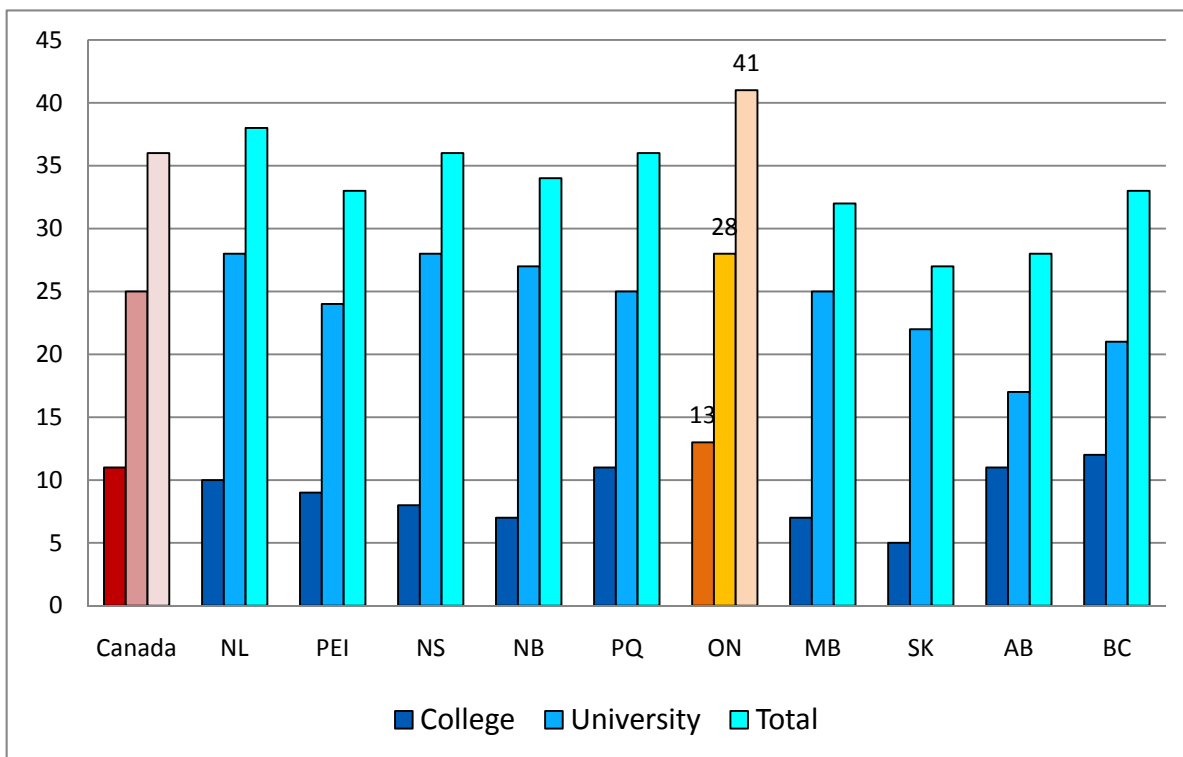
PSE Participation

There is no obvious age cohort to use when calculating the PSE participation rate. The numerator is full-time equivalent enrolment in PSE programs for the population of a specified age, and the denominator is the total population of that age. To allow alignment with census data, we shall define the participation rate for the cohort aged 20 to 24. Unfortunately, there are no public data available for apprenticeship registrants by age so we are left with examining college and university participation rates.

Ontario's PSE participation rate by this definition in 2006 was 41 per cent — 28 per cent in universities and 13 per cent in colleges (HEQCO, 2009, Table 1.5, p. 27).

As with PSE attainment data, these numbers mean little by themselves. They are more informative when put in comparative perspective. Figure 8 shows college and university participation rates for the population aged 20 to 24 for Canada and the provinces in 2006. Ontario's aggregate PSE participation rate is highest in the country. The university participation rate, at 28 per cent, is similar to the rate in Newfoundland and Labrador and in Nova Scotia. The college participation rate, at 13 per cent, is the highest in Canada.

Figure 8. College and university participation rates for population aged 20 to 24, Canada and the provinces, 2006



Source: Statistics Canada and the Council of Ministers of Education, Canada. 2007. *Education indicators in Canada: Report of the Pan-Canadian Education Indicators Program*. Catalogue no. 81-582-XIE. Ottawa.

When attempting to compare Ontario's PSE participation rates to those in other countries, the same data issues arise as for educational attainment. The challenge is especially great for non-university education, but exists even for university enrolment. For example, a recent study by the Association of Universities and Colleges of Canada (2007, Figure 1.20, p. 21) illustrates the difference that a slight change in cohort makes to international rankings. The work to make these data more comparable is under way, as noted above, so it is wise to suspend judgment until it is completed.

In sum, Ontario appears to be adding to its aggregate supply of human capital at a rate that will keep it competitive with leading provinces and nations. It is important to stress, however, that this conclusion is only valid if the ongoing work on international comparisons does not result in a significant change in Canada's relative position. It also

assumes that aggregate PSE participation is the relevant competitive measure rather than separate indicators for university and non-university components.

Clearing Up a Common Confusion

The analysis in the preceding sections helps to clear up a common confusion in discussions of where Ontario stands with respect to meeting human capital needs for the new economy.

It is a fact, as noted above, that 41 per cent of Ontarians aged 20 to 24 were registered in college or university in 2006. But it is also a fact that 40 per cent of Ontarians aged 20 to 24 in 2006 had already graduated from a PSE program (Figure 4). Eighteen percent were college graduates, 4 per cent possessed an apprenticeship or trade certificate, and 18 per cent had earned a university certificate, diploma or degree.

One might be tempted to conclude from these numbers that the final PSE attainment rate of Ontarians who were between the ages of 20 and 24 in 2006 will be over 80 per cent. But this simple calculation ignores double counting, for example. Some proportion of those reporting a college certificate or diploma will also be registered in another college program or a university program.⁴ The calculation also ignores the fact that some proportion of those enrolled in college or university programs in 2006 will not complete them.

Although we cannot be certain what the final PSE attainment rate for Ontarians aged 20 to 24 in 2006 will be in 2009, we can narrow the range considerably. It is reasonable to assume that Ontarians aged 25 to 34 have largely completed PSE, and Figure 4 shows the highest educational attainment for this cohort in 2006. Over two-thirds of this group reported a PSE credential — 6 per cent in apprenticeship or trades, 24 per cent with a college certificate or diploma, and 37 per cent with a university certificate, diploma or degree. Participation rates have risen in recent years, meaning that PSE attainment for the cohort aged 20 to 24 will be higher than for the cohort aged 25 to 34, so two-thirds can serve as the lower base line.

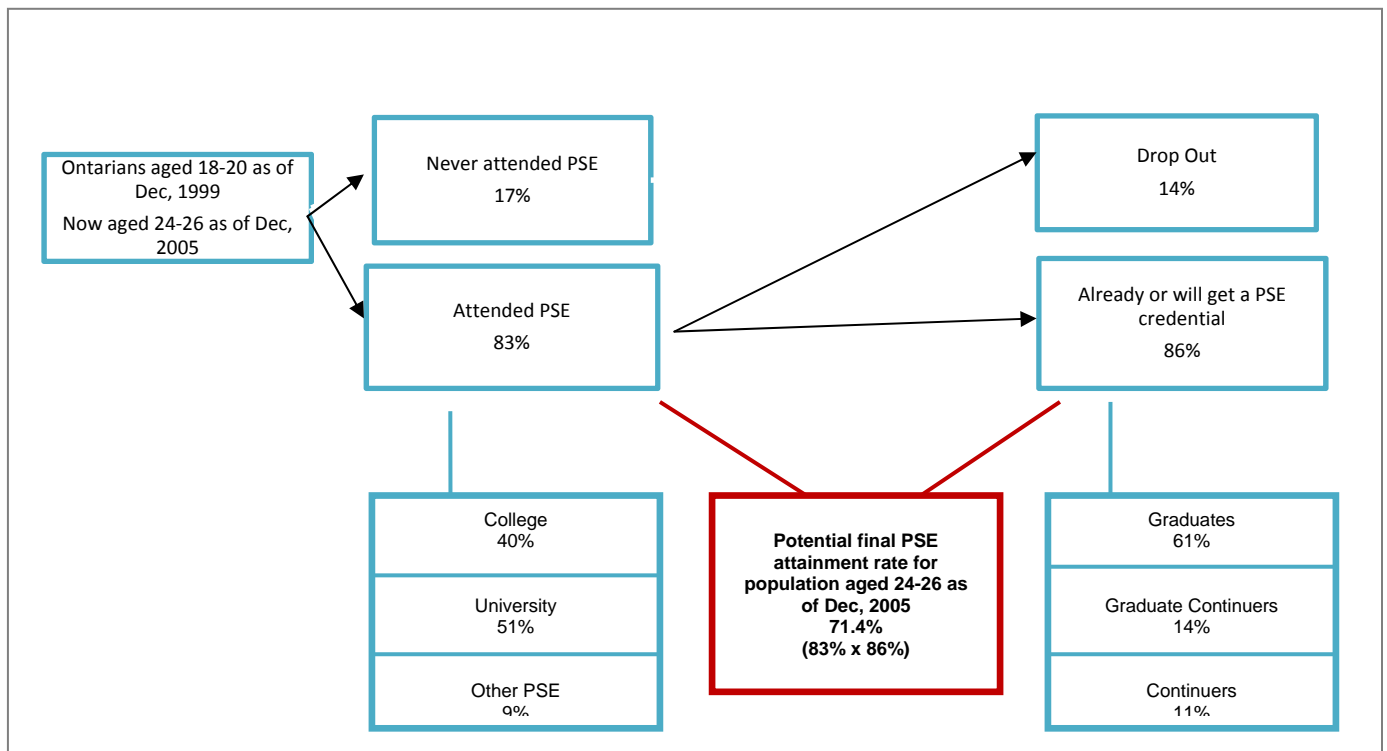
The Youth in Transition Survey (YITS) provides direct information on PSE decisions and outcomes. Participants in YITS-B were first surveyed in December 1999 when they were 18 years old. They were surveyed about their status again in 2002, 2004, and 2006. These data thus provide a direct measure of choices in education and other areas that students made over time.

⁴ Although they are working toward a second PSE credential, so double counting is not necessarily a problem.

Figure 9 shows the YITS results for Ontario. Of the respondents, 83 per cent attended PSE and 17 per cent never attended. Of those attending PSE, slightly over half went to university, 40 per cent attended college and 9 per cent attended other PSE institutions. Of those attending PSE, 14 per cent dropped out, 61 per cent graduated but continued no further, 14 per cent graduated and continued on in another program, and 11 per cent were still completing their programs.

These data suggest that the PSE attainment rate for Ontario is 71.4 per cent (83 per cent times 86 per cent), or slightly lower, if some of those who continued do not complete their studies to receive another credential.

Figure 9. PSE attainment rate from YITS-B data, 2006



Source: Derived from Shaienks and Gluszynski (2007)

Putting this information together, we can bracket the probable PSE attainment rates for the cohort of Ontarians aged 20 to 24 in 2006. It is not lower than the 67 per cent rate for the group aged 25 to 34. It is below 80 per cent because this figure ignores double counting and drop-outs. The YITS figure of around 70 per cent falls into this range.

In sum, it is reasonable to expect that 70 per cent of Ontarians aged 20 to 24 in 2006 will earn at least one credential in postsecondary education. Added to this is the fact that the educational attainment of immigrants typically exceeds that of non-immigrant Canadians (HEQCO, 2009, Table 1.3, p. 24). Thus, assuming that the two-thirds figure for new jobs requiring some PSE is accurate, and that aggregate PSE attainment is the relevant measure of competitiveness, Ontario appears to be meeting the challenge. The implication is that the province is in the fortunate position of being able to pay attention to the issues related to the *quality* of education.

Conclusion

The analysis thus far has been relatively optimistic. Ontario's current stock of human capital and the rate of the population's participation in PSE compare favourably to those in competitor jurisdictions. Further, the province is a favoured destination for educated migrants from other parts of Canada and from other nations.

The emphasis must be on Ontario's potential competitiveness, however, because a number of factors could thwart success. On the demand side, future gains in participation rates must come disproportionately from the population groups that are currently under-represented in PSE. To achieve an increase among these groups will be more difficult because we understand less about the determinants of their decisions to participate in PSE or not, and certainly less about how to affect them positively through policy, than we do for more traditional participants.

Students from these groups usually require special support services if they are to succeed. While this need is evident for students with disabilities, the point can be extended to other under-represented groups, and support services can be expensive. Ontario's colleges and universities have made considerable progress in making campuses, programs, and courses more open to non-traditional students, but further progress will require attention to special funding sources.

The real concern, however, is on the supply side. Too often, the assumption is made (generally implicitly) that colleges and universities can accommodate all qualified applicants and give them a quality education. This view is not unreasonable with respect to accessibility; at least in past years, there was little evidence of supply-side constraints on PSE participation⁵. But this situation may be changing, particularly in the GTA where even by conservative assumptions the predicted demand for PSE places threatens to outstrip the available supply (HEQCO, 2009, p. 29). If these constraints do become

⁵ See Drewes (2008) for an attempt to identify supply-side constraints in Ontario PSE participation.

binding, Ontario will be increasingly challenged to meet its incremental human capital requirements.

The assumption that quality can be maintained in the face of increasing enrolment is even more difficult to analyze, primarily because of the lack of rigorous measures of education quality. Traditional indicators such as student-to-faculty ratios or funding per FTE student seem to suggest that quality has declined over time. To the extent that this conclusion is accurate, Ontario will be increasingly challenged in meeting its human capital requirements for the new economy. But input measures are generally acknowledged to be imperfect quality indicators, and much work remains before any definitive conclusion can be reached.

HEQCO's ongoing research activity will focus on these demand-side and supply-side considerations.

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