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**Factors Contributing to Canada's
Number One International
Ranking in the Proportion of
Adults Who Have Attained a
Community College Credential**

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Abstract

Canada ranks first among OECD countries in the proportion of the adult population whose highest level of education is a credential from a community college or similar type of educational institution. Canada's rate of attainment of this type of educational credential is more than three times the average for OECD member countries, and only three member countries have rates that are more than half Canada's rate. This paper explores the factors that contribute to Canada's high rate of short-cycle tertiary education attainment relative to other countries. The factors examined include: the role and prevalence of short-cycle postsecondary institutions in different countries; the proportions of students who begin postsecondary education in a college rather than a university; college graduation and transfer rates; and different approaches to workforce preparation. The paper concludes with a brief discussion of some of the implications of the international differences that were explored.

Introduction

If you are a Canadian waiting for the morning commuter train that takes you to your place of work, the odds are greater than one in four that the person waiting next to you is a graduate of a two- or three-year program in a community college or technical institute. The odds of this occurrence are not nearly as great in most other countries, and in some countries the odds would be close to zero.

Canada is an outlier with respect to one of the major international indices of educational attainment: the percentage of adults whose highest level of education is the completion of a program of “short-cycle tertiary education”. Short-cycle tertiary education corresponds to level 5 of the *International Standard Classification of Education, ISCED 2011* (UNESCO Institute for Statistics, 2012). Programs at ISCED level 5 are of a minimum of two years and are “typically but not always shorter than three years” (OECD, 2016:48). Also, “typically” these programs “are practically-based, occupationally-specific and prepare students to enter the labour market”, although the classification also includes academic programs below the level of a bachelor degree (OECD, 2016:48). In practice, ISCED level 5 refers to the types of programs that are offered by community colleges and their counterpart institutions in other countries.

According to the OECD publication, *Education at a Glance 2017*, in 2016 Canada had the greatest percentage of 25-64 year-olds, 26%, whose highest level of education was short-cycle tertiary, of any OECD member country (OECD, 2017). The average for member countries was 8%, and only three of the other 34 member countries — Austria, France, and Israel — had rates that were more than half of Canada’s. The only member country with a rate even close to Canada’s was Japan, whose rate was listed as 21%, but a footnote indicated that its rate also included postsecondary non-tertiary programs. The rate for the United States was 11%; the United Kingdom 10%; and the Netherlands and Germany, 1%. Largely as a consequence of its high rate of attainment of short-cycle tertiary education, Canada ranked first in total tertiary education attainment, though it was tied for 10th in bachelor degree attainment (OECD, 2017).

Canada’s outlier status in international comparisons of SCTE attainment rates has persisted for quite some time. In fact, while Canada has been maintaining or increasing its SCTE attainment, some countries have experienced declines in their SCTE attainment rates. For example, in 2015 Finland’s SCTE attainment rate for 25-34 year olds was 0% compared to a rate of 18% for 55-64 years (OECD, 2016). Canada’s attainment rates for these two age groups in 2015 were 23% for the older group and 25% for the younger group, indicating that the aggregate rate was stable or increasing slightly.

This paper identifies and discusses the principal factors that contribute to Canada’s outlier status with respect to the short-cycle tertiary education attainment rate. The first section of the paper discusses the statistics on international differences in SCTE attainment. The next section identifies five factors that help explain the observed differences between Canada and other OECD countries in SCTE attainment. The paper concludes with a discussion of policy implications. Although this paper focuses on Canada, it raises some general questions about international differences in the arrangements for tertiary education and workforce preparation that are independent of where Canada happens to fit in international comparisons. The other side of Canada’s high rate of SCTE attainment is the lower rates in many other countries.

Issues in the comparisons of short-cycle tertiary education attainment rates

Although there may be considerable variability within and between countries, and between fields of study, as to what constitutes a bachelor degree, the problems of comparability are much greater when it comes to tertiary education programs below the level of the bachelor degree. Whereas bachelor degrees are awarded primarily by universities and universities of applied sciences, Raby identified 71 different names of institutions that provide programs of short-cycle tertiary education (Raby, 2009). Besides the variation in types of institutions that offer short-cycle tertiary education, the variation in the programs themselves is so great that it may be difficult to ensure that the types of programs that are included in SCTE in one country are the same as those that are included in another country. For example, Kuczera and Field noted that while a program in hairdressing could be included in tertiary education in Korea, it would not be included in the United States (Kuczera & Field, 2013). An OECD economic review of Canada in 2012 suggested that some of what is counted as tertiary education in Canada might not be counted as tertiary education in some other countries (OECD, 2012). Because of such concerns, Norrie and Lin expressed skepticism about the value of international comparisons of attainment of short-cycle tertiary education (Norrie & Lin, 2009). However, Norrie and Lin noted also that “work is under way to make these data more comparable internationally” (Norrie & Lin, 2009:8).

Implementation of the 2011 edition of the *International Standard Classification of Education, ISCED 2011* (UNESCO Institute for Statistics, 2012), provided both a stimulus and an occasion for making the data to which Norrie and Lin referred more comparable. The first edition of *Education at a Glance* which was based on ISCED 2011 was the 2015 edition which provided figures on educational attainment for 2014 (OECD, 2015). The last edition of *Education at a Glance* that was based on the previous classification system, ISCED 97 (UNESCO, 1997) was the 2014 edition, which provided educational attainment figures for 2012 (OECD, 2014).

Under ISCED 1997, Level 5 was partitioned into two categories, 5A and 5B. Programs in category 5B were “practically oriented” and “occupationally specific” (UNESCO, 1997:36). Also they were of at least two years’ but normally not more than three years’ duration. In contrast, programs at Level 5A were “largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements” (UNESCO, 1997:35). The duration of programs in the 5A category could be from three to six or more years, and it typically included bachelor and master’s degree programs. Programs leading to an advanced research qualification, normally a doctorate, were classified at Level 6. In the enrolment and educational attainment statistics reported in *Education at a Glance* prior to the 2015 edition, there were two categories, Tertiary-type A and Tertiary-type B. Tertiary-type A consisted of ISCED levels 5A and 6; while Tertiary-type B consisted of ISCED Level 5B.

In ISCED 2011, Level 5 programs include both programs that are “practically-based and occupationally specific”, and “academic tertiary education programs below the level of a Bachelor’s program” (UNESCO Institute of Statistics, 2012:48). The new category of short-cycle tertiary education is thus similar to the old Tertiary-type B category, but with the explicit addition of short-cycle academically oriented programs. Because programs are no longer differentiated according to whether their orientation is applied or academic, the newer classification system has been described as “a backward step in terms of visibility of vocational education in the tertiary sector” (Hippach-Schneider et al., 2017:36).

Comparison of rates of attainment of Tertiary-type B education for 2012 under ISCED 1997 with the SCTE attainment rates for 2014 under ISCED 2011 show substantial differences, in both directions, for several countries, differences of greater magnitude than could be expected to occur within just two years. The frequency and magnitude of these differences suggest that some effort — possibly of the type foreshadowed by Norrie & Lin — has gone into improving the validity of the educational attainment statistics. However, the comparison also suggests the possibility of some continuing issues. One of the countries for which there was a large difference was Austria where the rate of attainment more than doubled, from 7% in 2012 to 15% in 2014. Hippach-Schneider et al. have delved into the difference in overall tertiary attainment rates for Austria between 2013 (based on ISCED 1997) and 2014 (based on ISCED 2011), using data from the European Commission (Hippach-Schneider et al., 2017). They found Austria's total tertiary attainment rate nearly 13 percentage points higher for 2014 than for 2013 (40.0% vs. 27.3%), while the rates for Finland, France, Germany, and the United Kingdom differed by only a point or two between the two years (Hippach-Schneider et al., 2017:34).

In explaining the difference in Austria's tertiary education attainment rates, Hippach-Schneider et al. noted that there were no changes in the educational system and no large changes in the number of people graduating between 2013 and 2014. However, "various" education and training programs that were "nationally not regarded as tertiary from an institutional perspective or in terms of public perception" came to be "viewed statistically" as tertiary (Hippach-Schneider et al., 2017:36). It is unknowable whether this adjustment and the adjustments made in SCTE attainment rates for several other countries in the implementation of ISCED 2011 would allay the concerns expressed by Norrie and Lin about international comparisons of these rates. For those authors it may be noteworthy that the rate for Canada was unchanged with the implementation of ISCED 2011. Nevertheless, the adjustments for other countries may reflect the work that Norrie and Lin said was under way to make such rates more internationally comparable.

In their analysis of international statistics on vocational education, Hippach-Schneider et al. were more concerned about another issue than the problem of determining which institution-based educational programs are counted as part of tertiary education. That issue is the exclusion of industry-based and profession-based initiatives in vocational education from the statistics on vocational education and training, including SCTE attainment rates. Their concern is that the tendency to associate tertiary education with education that is based in, and occurs largely within, formal educational institutions results in a serious understatement of the extent of vocational education and training (VET) in countries — like Germany and Austria — in which a substantial proportion of VET is industry-based or profession-based. Examining the impact of this factor on international differences in SCTE attainment rates involves less a problem of statistics than a more fundamental issue of how to compare institution-based with industry-based education. This question is addressed in the next section where it is suggested that Canada's commitment to academization of vocational education may be one of the major factors responsible for its outlier status in international comparisons of SCTE attainment rates.

Before concluding this section, two additional points need to be made about the data on educational attainment rates, one of a general nature, the other pertaining specifically to Canada. The first is a reminder that in calculating educational attainment rates, individuals are classified by the highest level of education they have attained. Thus, someone who has completed a program of short-cycle tertiary education and has also completed a bachelor degree will be counted as having attained ISCED level 6, a bachelor degree, not level 5, SCTE. The ISCED treats education as consisting of levels that are vertically differentiated, even if some in the vocational education sector may regard a vocationally-oriented

program of short-cycle tertiary education as so different from an academically-oriented bachelor degree that it is impossible to rank them hierarchically.

This reminder is relevant to the second point, the implications of the educational structure in Canada's second largest province, Québec which accounts for about 23% of the nation's population. The OECD 2012 economic survey of Canada suggested that certain features of Québec's education system impart an upward bias in Canada's rate of attainment of short-cycle tertiary education in comparison with other countries (OECD, 2012). In contrast to the other provinces which all have school systems consisting of 12 grades, the school system in Québec ends after Grade 11. After Grade 11, a student may enter a *collège d'enseignement général et professionnel* (CÉGEP) to pursue either a two-year pre-university program or a three-year career education program. A Québec student who wishes to do a bachelor degree must do the two-year, pre-university program in a CÉGEP in order to qualify for admission to a university. In 2011-2012, 57.7% of CÉGEP enrolment was in the two-year, pre-university stream, and 27.1% was in the three-year technical education stream (Government of Québec, 2014).

The alleged statistical bias in favor of short-cycle tertiary education arises from two factors. One is that, unlike the situation in some countries (and other Canadian provinces), virtually 100 per cent of school leavers who wish to pursue a bachelor degree enroll in a two-year educational program in a short-cycle institution rather than having the opportunity to choose between a short-cycle institution and a university. Thus, enrolment in short-cycle tertiary education is higher than in a jurisdiction where students leaving secondary school may choose between attending a college or a university. The other source of bias is that first-year students in Québec's CÉGEPs are of the same age and stage of progression in their education as Grade 12 students in other educational systems. The implication is that many students who in other provinces would be counted in secondary school enrolment are counted as tertiary students in Québec.

The latter source of bias is more of a problem for enrolment and participation rate comparisons than for educational attainment rate comparisons. The students who complete a three-year career education program will have completed two years beyond the equivalent of Grade 12 in a short-cycle tertiary institution, thus meeting the expectations for attainment of short-cycle tertiary education. Students who complete the pre-university stream and subsequently attain a bachelor degree will be counted in the bachelor degree attainment category. Those who complete the pre-university program but do not go on to complete a bachelor degree will be counted in the SCTE attainment category even though their short-cycle tertiary education experience will have consisted of only one year beyond the equivalent of Grade 12.

However, it is unlikely that the existence of this group of students would exert a major bias in Canada's SCTE attainment rate. The two-year, pre-university stream would account for about 57 of 100 students in the CÉGEPs. Based on a 5-year graduation rate of about 70% (Government of Québec, 2014), about 40 would graduate. Of those graduates, about 80% (Government of Québec, 2014), or 32 would go on to university, and about two-thirds would earn a bachelor degree (Government of Québec, 2014). The graduates of the pre-university stream who do not earn a bachelor degree would consist of the 8 who do not go on to university plus the 10 who enroll in a university but do not attain a degree, for a total of 18. Given that Québec's share of the population is less than 25%, an additional 18 of 100 students would correspond to no more than a 4.5% boost to Canada's rate of SCTE attainment, or about one percentage point difference. Moreover, in this example, of the 10 students who transferred to a university but did not complete a bachelor those who spent at least one year at university would have had two years of

postsecondary education beyond the equivalent of Grade 12. Hence they would fit the profile of persons who had at least two years of tertiary education and a tertiary education credential.

Further evidence that the impact of the Québec system on Canada's SCTE attainment rate is quite small is found in a Statistics Canada report which breaks down the 2014 international education indicators for Canada by province and territory (Statistics Canada, 2015). While the short-cycle tertiary education attainment rate for Canada in 2014 was 25%, the rate for Québec was 24%. In four of the other nine provinces, the SCTE rate of attainment was higher than the national average. Thus, rather than imparting an upward bias on Canada's rate of attainment, Québec's rate exerts almost no bias at all, if anything a very slight downward influence. The next section of this paper will elaborate on how the unique pathway to university in the Québec system may exert a downward influence on Canada's rate of SCTE attainment.

Factors Influencing Canada's outlier status in attainment of short-cycle tertiary education

In order to identify factors that contribute to differences in the SCTE attainment rate between Canada and other countries, it is necessary to consider various aspects of tertiary education that might be relevant. One problem in doing so is the unevenness of comparative data on higher education systems. Within Canada, data on certain features of higher education are more readily available for some provinces than for others, and internationally data are more readily available for some countries than others. Also, the key factors contributing to differences in SCTE attainment rates between Canada and some countries may not be the same as those that account for differences in SCTE attainment between Canada and other countries. For example, because of differences in the organization of tertiary education between the United States and say Finland, the factors that help most to explain the differences in SCTE attainment between Canada and the United States are likely to be different than those that account for the difference in SCTE attainment between Canada and Finland.

In this paper, particular attention is given to comparison between Canada and the United States. Its community college system is one of the most noteworthy features of American higher education. The United States was the first country to develop a system of community colleges, and the American community college has served as a model for the establishment of similar institutions in many other countries, including to some extent, Canada. Given the prominent place that the community college has occupied in the history of higher education in the United States, the fact that the rate of attainment of a community college credential in Canada is 2.4 times the U.S. rate is worthy of some exploration. The relatively low rate of attainment of community college credentials is also a significant factor contributing to the concern in the United States about its ranking in international comparisons of educational attainment (Skolnik, 2016b).

The five factors that are proposed here as important contributors to the differences in SCTE attainment rates between Canada and other countries are:

1. The proportion of tertiary students that enrolls in short-cycle institutions, as opposed to baccalaureate-granting institutions;
2. The completion rates in short-cycle postsecondary institutions;
3. The rates of bachelor degree attainment of students who begin postsecondary education in a short-cycle institution;

4. The extent to which short-cycle institutions add the awarding of bachelor degrees to their repertoire of activity and/or evolve into primarily bachelor and higher degree awarding institutions; and
5. The extent to which higher vocational education in a country is provided by the postsecondary education sector as opposed to being more industry and profession based.

The remainder of this section provides discussion of each of the above factors.

1. The proportion of tertiary students who begin education in a short-cycle institution

Short-cycle tertiary education was slow to develop in Canada. By 1958 there were 49 junior colleges across the country, but more than half in just one province, Québec, and 40 of the 49 were church-controlled institutions, while there were few technical institutes that offered programs of at least two years' duration (Campbell, 1971). The situation changed substantially beginning in the 1960s. Between the early 1960s and the early 1970s, most provinces created systems of colleges and institutes whose primary mission was the provision of short-cycle tertiary education (Dennison & Gallagher, 1986; Jones, 1997).

The major expansion of SCTE that got under way in Canada in the 1960s was paralleled by similar developments in many other countries (OECD, 1971; Furth, 1973). Common to the countries that undertook this expansion of SCTE was the belief that because of changes occurring in society, technology, and the workplace, the typical high school leaver would need more education, but expanding traditional universities was not the most appropriate way to accommodate that need. One reason for the creation of alternatives to the university was cost. As a historian of education in Ontario remarked, for the province to expand higher education solely through enlarging the university sector was to "bankrupt itself in a vain attempt to provide the most expensive of post-secondary facilities [universities] to all comers, regardless of evidence of ability to benefit from them" (Fleming, 1971:492).

Another important motive for the expansion of short-cycle tertiary education was to create a cadre of para-professionals who could take on many of the jobs emerging as a result of changes in technology, advances in knowledge, and changes in the organization of the workplace. In filling these emerging jobs, it was thought that graduates of short-cycle tertiary education programs could free university-trained workers from the need to do work that could be done by others and allow them to concentrate on work which their university studies prepared them to perform.

The example most frequently used to illustrate the role that graduates of short-cycle programs could play in the workforce involved the relationship between engineering technicians, whose education consisted of two years of study in a community college or technical institute, and engineers, who were the product of a four-year university program. The technician is perhaps the quintessential occupational title with respect to short-cycle tertiary education. The *International Standard Classification of Education, ISCED 2011* notes that programs at ISCED Level 5 "may be referred to in many ways, for example: (higher) technical education, community college education, *technician* [emphasis added] or advanced/higher vocational training, associate degree, or bac+2" (UNESCO, 2012:48). As far back as the 1930s, engineering educators and efficiency experts had alleged that the most efficient arrangement would be to have three or even four technicians for every engineer (Wickendon & Spahr, 1931; Beatty, 1958; Merrill, 1960). Such pronouncements about the ideal mix of technicians and engineers were based on research that showed that technicians could perform much of the work of engineers (64% in one study) and were

cheaper to educate and employ (Merrill, 1960). However, in the 1960s the ratio of technicians to engineers in Canada and the United States was less than 1:1 (Skolnik, 1970).

Interest in increasing the ratio of technicians to engineers featured prominently in the dialogue that led to the establishment of provincial systems of community colleges in Canada in the 1960s. In Ontario, one of the precursors to the establishment of a college system was a 1963 report of a committee of the provincial legislature that examined the province's needs for skilled workers (Simonett, 1963). The committee agreed with the position of the association of professional engineers that the province was "graduating too many university trained engineers relative to the number of technicians which are being turned out" (Simonett, 1963:35). When the vision for the new system of colleges was announced by Ontario's Minister of Education in 1965, the first occupation in the list of programs that the government envisaged for the colleges was engineering technician, and the second item in the list was para-professionals in fields other than engineering (Davis, 1965).

Creating opportunities for learners to prepare for what the government expected to be a boom in the mid-skilled segment of workforce also met another public policy goal: creating alternatives for the non-university-bound student (Davis, 1965). Creating such alternatives was important, because, as Leslie (1980) noted, one of the core values of the Canadian university system is an emphasis on minimum standards and universal accessibility for those who meet the minimum standards. Leslie noted that a consequence of this core value is that the Canadian university system excludes learners who possess qualifications that might enable them to be admitted to a university in a more stratified university system such as that of the United States (Leslie, 1980). Because of the differences in views about minimum standards and stratification in the university sectors of the two countries, it might be expected that colleges would have a more prominent position relative to universities in the Canadian than in the American postsecondary system.

One indicator of the relative prominence of the two types of postsecondary institutions is the numbers of each type of institution. Although — with few exceptions — the college system started much later in Canada than in the United States, colleges now comprise more than 60% of the postsecondary institutions in Canada (author's estimate, based on web sites of Colleges and Institute Canada, and Universities Canada), but less than 40% of the postsecondary institutions in the United States (National Center for Education Statistics, 2018). Moreover, between 2001 and 2016, the number of public universities in the United States increased by 20%, while the number of community colleges decreased by 17% (National Center for Education Statistics, 2018).

The prominent role of colleges in Canada is reflected also in the percentage of new entrants to postsecondary education who enroll in a college rather than a university. Other things equal, the greater the proportion of tertiary students that enrolls in short-cycle institutions, the greater will be the short-cycle tertiary attainment rate. It was noted earlier that in Québec, virtually 100% of school leavers who continue their education beyond secondary school enroll in a CÉGEP. In Ontario, 58% of new fall 2016 postsecondary students enrolled in a college (Colleges Ontario, 2017). It was not possible to find first-year enrolment figures for other provinces, but these two provinces accounted for 65.2% of total postsecondary enrolment in Canada in 2015/2016 (Statistics Canada, 2018). The proportion of first-year postsecondary students in the United States who begin in a short-cycle institution is much smaller than in Ontario and Québec. Of the 2010 cohort of first time freshmen students, 37.5% enrolled in a two-year institution (Shapiro, Dundar, Wakhungu, Yuan, & Hwang, 2016). If the proportion of first-year tertiary students that enrolled in short-cycle institutions in other parts of Canada than Québec and Ontario was half the Ontario rate, the overall figure for Canada would be 59%, well above the rate for the United

States. In OECD countries where the short-cycle tertiary sector is less prominent than it is in the United States — which is most of them — it is unlikely that the short-cycle sector takes a higher proportion of first-year tertiary students than in the United States. Thus, Canada is probably a substantial outlier with respect to the first of the five contributing factors.

2. Program completion rates in short-cycle tertiary education

Other things equal, the greater the proportion of students who start short-cycle tertiary education programs who complete their program, the higher will be the SCTE attainment rate. Usually in international comparisons the term “completion rate” is used to refer to the proportion of the population that attains an educational credential, i.e., what in this paper is referred to as a credential attainment rate (e.g., Conference Board of Canada, 2018). It has proved impossible to find international comparative data on the proportion of the students who enter an SCTE program who complete the program. However, some data pertaining to this definition of completion rate are available for Canada and the United States.

It was noted earlier that the completion rate in the two-year, pre-university stream in the CÉGEPs is about 70% (Government of Québec, 2014). The same source shows the rate for the three-year career education stream as about 53%, giving an enrolment-weighted total rate of about 64.5%. A 2017 report by Colleges Ontario showed that the graduation rate for all programs in Ontario colleges in 2015/16 was 66.7% (Colleges Ontario, 2017). The 4-year completion rate for just two-year programs in 2016-17 was 64.6% (Colleges Ontario, 2018). This figure is much higher than the completion rates for two-year public postsecondary institutions in the United States found in the National Student Clearinghouse Research Center (NSCRC) cohort studies of educational attainment. In the study of the 2010 cohort, 26.7% of students completed a two-year degree or certificate at their starting institution within 6 years (Shapiro et al., 2016). Counting the additional 3.3% of the cohort who reached completion at another two-year institution, the rate of completion of programs of SCTE in the United States appears to be less than half the Ontario rate.

A similar pattern of differences between Canada and the United States was found in a study that compared community college drop-out rates between one American state and several Canadian provinces (Frenette, Michaud-Leclerc, Minaya, Oreopoulos, Scott-Clayton, & Tsao, 2017). The American state in the study was Ohio, and the Canadian data were for British Columbia and the Atlantic Region which consists of four provinces: New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland & Labrador. Students were divided into those who first enrolled between ages 18 and 20 (called traditional students), and those whose first enrollment occurred between the ages of 21 and 35 (non-traditional students). Four years after first enrollment, 64.0% of traditional students in Ohio had dropped out, compared to 35.8% in Atlantic Canada and 38.2% in British Columbia. For non-traditional students the drop-out rates were: Ohio 77.8%; British Columbia 48.7%; and Atlantic Canada 28.0% (Frenette et al., 2017). The United States data cited here are from only a single state, but they show a similar pattern as the comparison based on the national study by the NSCRC. Taken together, these data provide reason to believe that the completion rates in short-cycle tertiary education in Canada are significantly higher than in the United States, thus contributing to the reported differences in short-cycle tertiary attainment rates between the two countries. Frenette et al. suggest that key factors contributing to the difference in completion rates between the two countries are the greater structure and support for students that Canadian colleges provide, and the lesser stigma attached to attending a community college in Canada than in the United States (Frenette et al., 2017).

3. Bachelor degree completion rates for students in short-cycle tertiary education

Other things equal, the smaller the proportion of graduates of short-cycle tertiary education programs that subsequently complete a bachelor degree, the higher the short-cycle tertiary attainment rate. There is not a great deal that can be done to assess the impact of this factor, because of the lack of data in Canada on bachelor degree completion rates for graduates of short-cycle institutions. The data situation is much better in the United States where there have been many national longitudinal studies of degree completion. These studies have shown that about 14-16% of students who begin postsecondary education in a community college complete a bachelor degree within 6 years (Jenkins & Fink, 2016; Shapiro, Dundar, Huie, Wakhungu, Yuan, & Bhimdiwali, 2017). However, the majority of community college students that complete a bachelor degree are those that left a community college without earning a two-year credential. In the Shapiro et al. study of the 2010 cohort, 58% of the community college entrants who earned a bachelor degree had not previously earned a two-year degree or certificate in a community college (Shapiro et al., 2016). The 6.7% of community college entrants that earned both a short-cycle credential and a bachelor degree constitute a relatively small proportion of the 30% of community college entrants that earned a two-year credential. Thus, the college-to-university transfer system for which the United States is well known does not contribute greatly to the country's relatively low rate of SCTE attainment.

While there have been no national longitudinal studies of bachelor degree attainment in Canada comparable to those in the United States, some data on transfer rates are available for a few Canadian provinces. A 2005 meta-study of transfer rates in selected jurisdictions by the Association of Colleges of Applied Arts & Technology of Ontario (ACAATO, the predecessor of Colleges Ontario) found that college-to-university transfer rates in Québec were substantially in excess of those in the United States (ACAATO, 2005). Whereas the transfer rates for students in the academic stream in four American states with well-developed transfer systems ranged from 36% to 55%, the corresponding rate for Québec was 77% (ACAATO, 2005). That figure is very close to the 80% transfer rate for the two-year, pre-university stream reported by the Government of Québec in 2014.

In the ACAATO study, the transfer rates for applied programs ranged from 5% to 11% in the American states, compared to 21% in Québec. Other sources show even higher transfer rates for students in the three-year career education stream in Québec colleges: 27.5% (Fisher, Rubenson, Shanahan & Trottier, 2014); 30% (Bégin-Caouette, 2017). The ACAATO study also showed transfer rates in British Columbia that were comparable to those of the American states. In contrast, Ontario studies of the movement of students from colleges to universities show aggregate transfer rates in range of 5 to 8 per cent (Kerr, McCoy, & Shuping, 2010; Trick, 2013).

The lack of data on the proportion of students transferring from colleges to universities who earn a bachelor degree constitutes a serious gap in the information needed to assess the impact of subsequent bachelor degree completion on measured rates of short-cycle tertiary education attainment. Québec students cannot be admitted to a university without having earned a diploma in a college (diplôme d'études collégiales, known as a DEC), unless they apply as a mature student for which normally they must be at least 21 years of age and meet other requirements. Thus, it is likely that most of the students in that province who earn a bachelor degree had previously earned a diploma. Such individuals would not be counted in the Canadian figures for short-cycle tertiary education attainment. Québec's high transfer rate could thus exert a downward influence on Canada's SCTE attainment rate,

offsetting (or perhaps more than offsetting) the other upward influences of the Québec system on Canada's attainment rate. On the other hand, Ontario's very low transfer rate – when combined with its high rates of channeling first time postsecondary students toward colleges and the colleges' relatively high completion rate – would seem to exert an upward influence on Canada's SCTE attainment rate.

Earlier it was noted that a relatively small proportion of persons who earn a two-year degree or certificate in the United States earn a bachelor degree. Most other countries have done far less than the United States to develop pathways from short-cycle institutions to universities. Thus it is unlikely that differences between Canada and other countries in the extent to which graduates of short-cycle programs subsequently earn a bachelor degree contributes to Canada's outlier status in SCTE attainment. More likely it brings Canada's SCTE attainment closer to that of other countries.

4. The evolution of short-cycle tertiary institutions into primarily degree-granting institutions

The establishment of provincial systems of community colleges in Canada in the 1960s was part of a worldwide movement that saw the creation of new types of postsecondary institutions in many countries (Watson, 1973). These new institutions had many characteristics in common besides offering programs of shorter duration than those of traditional universities (OECD, 1971). The new institutions embraced relatively open admission, were more practically-oriented than the universities, emphasized preparation for specific roles in the workforce, and made extensive use of experiential learning. Ultimately, the characteristics just noted turned out to be more fundamental institutional characteristics than program duration, because in many countries as the new institutions evolved they retained, at least to some extent, the applied and non-traditional orientations of the education they offered while increasingly replacing short-cycle programs with programs at the level of the bachelor degree (Taylor, Ferreira, Machado, & Santiago, 2008).

In many European countries, through institutional evolution and mergers, what started as short-cycle institutions eventually became universities of applied sciences (UAS) that award mainly bachelor and postgraduate degrees. In some countries, UASs now award the majority of bachelor degrees, for example, about two-thirds in the Netherlands (Klumpp, de Boer, & Vossensteyn, 2014) and over 60% in Finland (Statistics Finland, 2017a, 2017b). Short-cycle credentials appear to have been a casualty of the transformation of formerly short-cycle institutions into universities of applied sciences.

The most recent example of this development is found in Finland. In 1992, a system of 32 baccalaureate-granting polytechnic institutions was created through mergers of over 200 vocational institutions that had mainly offered short-cycle programs (Välimaa & Neuvonen-Rauhala, 2008). Within 20 years, the polytechnics had become major providers of bachelor degree programs. The number of bachelor degrees awarded by the polytechnics has grown from 1,638 in 1995 to 23,540 in 2017, when these institutions — which have become universities of applied sciences — also awarded 2,764 master's degrees. (Statistics Finland, 2017a). By comparison, in 2017 the universities awarded 14,044 bachelor degrees and 15,087 master's degrees (Statistics Finland, 2017b). As of 2015, zero per cent of 25-34 year-olds had attained a short-cycle tertiary education credential (OECD, 2016), whereas the corresponding figure in 2002 was 19% (OECD, 2004). In the Netherlands, where the SCTE attainment rate for the younger adult population is only slightly higher than Finland's, a 2014 OECD review concluded that insufficient provision of vocational education at the tertiary level below the bachelor degree was a weakness of the tertiary

education system (Fazekas & Litjens, 2014). Even in countries which have continued to provide short-cycle tertiary education, its proportion of tertiary education has declined as originally short-cycle institutions have increased their bachelor degree provision. For example, in New Zealand the polytechnics account for about 20% of undergraduate enrolment (New Zealand Ministry of Education, 2017), and the rate of SCTE attainment of the adult population in 2015 was 4% (OECD, 2015).

In Canada, most of the tertiary institutions that began as short-cycle institutions have continued to be exclusively or mainly providers of short-cycle programs. About a decade ago, 7 former short-cycle institutions in British Columbia and Alberta became universities, but a special type of university whose mandate includes continuing to provide short-cycle vocational programs. Provision of short-cycle tertiary education is still a substantial activity in these institutions, and in most there are at least as many short-cycle as baccalaureate programs. Recently it was announced that three more colleges in Alberta and one in Yukon Territory are going to transition to university status, but as with the ones that preceded them they will still be expected to continue to offer SCTE programs (Samson, 2018).

Many of the other short-cycle institutions in Canada have become eligible to award bachelor degrees, but bachelor degrees constitute a quite small proportion of their total activity. Only in Ontario and British Columbia do some short-cycle institutions offer more than just a few bachelor degree programs. The largest numbers of college baccalaureate programs are offered in Ontario, but these are heavily concentrated in small number of colleges. Four colleges account for two-thirds of the programs, and overall only 6.5% of students in Ontario colleges are enrolled in baccalaureate programs (Wheelahan, Moodie, Skolnik, Liu, Adam, & Simpson, 2017). Bachelor degree programs in the colleges account for 4% of undergraduate degrees in Ontario (Wheelahan et al., 2017). Because of the way that postsecondary system is structured in Québec, the colleges there are not allowed to award bachelor degrees (Begin-Caouette, 2017).

The difference between the way that short-cycle tertiary institutions have evolved in many European countries and in Canada helps to explain the continuing, if not widening, gap in SCTE attainment rates between those countries and Canada. Among Canadian provinces, this difference is perhaps most surprising for Ontario. When the legislation to establish a college system in Ontario was introduced in 1965, the government explicitly rejected a transfer function for the colleges (Skolnik, 2010). Thus, like their counterparts in most European countries at that time, the role of Ontario colleges relative to the universities was to be a parallel tertiary sector that concentrated on vocational education rather than a sector of feeder institutions that offered the first two years of university-equivalent arts and sciences subjects.

The original plan for Ontario colleges gave them a significant leg up toward becoming degree-granting institutions like the European universities of applied sciences (Skolnik, 2016a). At a time when the three-year bachelor degree — as distinct from the Honours bachelor degree which is a four-year degree — was the most commonly awarded degree in Ontario, the colleges were authorized to award three-year diplomas, called advanced diplomas. In 1972 and again in 2014 the government received recommendations that the colleges be allowed to convert their three-year diplomas to three-year bachelor degrees, but in neither case did the government implement the recommendation. Ontario colleges award one three-year diploma for every 3.3 two-year diplomas (Colleges Ontario, 2017), and Ontario is the only jurisdiction in North America or Europe in which a three-year postsecondary credential that is not bachelor degrees is awarded (Wheelahan et al., 2017).

There has been some interest in enabling a limited number of Canadian colleges to become polytechnic institutions, one of the features of which would be offering a substantial number of baccalaureate programs and some master's programs, and four colleges have been given the polytechnic designation by their provincial governments. However, only one of these four institutions offers more than a handful of bachelor degree programs. One of the major reasons why provincial governments have restricted bachelor degree programming in colleges is so that they would not encroach on the universities. Another reason is the fear that the lure of the baccalaureate could lead colleges to jettison both their SCTE and their non-tertiary training activities. Unlike the situation in countries such as Finland and the Netherlands where there are many VET providers outside the universities of applied sciences, Canada opted for the consolidation of most vocational and adult education and training into comprehensive colleges that have multiple missions. Thus, in Canada, the comprehensive nature of the colleges has worked against the adoption of the European UAS model. The resulting concentration on short-cycle programs in Canada's colleges and institutes has helped to maintain Canada's status as an outlier in regard to SCTE attainment.

5. The extent of reliance on institution-based programs for vocational education and training

The short-cycle tertiary education attainment rate is an indicator of the completion of programs that are based in tertiary education institutions. Although short-cycle tertiary education institutions may offer academic programs, their major role in most countries is the provision of vocational education and training (VET). However, there is an alternative approach to providing VET. That approach is industry-based VET, organized by industry associations, professional organizations and trade unions. In some countries, the industry-based approach is quite substantial, and serves large numbers of learners.

These two approaches are not mutually exclusive, as learners in industry-based VET typically spend some time in educational institutions on studies that complement their workplace learning; and workplace learning is a common feature of institution-based VET. The industry-based system that is perhaps most well known internationally is Germany's dual system. The word dual reflects the combination of workplace learning with "large amounts of systemic training in colleges" (Deissinger & Gremm, 2017:297). According to Hoeckel and Schwartz (2010), 60% of a typical cohort of secondary school students in Germany enters the dual system (Hoeckel & Schwartz, 2010). The dual system is common also in other Germanic countries. In Austria, "the single largest part of the VET system is the dual apprenticeship system" (Hoeckel, 2010:10). In Switzerland, about 70% of upper secondary school students choose the vocational path which allows them to gain work experience in one of 240 occupations that include such fields as banking, insurance, ICT, social services, health, and performing arts (Hoffman & Schwartz, 2015). About 30% of Swiss companies participate in the dual education system and work through their respective industry organizations in cooperation with the state educational secretariat to develop competence standards, curriculum and assessments. In many fields, industry associations have established schools with state-of-the-art facilities and equipment.

In recent years, there has been an increase in the extent of inclusion of work experience components in the programs of short-cycle tertiary institutions in many countries. For example, in France about 25% of all students in the two-year tertiary education programs, the Brevet de Technicien Supérieur (BTS) and the Diplôme Universitaire de Technologie (DUT), complete work-based components in the form of apprenticeships (Hippach-Schneider et al., 2017). Canadian colleges facilitate work experience for students in their short-cycle career education programs through extensive use of cooperative education

and other forms of complementary work experience activities including mandatory professional practice, internships, applied research projects, and service learning (Sattler & Peters, 2013).

For the purpose of this paper, the important difference between institution-based and industry-based approaches to VET is that the latter tend not to be included in tertiary education attainment statistics. Thus, in Germany a large number of higher level VET programs that are based outside the formal education system are not treated as educational activities falling under ISCED (Hippach-Schneider et al., 2017). Or as Green & Henseke express it, “. . . jobs which in other countries might require the deployment of college-educated labour are filled by academically-able vocationally-trained labour who are not classified as having had tertiary education” (Green & Henseke, 2017:16). Excluded are programs of business organizations that prepare learners for examinations for state-recognized advanced vocational qualifications for which ISCED-counted programs of educational institutions also prepare learners. In 2014, almost 100,000 of those from the business organization stream completed such examinations compared to 370,000 first-time tertiary education graduates (Hippach-Schneider et al., 2017). In comparison with Germany where apparently much VET is excluded from statistics on tertiary education attainment rates, a high proportion of Canada’s VET is included because it is institution-based. While more than 50% of secondary school graduates in Germany go directly into some form of apprenticeship, the corresponding figure for Canada is less than 1% (Deissinger & Gremm, 2016).

The exclusion of much VET activity from tertiary education attainment statistics helps to explain something of a paradox in the international literature on VET. On the one hand, Germany is widely regarded as having one of the most effective VET systems in the world. There have been numerous publications drawing attention to what other countries can learn from the German system (Deissinger & Gremm, 2016; Newman & Winston, 2016; Symonds, Schwartz, & Ferguson, 2011). Moreover, Taylor notes that “Canadian policy-makers often speak with envy about the German apprenticeship system” (Taylor, 2016:48). On the other hand, according to OECD statistics, Germany’s short-cycle tertiary education attainment rate in 2015 was 1% for the population aged 25-64, and 0% for 25-34 year-olds (OECD, 2016). In contrast, Canada has the world’s highest rate of short-cycle tertiary education attainment, but its approach to workforce development does not seem to attract close to the amount international attention as does Germany’s. Perhaps this is because there is so much interest in workplace learning today, and apprenticeship training has been described as an “incidental” part of VET in Canada (Lehmann, 2012:25, cited in Deissinger & Gremm, 2016:300).

The factors that have been identified in this section as contributors to Canada’s high rate of attainment of short-cycle tertiary education relative to other countries are not independent of each other. For example, the high proportion of Canada’s secondary school graduates that enter short-cycle tertiary education is related to its emphasis on institution-based VET relative to industry-based VET. The high percentage of first year postsecondary students that enter short-cycle programs in Canada is also related to the absence of institutions whose primary role is that of offering applied baccalaureate programs, as many of their counterpart students in countries that have universities of applied sciences might choose to enroll in those institutions rather than in short-cycle institutions.

Implications and Conclusions

There is considerable variation in the approaches that different countries have used to educate people and equip them with the knowledge and skills needed for the world of work. In contrast to other OECD countries, the Canadian approach has emphasized the role of non-university postsecondary institutions

— colleges and institutes — in the provision of programs of two or three years' duration. This emphasis has made Canada a leader in the rate of attainment of short-cycle tertiary education. The Canadian approach stands in sharp contrast to the approach of the United States which has given the primary role for postsecondary education and workforce preparation to institutions whose mission is to offer programs of at least four years duration, i.e., what in Canada would be called universities. A consequence of this difference is that Americans are twice as likely to have attained a bachelor degree as a community college credential, while Canadians are nearly 25% more likely to have a college credential than to have a bachelor degree.

Many European nations have followed a different approach than either Canada or the United States. They have eschewed both the Canadian emphasis on short-cycle tertiary education and the massive systems of universities found in the United States. University sectors in these countries are often relatively small and are not places “you go to for a broad general or liberal arts education” (Hoffman & Schwartz, 2015:6). Rather, they focus on preparing students for a relatively small set of high level, specialized occupations such as lawyer, doctor, professor, or scientist. Preparation for other occupations is the responsibility of universities of applied sciences which emphasize applied education similar to that provided by Canadian colleges and institutes but of longer duration.

Some of the European countries which have developed universities of applied sciences — notably Germany, Switzerland and Austria — are also known for their dual education systems, which were described earlier. There is a strong complementarity between the dual education system and the university of applied sciences, as they share appreciation of the value of applied education. Because of that shared value, it is feasible for high school students in Switzerland who go into an apprenticeship to subsequently qualify for admission to a bachelor degree program in a university of applied sciences (Hoffman & Schwartz, 2015). Comparable pathways from apprenticeship to enrolment in a bachelor degree program are not easy to find in Canada.

Although trying to shed light on Canada's outlier status in regard to short-cycle tertiary education attainment was the motivation for this paper, some of the issues raised in the paper are relevant to other countries as well. For example, countries that have nearly zero rates of short-cycle tertiary education attainment might want to consider whether they have gone too far in scaling back a type of education that could be valuable both in the workplace and, as Gallacher, Ingram & Reeve (2012) have suggested, also for widening access to higher education.

For Canada, the examination of factors that contribute to its high rate of SCTE attainment relative to other OECD countries suggests four possible areas for policy consideration. The first pertains to a concern that one of the reasons why the highest level of education of many Canadians is a diploma from a college might be because — at least outside Québec — transferring to a university is so difficult. Although recent years have seen efforts by provincial councils on admission and transfer and other agencies to improve transfer opportunities, students in college career programs still face considerable difficulties in moving on to universities to complete bachelor degrees. This problem is not unique to Canada, and its apparent intractability may suggest that the root cause is a fundamental mismatch between the curriculum and objectives of a short-cycle career program in a college, on the one hand, and the curriculum and objectives of a bachelor degree program in a traditional university, on the other. Although this problem of mismatch is not unique to Canada, the scale of the problem is greater for Canada than for most other countries because of the high proportion of students who begin postsecondary education in a college.

Since achieving improvements in the transfer route to bachelor degree completion has been so difficult, it is important to consider alternative means to increasing opportunities for students who start postsecondary education in a college career program to earn a bachelor degree. The most obvious alternative, which is now provided at least minimally in six provinces and one territory (Jones, 2018), is to allow colleges to award applied bachelor degrees. This reform could have other benefits in addition to improving opportunities for degree completion for college-bound students, e.g., providing graduates with knowledge and skills needed by the Canadian economy (Wheelahan et al., 2017). Although colleges in many parts of Canada have been declared eligible to award bachelor degrees under certain conditions, the conditions are very restrictive, and the process through which colleges must go to obtain approval to offer a bachelor degree program have been described by a college president as “cumbersome and inefficient” (Vollebregt, 2018). Rather than treating the college bachelor degree as an exceptional program grudgingly approved by provincial governments to appease a limited number of college and industry leaders, perhaps it is time to consider this credential as an integral component of a strategy for postsecondary education in Canada.

Likely the major reason why provincial governments have restricted the scale of the college bachelor degree is a concern that in the absence of such restrictions colleges might reduce their commitment to short-cycle tertiary education and other areas such as trades, basic skills and special needs. Given the experience of many formerly short-cycle institutions in other countries that became predominantly providers of bachelor and higher degree programs, that concern would appear to be justified. Because of the important role that Canadian colleges, as comprehensive educational institutions, play in SCTE and in non-tertiary VET, transforming whole college systems into systems of universities of applied sciences is not a viable option. However, that does not rule out the possibility of a change in status for some colleges which would involve substantially increasing their bachelor degree provision and as well offering applied master’s programs. The applied orientation of these institutions could differentiate them from the universities in the same way that universities of applied sciences are differentiated from universities in other jurisdictions. The improved opportunities for attainment of applied bachelor degrees resulting from a change in status for some colleges, and easing the restrictions on bachelor degree programming in other colleges, could result in some increase in Canada’s bachelor degree attainment rate, and a corresponding reduction in its SCTE attainment rate.

The preceding comments concerning the need to improve opportunities for bachelor degree attainment in Canada reflect one of two contradictory themes evident in recent higher education literature. That theme, of course, is the importance of bachelor degree attainment both for individual and national economic wellbeing. The evidence in support of the contribution of higher levels of education to a nation’s economy is actually not very strong. The results of empirical studies of the relationship between various indicators of educational attainment and macroeconomic variables such as national income have been inconclusive or show only a weak relationship (Bosworth & Collins, 2003; Caplan, 2018; Clancy & Marginson, 2018), or have been described as “fragile at best” (Aghion, Boustan, Hoxby & Vandembussche, 2009). Such correlations as have been found between education and economic growth also leave open the possibility that the causation runs in the other direction, i.e., that more affluent countries are able to spend more on education. The argument that higher levels of education are needed has been buttressed also by studies in the United States and Britain that show better employment and/or wage growth at the top than in the middle of the labour market, supporting the idea of job market polarization (Autor, 2010; Goos & Manning, 2007).

The contrary theme in the literature on higher education and work is that there has been over-emphasis on the baccalaureate in recent years, and that other realms of education, including college and especially,

workplace education, merit more attention. Job market signaling theory provides reason to question the contribution of higher rates of bachelor degree attainment to economic growth. Caplan estimates that about 80% of the value of a traditional bachelor degree is just due to its signaling to employers that the degree holder possesses personal traits such as intelligence and perseverance, and only 20% represents the acquisition of human capital that might contribute to productivity (Caplan, 2018). With respect to alleged job market polarization, there is controversy about the extent of polarization in the job market in the United States (Holzer, 2015), and as to whether there has been significant polarization in the Canadian labour market (Green & Sand, 2013). In the United States, the Georgetown University Center on Education and the Workforce recently produced a publication that lists the many “good jobs that pay” available to those who have completed an associate degree (Carnevale, Strohl, Cheah, & Ridley, 2017) and another publication that shows that field of study matters more to earnings than level of credential (Carnevale & Cheah, 2018). The latter study shows that the median earnings for a STEM associate degree are more than 20% greater than for a B.A. in Psychology or Social Work. In a related vein, the Canadian Occupational Projection System projects that of 6.35 million job openings expected during the 2017-2026 period, 34.2% of the openings will require a college education, compared to 24.3% a university degree (Canadian Occupational Projection System, 2018).

Other recent contributions to the literature on the relationship between education and work in North America take up the theme that vocational education, including particularly education in the workplace has been neglected (Symonds, Schwartz & Ferguson, 2011; Newman & Winsten, 2016; Institute for Competitiveness and Prosperity, 2017). While the attraction of the German dual education system is understandable, it is nevertheless important not to lose sight of the strengths of the heavily institution-based system of vocational education that has been developed in Canada over the past half century. Probably much could be done to marry the best of these two approaches, perhaps using innovative formats that challenge conventions for classification and measurement of short-cycle tertiary education attainment rates.

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