



True North in
Canadian public policy

PERFORMANCE ANXIETY: Post-Secondary Education and the Future of the Canadian Workforce

by Ken S. Coates and Douglas Auld



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Canadian public policy



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Executive Summary

Like political leaders around the world, Canada's federal government has placed a fundamental importance on producing a steady stream of highly qualified personnel, the workers needed to build new businesses, produce greater commercial activity and provide the high-paying jobs Canadians want.

This means that the nation's future rests on the effectiveness of a loosely connected and multi-dimensional post-secondary system. It also raises a basic question: Are Canadian universities, colleges, and polytechnics collectively up to the challenges of the 21st century?

The Macdonald-Laurier Institute will examine this critical national issue in two steps:

- This paper, which provides a preliminary overview outlining the achievements, challenges, and prospects of the Canadian post-secondary system as a primary contributor to inclusive economic development in Canada.
- The second publication in this series will provide an examination of quality assurance measures, focusing primarily on the situation in Ontario, and considers how institutions and governments monitor and evaluate the complex and difficult interplay of government and family investment, the job market, and national economic growth.

First the good news. The country's top universities, all publicly funded, are highly ranked. McGill, Toronto, Waterloo, Alberta, the University of British Columbia, McMaster, and others are among the top 150 publicly supported research intensive universities in the world. And the country has a network of fine regional universities and liberal arts colleges.

“The Canadian system is comprehensive and accessible, providing academic support for weak students and financial support for disadvantaged ones.”

The country's polytechnics – from Sheridan and Conestoga College to Red River College and the British Columbia Institute of Technology – focus on technical and trades-based education, host degree programs and applied research programs and have strong relationships with local and regional employers. Community colleges emphasize broad and ready access to PSE, with many offering adult basic education, an array of certificates and diplomas, and trades and apprenticeship programs and some university transfer courses. Colleges, polytechnics and universities have developed collaborative or coordinated programs, bringing the elements of a liberal education together with practical and technical learning and blurring the lines between institutions.

The Canadian post-secondary system is remarkably inclusive. Bastions of privilege and exclusion remain – engineering programs struggle to attract large numbers of women and comparatively few men enter nursing – but many have fallen. A sizable number of Indigenous students have enriched campus life.

The Canadian system is comprehensive and accessible, providing academic support for weak students and financial support for disadvantaged ones.

Here are the challenges. Some institutions have large numbers of students requiring basic remedial education. Dropout rates of half of the entering class can be seen at some institutions. A growing number of institutions, rooted in areas of demographic decline, survive by attracting large numbers of international students. While Canada is a world leader in attracting international students, usually in the top 10 countries, many of these students have trouble adapting to academic life in Canada and graduation rates are typically low.

It is fair to say that businesses are not uniformly impressed with the quality of graduates they hire. And claims about the earnings of graduates are overstated. Program choice varies outcomes dramatically, as do socioeconomic factors and work habits. Many fine arts graduates will make less over a career than the typical person with a high school diploma.

Within this context, this paper makes several recommendations, including:

- PSE institutions need to review their classes and programs to determine the degree to which they prepare students for available jobs and, outside the students' course work, provide students with practical advice on gaining access to jobs.
- Canada needs a robust, time-sensitive system for identifying jobs, employment rates and other work-related data. The system lags so far beyond current realities as to provide little relevant real-time information and even less evidence of pending changes in the employment market.
- Students require accurate and up-to-date information on the employment outcomes from college, polytechnic and university programs. This information should relate study programs to work and career outcomes.
- But employers can't shoulder all of the cost of embedded programs for students. Instead, K-12 and PSE institutions should look at providing student-run and staffed commercial and administrative activities within their operations.
- The country's institutions need to shift more rapidly from credentials to competencies. If, as appears possible, credentials are less essential for jobs, it is vital that institutions provide proper evidence of the individual's competence in desired skill sets.
- The country needs more inter-regional mobility to encourage students to relocate to institutions where there are study slots available and where training opportunities align with job opportunities.
- Canada needs a jobs strategy that focuses on the emerging technology-driven economy. A collaboration of the private sector, government agencies and PSE institutions is required.

Sommaire

Comme les dirigeants politiques partout ailleurs dans le monde, le gouvernement fédéral a accordé une importance fondamentale à la préparation d'un flux régulier de personnel canadien hautement qualifié, personnel nécessaire pour créer de nouvelles entreprises, intensifier l'activité commerciale et offrir les salaires élevés souhaités de la part des Canadiens.

Cela signifie que l'avenir du pays repose sur l'efficacité d'un système d'institutions postsecondaires multidimensionnelles modérément reliées entre elles. Cette situation soulève également la question centrale suivante : les universités, collèges et écoles polytechniques peuvent-ils répondre collectivement aux défis du 21^e siècle?

L'Institut Macdonald-Laurier examinera cette question nationale critique en deux étapes :

- Tout d'abord, le présent document offre un aperçu provisoire des réalisations, défis et perspectives du système d'éducation postsecondaire canadien envisagé sous l'angle de son rôle comme facteur important du développement économique inclusif au pays.
- Puis, dans le deuxième document de cette série, certaines mesures d'assurance de la qualité portant tout particulièrement sur l'Ontario seront étudiées ainsi que la manière dont les institutions et les gouvernements surveillent et évaluent les liens d'interdépendance complexes et problématiques entre les investissements réalisés par le gouvernement et les familles, le marché du travail et la croissance économique au pays.

Tout d'abord, abordons les bonnes nouvelles. Les meilleures universités du pays, qui sont toutes financées par des fonds publics, sont très prisées. Les universités McGill, de Toronto, de Waterloo, de l'Alberta, de la Colombie-Britannique, McMaster et bien d'autres comptent parmi les 150 premières universités dans le monde à forte intensité de recherche qui sont financées par les fonds publics. De plus, le pays dispose d'un réseau d'universités régionales et de collèges d'arts libéraux tout à fait adéquat.

Les écoles polytechniques du pays – des établissements supérieurs Sheridan College et Conestoga College jusqu'au Red River College, en passant par l'Institut de technologie de la Colombie-Britannique – mettent l'accent sur l'enseignement technique et les métiers, offrent des programmes sanctionnés par un grade et de recherche appliquée et entretiennent des liens étroits avec les employeurs locaux et régionaux. Les collèges communautaires priorisent quant à eux l'accès étendu et facile à l'enseignement postsecondaire et sont nombreux à offrir une éducation de base aux adultes, une large gamme de certificats et de diplômes, des programmes axés sur les métiers et l'apprentissage ainsi que certains cours préparatoires à l'université. Les collèges, les écoles polytechniques et les universités ont élaboré des programmes coopératifs et coordonnés en rapprochant certains éléments d'une éducation libérale et l'apprentissage pratique et technique, ce qui estompe les frontières entre les institutions.

Le système d'enseignement postsecondaire canadien est très inclusif. Certaines forteresses élevées autour de privilèges ou sur la base de l'exclusion résistent – programmes de génie qui ont du mal à attirer un grand nombre de femmes et soins infirmiers, domaine qui compte relativement peu d'hommes – même si elles ont été nombreuses à disparaître. Un nombre important d'étudiants autochtones a enrichi la vie universitaire.

Le système canadien est exhaustif et accessible, puisqu'il offre des programmes d'aide aux étudiants plus faibles ainsi qu'un soutien financier aux personnes défavorisées.

Voici maintenant les défis à surmonter. Certains établissements ont admis un grand nombre d'étudiants qui ont besoin de cours de rattrapage. De plus, les taux d'abandon dans les classes d'entrée sont de 50 pour cent dans certains établissements. Enfin, un nombre croissant d'institutions aux prises avec les effets du déclin démographique doit survivre en attirant un grand nombre d'étudiants internationaux. Le Canada est un des pays qui réussit le mieux à attirer les étudiants internationaux, comptant habituellement parmi les dix premiers, mais ces étudiants ont du mal à s'adapter à la vie universitaire au Canada et leurs taux de diplomation sont généralement faibles.

Il convient de souligner que les entreprises ne sont pas toutes impressionnées par la qualité des diplômés et diplômées qu'elles embauchent. De plus, les affirmations relatives aux gains des diplômés sont surestimées. Les résultats varient considérablement en fonction des programmes, de même qu'en fonction des facteurs socioéconomiques et des habitudes de travail. De nombreux diplômés des beaux-arts gagneront moins au cours de leur carrière que les personnes titulaires d'un diplôme d'études secondaires en général.

Dans ce contexte, plusieurs recommandations sont formulées dans le présent document, y compris les suivantes :

- Les établissements d'enseignement postsecondaire doivent revoir leurs cours et leurs programmes pour déterminer la mesure dans laquelle ils préparent les étudiants aux emplois disponibles et, à l'extérieur des travaux de cours, fournissent aux étudiants des conseils pratiques sur l'accès à l'emploi.
- Le Canada doit pouvoir compter sur un système solide et à jour pour identifier les emplois à combler, les taux d'emploi et d'autres données liées au travail. Le système est profondément déconnecté de la réalité actuelle en ce sens qu'il fournit peu d'informations pertinentes en temps réel et encore moins d'indications sur les changements éminents sur le marché de l'emploi.
- Les étudiants ont besoin d'informations précises et à jour sur les résultats d'emploi des titulaires d'un diplôme collégial, universitaire ou polytechnique. Ces informations doivent mettre en lien les programmes d'études et les résultats en matière de travail et de carrière.
- Les employeurs ne pouvant pas assumer la totalité du coût des programmes d'apprentissage intégré au travail pour les étudiants, c'est aux établissements d'enseignement secondaire et postsecondaire de s'efforcer d'offrir des activités commerciales et administratives dirigées et menées par les étudiants dans le cadre de leurs opérations.

“ Le système canadien est exhaustif et accessible, puisqu'il offre des programmes d'aide aux étudiants plus faibles ainsi qu'un soutien financier aux personnes défavorisées.

- Les institutions du pays doivent prendre leurs distances par rapport aux titres scolaires en se tournant rapidement vers l'acquisition de compétences. Si, comme ce semble être le cas, les diplômes sont moins essentiels pour obtenir un emploi, il est essentiel que les institutions fournissent une preuve adéquate des compétences des individus à l'égard des aptitudes qui sont souhaitées.
- Le pays a besoin de plus de mobilité interrégionale afin d'encourager les étudiants à fréquenter les institutions offrant des possibilités de formation et où ces formations s'alignent sur les possibilités d'emploi.
- Le Canada bénéficierait d'une stratégie de l'emploi axée sur l'émergence d'une économie davantage orientée vers la technologie. Le secteur privé, les organismes gouvernementaux et les établissements d'enseignement postsecondaire doivent collaborer sur ce plan.

Introduction

In February 2017, the Advisory Council on Economic Growth released a series of papers on strategies for improving Canada's economic prospects. The reports covered such diverse topics as international trade, infrastructure, and general economic strategy. A key paper, "Building a Highly Skilled and Resilient Workforce Through the FutureSkills Lab," outlined the importance of a flexible, adaptable post-secondary education system to Canada's success in a rapidly changing world. The first paragraph of the report laid out the challenge in stark terms:

Canadian workers face a rapidly changing economy which will have a profound impact on the nature of work and jobs of the future. To be equipped for this change, there is a critical need for Canada to rethink our approach to learning, work, and training. Nearly half of Canadian jobs are at high risk of being affected by automation over the coming ten to twenty years. The rise of the "gig economy" means that an increasing number of Canadians will find employment through independent contract work, and therefore not be afforded access to traditional employer-led training and development. While automation and technological change promises to be economically productive, and will likely result in the creation of new jobs, these changes mean that Canadian workers will have to adapt to employers' and consumers' rapidly evolving requirements. (Advisory Council on Economic Growth 2017)

The economic and employment challenges are global in nature and consequence, and are not unique to Canada. The combination of economic globalization, rapid technological change, and the dramatic expansion of post-secondary opportunities and enrolment have transformed the inter-connected worlds of educational preparation and work.

Adapting to these new realities is difficult, largely because the future is uncertain. For industrialized nations, making the adjustment from late 20th-century education, training, and work place conditions to the appropriate systems for mid-21st-century personal success and national competitiveness is crucial for economic well-being and prosperity. Canada, with its significant dependence on the natural resource economy and an over-heated real estate market, faces the additional challenge of accommodating a major commercial and workplace transition while also responding to the technological and structural change.

“The economic and employment challenges are global in nature and consequence, and are not unique to Canada.”

Prime Minister Justin Trudeau and his cabinet colleagues have focused their efforts for economic renewal and sustained growth on the development of an innovation economy. Like political leaders around the world, they reiterate the fundamental importance of producing a steady stream of highly qualified personnel, the workers needed to build new businesses, produce greater commercial activity and provide the high-paying jobs that Canadians dearly want. They have, again as is commonplace internationally, focused on the post-secondary education system, sending strong signals about national preferences as, for example, the call by Minister of Innovation, Science and Economic Development Navdeep Bains for widespread coding education. And like their counterparts in other countries, they have emphasized the contributions of universities over colleges, institutes, and polytechnics.

The importance attached to post-secondary education – routinely presented as the foundation of sustained prosperity – means that the nation’s future rests on the effectiveness of a loosely connected and multi-dimensional system. It also raises a basic question: Are Canadian universities, colleges, and polytechnics collectively up to the challenges of the 21st century?

Before returning to the Canadian scene, it is worth noting that the last few years have seen a growing world-wide debate about the effectiveness of post-secondary education, particularly in terms of employment, career earnings, and return on investment. The United Kingdom is embroiled in a major debate about vice-chancellors’ salaries, tuition fees and the quality of university teaching. Bryan Caplan’s over-the-top critique, *The Case against Education: Why the Education System Is a Waste of Time and Money*, has attracted considerable attention in the United States (Caplan 2018). A more important book, Joseph Aoun’s *Robot Proof: Higher Education in the Age of Artificial Intelligence*, offers a more balanced analysis of the connection between college education, practical skills, and the changing workforce (Aoun 2017).

This debate is driven by many factors, including concern over tuition fees and student debt, the uneven experience of students in college or university and after graduation, employers’ critiques of graduates’ career readiness, and the reality and prospect of the disruption of the workforce through technological change. It reflects, too, the often-intense engagement of parents in their children’s adult lives and their concern about their ability to find suitable employment and, therefore, the career opportunities needed to sustain a successful life. The debate in Canada, therefore, is playing out against a global background of, simultaneously and inconsistently, the increased emphasis on post-secondary education and growing concerns that colleges, polytechnics, and universities are not up to the challenges of the 21st century.

Hence the federal government’s aforementioned plan to expand its presence in this field through the FutureSkills Lab. While detailed plans remain to be worked out, it is clear that the Trudeau government is operating on several key assumptions:

- Canada’s post-secondary institutions and education and training programs, despite their many strengths, may not be well-suited to the challenges of the modern workforce;
- Future directions in skills, training and employment are uncertain, but the potential for rapid and substantial change in the needs of the Canadian workforce is real.
- Developing an appropriate national response is a significant administrative problem and requires central coordination.
- Government initiatives, whatever they might be, need to be monitored and evaluated, ideally with a view to altering skills development and training programs on the basis of detailed and reliable evidence.

The Macdonald-Laurier Institute examines this critical national issue in two steps:

- This paper provides a preliminary overview which outlines the achievements, challenges, and prospects of the Canadian post-secondary system as a primary contributor to inclusive economic development in Canada. Governments in Canada and other countries have attached a high priority to education, training, and skills development and have invested heavily in this area.
- Given the importance that the government assigns to skills and training, and given the administration’s two-pronged commitment to “deliverology” and the transparent analysis of

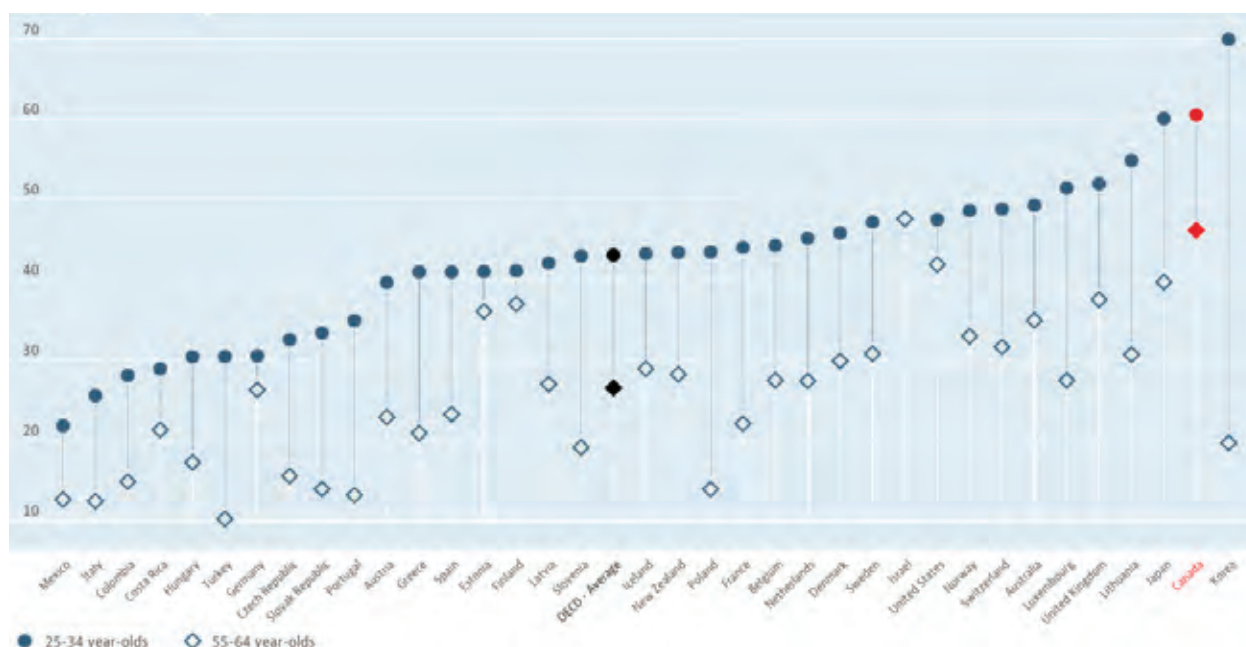
results, it is helpful to consider how governments and post-secondary institutions might measure their achievements. The second publication in this series will provide an examination of quality assurance measures, focusing primarily on the situation in Ontario, and considers how institutions and governments monitor and evaluate the complex and difficult interplay of government and family investment, the job market, and national economic growth.

Let's be clear at the outset that there are fundamental challenges in making these comparisons and assessments. Universities, emerging out of centuries-long traditions, have inherited standards and expectations that motivate the faculty and students and that animate administrative efforts. Colleges and polytechnics are newer in Canada, arising out of vocational and trades schools over the past half-century, but expanding into comprehensive and multi-faceted institutions that operate across the country and that are connected to their regions and communities.

While universities offer undergraduate and graduate degrees, in a variety of academic and professional fields, colleges provide access to a multitude of academic, industrial, trades, professional, and remedial programs. The polytechnics, less recognizable by most Canadians but well-regarded for the effectiveness of the workplace transitions of their graduates, deliver short and long-term courses, with several offering degrees and looking – save for the technical focus of many of their programs – increasingly like universities. There is a great deal of movement between institutions – from colleges and polytechnics to universities, from universities to colleges and polytechnics – and from the workforce to the institutions and vice versa.

The State of PSE in Canada

CHART 1: NATIONAL COMPARISONS, PSE PARTICIPATION RATES, OECD

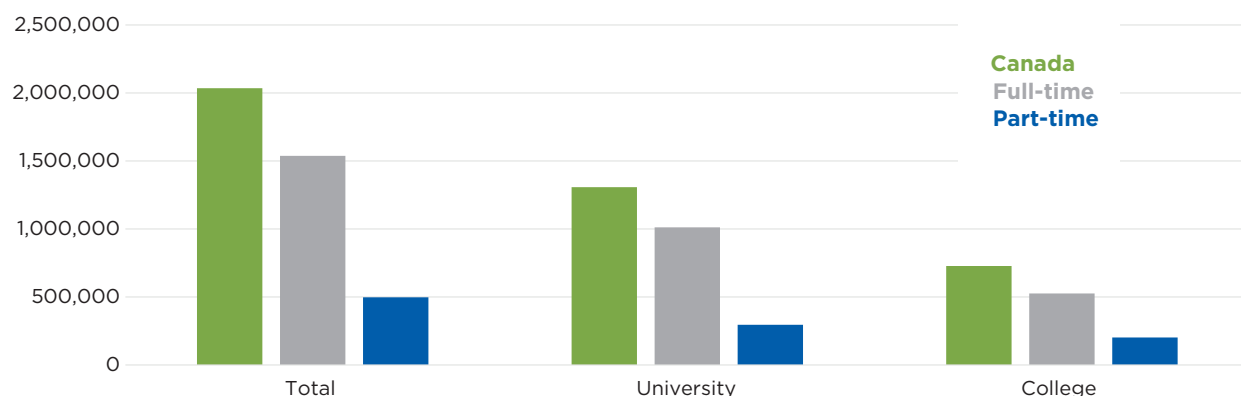


Source: <https://data.oecd.org/eduatt/population-with-tertiary-education.htm>

As a starting point, it is vital to recognize the historical and contemporary achievements of the current Canadian post-secondary education system. Canada has a high PSE participation rate, generally behind only South Korea, fuelled by substantial university attendance and one of the best polytechnic and community college systems in the world.

The country's top universities, all publicly funded, are highly ranked (Usher 2008). McGill, Toronto, Waterloo, Alberta, the University of British Columbia, McMaster, and others are among the top 150 publicly supported research intensive universities in the world. The country has a network of fine regional universities – from Memorial University of Newfoundland through the Université de Québec system, and including Manitoba, Saskatchewan, Calgary, Victoria, and UNBC – that do a fine job of serving their host territories. The university system is diverse, from small liberal arts colleges to top-ranked medical-doctoral institutions, from the exclusivity of Queen's and Western to more open-access institutions like Winnipeg, Vancouver Island University and St. Mary's. While a growing number of institutions struggle to fill their classrooms, particularly in areas of sharp demographic decline like the Maritimes and across the provincial norths, many have large and impressive student populations.

CHART 2: ENROLMENT, POST-SECONDARY EDUCATION, CANADA, 2015/2016



Source: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/educ71a-eng.htm>.

Although universities get much of the public attention, the rest of the Canadian PSE network is equally impressive. The country's polytechnics – from Sheridan and Conestoga College to Red River College and the British Columbia Institute of Technology – focus on technical and trades-based education, host degree programs and applied research programs and have strong relationships with local and regional employers. Community colleges emphasize broad and ready access to PSE, with many offering adult basic education, an array of certificates and diplomas, and trades and apprenticeship programs and some university transfer courses.

While the general impression of Canadian PSE is that the system is hierarchical, with colleges on the bottom and research-intensive universities on the top, the reality is much different. Some college and polytechnic programs have high admission standards and long waiting lists. Growing numbers of university graduates subsequently enroll in college or polytechnic programs in order to prepare for employment. Colleges, polytechnics and universities have developed collaborative or coordi-

nated programs, bringing the elements of a liberal education together with practical and technical learning and blurring the lines between institutions.

The challenge in Canada of preparing a 21st-century workforce extends beyond the institutional complexity of the PSE institutions to include the perturbations of Canadian federalism. Education, including PSE, is a provincial responsibility that the provinces guard carefully. The federal government has adopted an expanded role in research in recent years, but Ottawa plays a lesser role, principally supporting student loans, in undergraduate and graduate educational programming.

The result has been that Canada does not have a “system” in any practical sense of the term, although, to be fair, the provinces do not actually operate their PSE institutions as a system either, favouring autonomy over central control. The result is limited coordination, serious systemic inefficiencies, and significant regional inequalities. Some institutions must cope with large numbers of applications; others have too few people trying to get in and have been forced to lower standards to attract enough students to cover costs. As a management tool, available to the national government to effect significant changes in the workforce, the Canadian PSE institutions are disconnected, diverse, and provincially focused. Federalism, it is clear, is a significant challenge to national preparations for the 21st-century economy. Conversely, PSE is a major tool in the hands of provincial governments seeking to connect education and training with regional economic and workplace realities.

Mandates and activities range widely across institutions. There are open-access universities and colleges that focus on providing inexpensive opportunities in smaller centres and for students who would otherwise not be able to pursue a post-secondary education. There are elite research universities, ranked among the top institutions in the world, that have competitive admissions processes, high fees in high-demand professional programs, and a strong academic focus. Universities are solid and traditional and emphasize general education and knowledge production with less priority assigned to workplace preparedness. The polytechnics, connected to regional business and employment markets, are known for their technological emphases and their adaptability in the face of changing economic conditions.

“The challenge in Canada of preparing a 21st-century workforce extends beyond the institutional complexity of the PSE institutions to include the perturbations of Canadian federalism.

TABLE 1: MINIMUM ENTERING AVERAGES, ONTARIO UNIVERSITIES, 2017

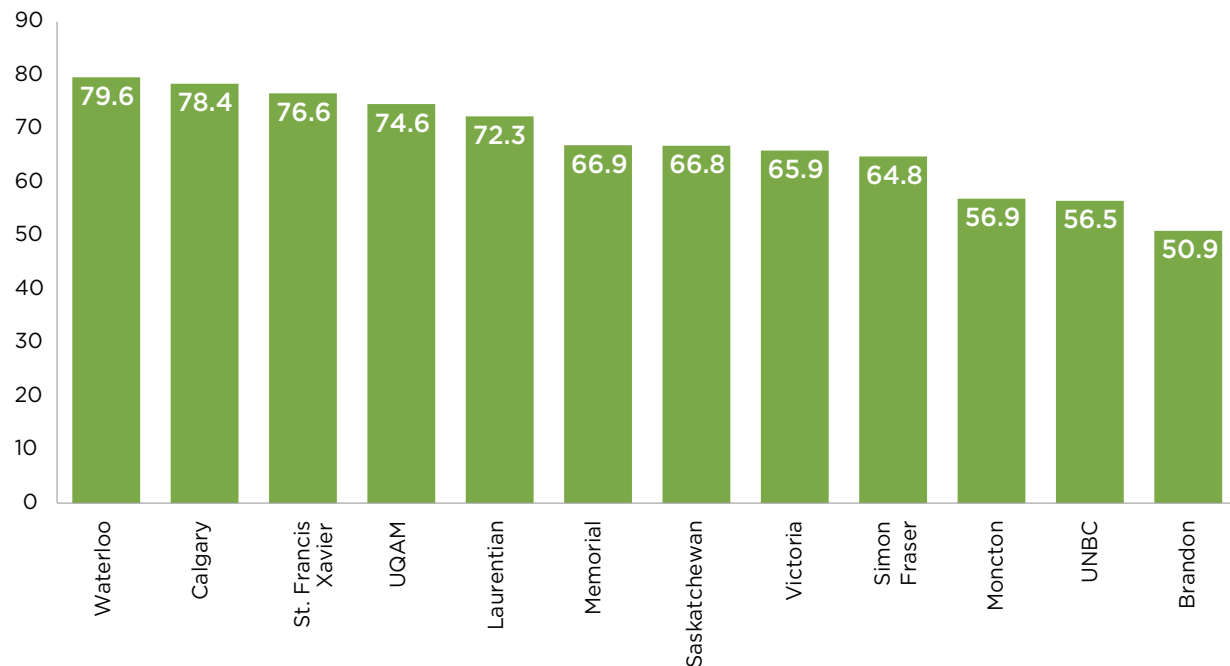
University	Minimum entering grade: Arts	Minimum entering grade: Science	Minimum entering grade: Commerce	Minimum entering grade: Engineering
Algoma	65%	65%	65%	65%
Brock	70%	70%	84%	
Carleton	78%	78-80%	80%	76-86%
Guelph	78-84%	80-85%	78-84%	83-85%
Lakehead	70%	70%	70%	70%
Laurentian	72%	72%	72%	72-80%
McMaster	75%	85-90%	82.50%	89%
Nipissing	70%	70%	70%	
OCAD U	70%, plus portfolio			
UOIT	70-75%	70-80%	75-80%	80-85%
Ottawa	73-78%	75-84%	75-85%	80-85%
Queen's	80%	84%	87%	90%
RMC	75%	75%	75%	75%
Ryerson	73-88%	72-90%	72-85%	88-90%
Toronto	75-84%	75-91%	83-88%	85-93%
Trent	70%	70%	70%	
Waterloo	80%	80%	80-92%	88%
Western	83.50%	83.50%	87.50%	87%
Wilfrid Laurier	70-86%	74-91%	89-93.5%	
Windsor	70-80%	70%	73-78%	74%
York	75%	80%	90%	80%

Source: <http://www.macleans.ca/education/university/ontario-universities-the-minimum-grades-for-getting-in/>

Some institutions have large numbers of students requiring basic remedial education. Dropout rates of half of the entering class can be seen in the more open-entry institutions. Others select their first-year classes from the top quarter of the country's graduating high school students. A growing number of institutions, rooted in areas of demographic decline, survive by attracting large numbers of international students, with the challenges and opportunities associated with a multicultural study population.

There are massive urban universities (York University), small town colleges (Northern Lights, with campuses across northern British Columbia, and Portage College in Alberta), faith-based colleges (Crandall University in Moncton, New Brunswick), elite polytechnics (Conestoga in Kitchener and Southern Alberta Institute of Technology), bilingual institutions (University of Ottawa and Laurentian University), culturally distinctive universities (First Nations University of Canada), private institutions (Quest University), and fine and performing arts institutions (Ontario College of Art and Design University and Emily Carr University of Art and Design in British Columbia), among other variations.

CHART 3: GRADUATION RATES, SELECTED INSTITUTIONS



Source, <http://www.macleans.ca/education/canadian-universities-with-the-highest-and-lowest-graduation-rates/>

Some universities are easy to enter, celebrating their open access approach, as does Athabasca University, or being flexible about admission requirements, as are Brandon University and Cape Breton University. The best polytechnic programs are more competitive than many university graduate and professional programs. While some professional programs, such as medicine and pharmacy, provide superb job prospects, other university degrees offer much less certainty of employment or income. Conversely, there are trades and technical courses that offer ready access to highly paid jobs and solid careers. While some of the institutions are weak by some international standards, they shine in providing opportunities for marginalized students and poor-performing high school graduates. The value-added of these institutions and their ability to give students from disadvantaged backgrounds and with poor educational foundations the opportunity to complete advanced studies is worth recognizing.

Moreover, the Canadian post-educations system is one of the best in the world. Canada had four universities in the top 100 in the world in 2018 according to the *Times Higher Education Supplement*, 10 in the top 250 and 18 in the top 500 (there are more than 20,000 three- and four-year degree granting institutions globally). This is no small accomplishment.

The college system, which does not have the same global ranking system, is highly regarded internationally; for years, Ontario's college system has been considered to be among the world's best. The polytechnics, although underestimated in Canada, are well recognized by employers and professionals in the field, with each of the institutions underpinning vibrant regional economies. Canada has one of the highest rates of post-secondary participation of any nation, in substantial measure because of the reach and inclusiveness of the college system.

By many measures, Canadian post-secondary institutions serve the country well. But the primary question is not whether or not these institutions meet the objectives set by their respective college, polytechnic, and university systems – although questions are emerging about that as well – but rather whether these institutions are meeting the objectives of governments, parents, and students.

The government of Canada, as noted at the outset, sees our post-secondary system as essential to national prosperity and continues to pour large sums into supporting researchers and students. Provincial and territorial governments, likewise, invest heavily in colleges, polytechnics, and universities, hoping that a steady supply of diploma and degree holders will both sustain and expand regional economies. Parents and students are preoccupied with employment and earnings, seeing a post-

“The government of Canada, as noted at the outset, sees our post-secondary system as essential to national prosperity and continues to pour large sums into supporting researchers and students.”

secondary credential as a near-essential requirement for aspirants to the Canadian middle and upper class. In other words, Canadians have tied a great deal of their hopes for the future – for individual students and for the country as a whole – to the success of the post-secondary system.

The Canadian post-secondary system has achieved a great deal, without the sky-high tuition fees of American private universities, the intense pressure surrounding admission to the top-ranked Japanese, Korean, and Chinese universities, or the uneven quality of many of the colleges and universities in other parts of the world. Indeed, in many respects, the Canadian PSE network is exemplary, providing important services and decent outcomes and serving as a platform for young Canadians seeking to gain an education and establish a decent career. This does not mean that all is well in the system, but it suggests that there is a strong foundation of government funding, public support, business engagement, and parental and student interest. Some of the accomplishments include the following:

HIGH INTERNATIONAL STANDING

As discussed earlier, and using accepted international metrics, Canadian colleges, polytechnics and universities are very highly regarded. The country does not have the elite private universities like the United States, many of which have multi-billion-dollar endowments. With a handful of exceptions, most Canadian institutions are comparatively young, with no universities with the historical pedigree of Cambridge or Oxford. In many instances, Canadian institutions may not be highly ranked as a whole but can have truly impressive specific programs. Despite these limitations, the Canadian post-secondary system is ranked well globally.

TABLE 2: THES TOP CANADIAN UNIVERSITIES, 2018

World Rank	University
22	University of Toronto
34	University of British Columbia
42	McGill University
78	McMaster University
108	Université de Montréal
119	University of Alberta
201-250	University of Calgary
201-250	University of Ottawa
201-250	University of Waterloo
201-250	University of Western Ontario
251-300	Dalhousie University
251-300	Laval University
251-300	Queen's University
251-300	Simon Fraser University
301-350	University of Victoria
351-400	York University
401-500	University of Manitoba
401-500	University of Saskatchewan

Source: <https://www.timeshighereducation.com/student/best-universities/best-universities-canada>.

Non-University Options (Colleges and Polytechnics)

Canada has one of the world's highest PSE participation rates, in large measure because of the high enrolments in Canada's colleges and polytechnics. These institutions focus less on academic programming (although many offer remedial, bridging, or transfer programs for students who intend to continue their studies at university) and more on career, professional and technical offerings. In recent years, the colleges and polytechnics have attracted substantial and, in many instances, growing numbers of university graduates to their programs, offering job-specific preparation that serves as an important supplement to the university degree.

Community colleges are well connected to regional industry and focus on career preparation. They provide access points for local students, typically by offering a wide range of short- and medium-length programs that lead to identified jobs. Indeed, many of the colleges operate as regional systems, not as single institutions, providing services in numerous communities in their catchment areas. Northern College, for example, operates four campuses across Northeastern Ontario (located in Timmins, Kirkland Lake, Moosonee and Haileybury). Yukon College has a main operation in

Whitehorse and 12 other campuses across the territory. In total, community colleges offer programming in more than 2,000 communities across Canada. The college system, although underestimated by most commentators, provides important training, retraining, and education in small and large communities across the country.

The polytechnics inhabit a special place in the Canadian post-secondary system. They specialize in advanced technical training; several now offer four-year degrees in some of the most demanding and career-ready fields. The polytechnics work very closely with local businesses and are highly regarded for their ability to connect students to the workforce. The Northern Alberta Institute of Technology and the Southern Alberta Institute of Technology

are renowned for their connections to the oil and gas sector. Sheridan is a world leader in digital media and animation. Conestoga is a crucial supporter of the Kitchener-Waterloo industrial and technology sectors (Doern 2008).

“In an important but currently underdeveloped innovation, the colleges and polytechnics are working with universities to provide laddered and combined program offerings.

In an important but currently underdeveloped innovation, the colleges and polytechnics are working with universities to provide laddered and combined program offerings. In the former instance, students start their studies at a college or polytechnic and then ladder into a degree completion option at a university. The combined degree offerings allow students to complete a college diploma and a university degree or a shared degree involving two institutions, linking the broad educational benefits of the university with the practical and career-oriented training from the college or polytechnic.

Seneca, for example, has a facility on the campus of York University. Ontario offers such collaborative programs as Child and Youth Studies and Child and Youth Worker Diploma (Brock and Durham), Bachelor of Information Technology and Interactive Multimedia Design (Carleton and Algonquin), Bachelor of Science in Nursing (McMaster and Conestoga College), and Design (York and Seneca), among many others. Across Northern British Columbia, UNBC shares physical space with the four northern institutions (Northern Lights, College of New Caledonia, Northwest Community College and Thomson Rivers University), offering their degrees on site and with the colleges providing first- and second-year university transfer courses that allow students to continue their studies at any university. Governments apparently favour more of these collaborations, although mixing institutional cultures has often proven difficult.

TABLE 3: COLLABORATIVE COLLEGE-UNIVERSITY PROGRAMS IN ONTARIO (SELECTED)

University	College	Joint Program
Brock University	Durham College	Child and Youth Studies (BA) & Child and Youth Worker Diploma
Algoma University	Northern College	Business Admin – Information Systems
Carleton University	Algonquin College	Bachelor of Information Technology – Interactive Multimedia & Design
University of Guelph	Humber College Institute of Technology & Advanced Learning	Honours Bachelor of Applied Arts in Media Studies (BAA) and Diploma in Media Communications
Lakehead University	Confederation College	Bachelor of Science in Nursing (BScN)
Laurentian University	Michener Institute	Radiation Therapy
McMaster University	Mohawk College	Bachelor of Science in Nursing (BScN)
Nipissing University	Canadore College	Bachelor of Arts Honours in Criminal Justice
University of Ottawa	Algonquin College, Woodroffe Campus	Honours Bachelor in Digital Journalism
Queen's University	St. Lawrence College	Bachelor of Science (Honours) degree with a specialization in Biotechnology

Source: <https://www.ouac.on.ca/guide/collaborative-university-college-programs/>

Incomes and Employment Rates for Graduates

Universities in Canada place a great deal of emphasis on two key statistics: the average income of university graduates and overall employment rates. As they correctly point out, these graduates have substantially lower unemployment rates than college and high school graduates, and earn substantially more money, as much \$1.5 million more over the course of their working lives than high school graduates.

Universities Canada (the primary advocacy organization for universities in Canada) repeats this number – as one would expect them to do – regularly, for it answers the most pressing question that parents and students currently have about advanced education: Will my daughter or son get a job that provides a decent income and career? The simple answer is yes: on average, someone with a university degree will be more likely to land a job and receive a higher income than the average resulting from high schools, colleges, and polytechnics.

TABLE 4: CUMULATIVE EARNINGS, 1991-2010

	MEN			WOMAN		
	Bachelor's degree	College certificate	High school diploma	Bachelor's degree	College certificate	High school diploma
2010 constant dollars						
Education	1,290,400	996,600	...	1,044,600	513,500	...
Fine and Applied Arts	843,900	807,200	...	652,100	437,300	...
Humanities	1,144,600	827,500	...	808,200	555,900	...
Social Sciences	1,358,900	1,241,500	...	824,300	563,800	...
Business Administration	1,619,400	1,099,500	...	1,169,100	625,100	...
Life Sciences	1,334,700	753,500	...	844,900	502,300	...
Engineering	1,845,000	1,244,200	...	972,600	718,800	...
Health	1,627,600	1,089,700	...	1,094,000	812,800	...
Mathematics and Physical Sciences	1,607,500	1,128,000	...	1,148,700	793,800	...
All fields of study	1,517,200	1,137,000	882,300	972,500	643,200	458,900
... not applicable						

Source: <https://www.statcan.gc.ca/pub/11-626-x/11-626-x2014040-eng.htm>

But there is a fundamental problem with this data, one of many of the challenges facing data collection in higher education in Canada. The statistics mentioned above are not adjusted for family income, intelligence, high school grades (which remain a good predictor of success at university), or other personal characteristics. These are the ones that are publicized:

- Young people with university or polytechnic degrees have higher incomes and lower unemployment rates than others in their age cohort;
- Young people with college or polytechnic diplomas have higher incomes and lower unemployment rates than those in their age cohort who have not attended post-secondary education.

One suspects that the same study of educational outcomes could, if the studies were done, produce the following headlines, all equally true.

- Young people from wealthy families have higher incomes and lower unemployment rates than others in their age cohort;
- Young people of high intelligence have higher incomes and lower unemployment rates than others in their age cohort;

- Young people with a high level of motivation and a strong work ethic have higher incomes and lower unemployment rates than others in their age cohort;
- Young people with grit and determination and the ability to overcome significant life challenges have higher incomes and lower unemployment rates than others in their age cohort.

All of these are intuitively true, although difficult to demonstrate. But one data set – employment rates and income levels for university graduates – gets the lion’s share of the attention. Comparable studies are rarely produced for the other, less institutionally focused categories.

The Education Policy Research Initiative at the University of Ottawa provides excellent data on the incomes of university graduates, connecting individuals to their field of academic study. The information demonstrates the crucial point that university graduates, in any field of study, can earn high incomes. It also shows that many university graduates earn average and below average incomes, suggesting that a university degree is not an assurance of employment or career earnings outcomes.

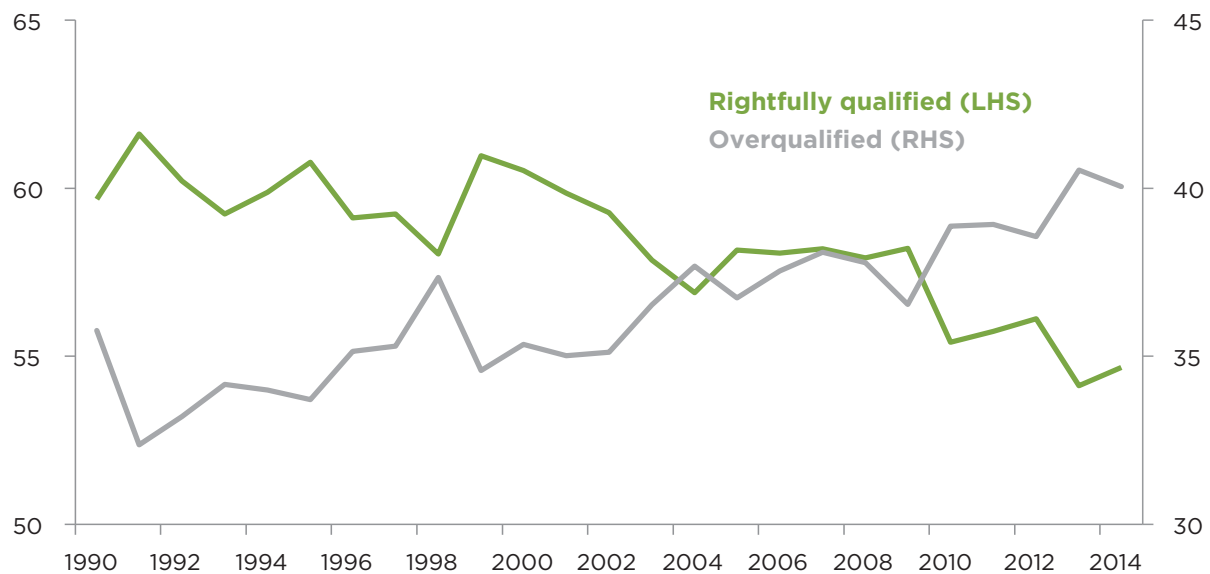
The university system celebrates these numbers much more enthusiastically than colleges and polytechnics. The latter offer a broader range of programs than universities – from hairdressing diplomas and short courses on traffic control to four-year degrees in engineering technologies and digital design – a mix of offerings which renders institutional or system averages quite meaningless.

There are other issues with the data. The averages do not include students who drop out before graduating, account for post-degree qualifications, or, as noted above, adjust for variations in intelligence, work ethic, or parental incomes, all of which have a strong influence on employability and lifelong incomes. The data are always backwards looking, telling us what happened to earlier graduates, and do not tell us what will happen in future years. Taken for what it is – the number typically circulated tells everyone what happens to the mythical “average” graduate – the numbers tell us that a university degree carries substantial financial benefits. But averages are also only averages. They provide little guidance for individual students or graduates.

The employment challenge is real. Many graduates – a growing number over the past 20 years – find work but end up with jobs that do not require a university degree. This percentage – typically described as the “underemployment rate” – is an important mark of the gap between educational expectations and employment outcomes. This disconnect is the source of considerable parental and graduate discontent and worries governments that their extensive investments in post-secondary education are being ill-used. It is also not a new phenomenon.

CHART 4: EDUCATIONAL CREDENTIALS VS. EDUCATIONAL REQUIREMENTS FOR RECENT UNIVERSITY GRADUATES

percent of workers aged 25 to 34
with a university degree

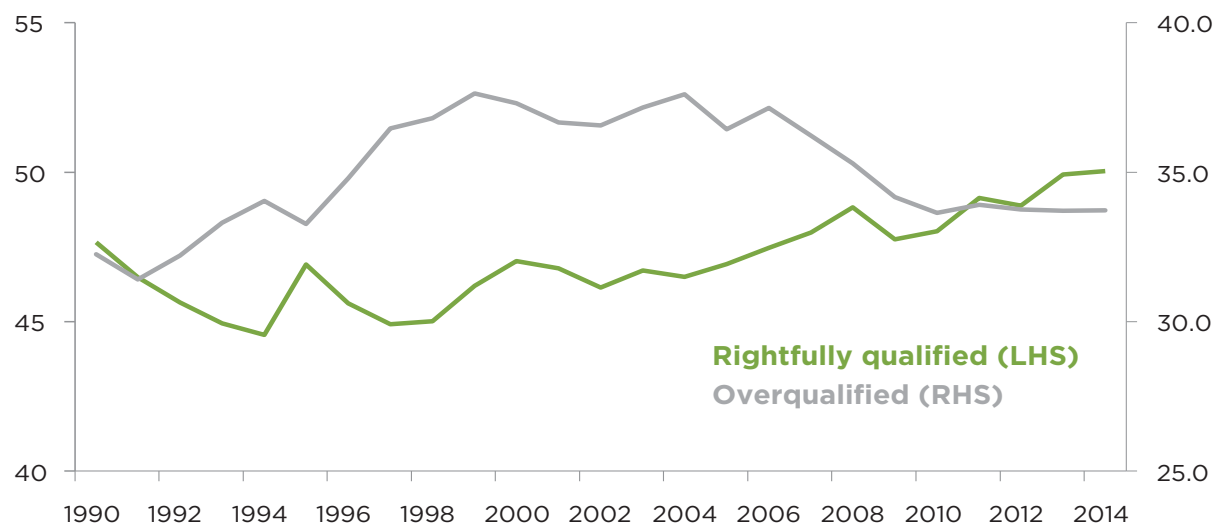


Source: Parliament Budget Officer and Statistics Canada

The situation facing college graduates is similar, with conflicting results and unresolved debates about the efficacy of their instructional programs. Even these career-focused institutions are not able to place all of their graduates in positions related to their field of study. Fully a third of their graduates are underemployed, relative to their credentials.

CHART 5: EDUCATIONAL CREDENTIALS VS. EDUCATIONAL REQUIREMENTS FOR RECENT COLLEGE GRADUATES

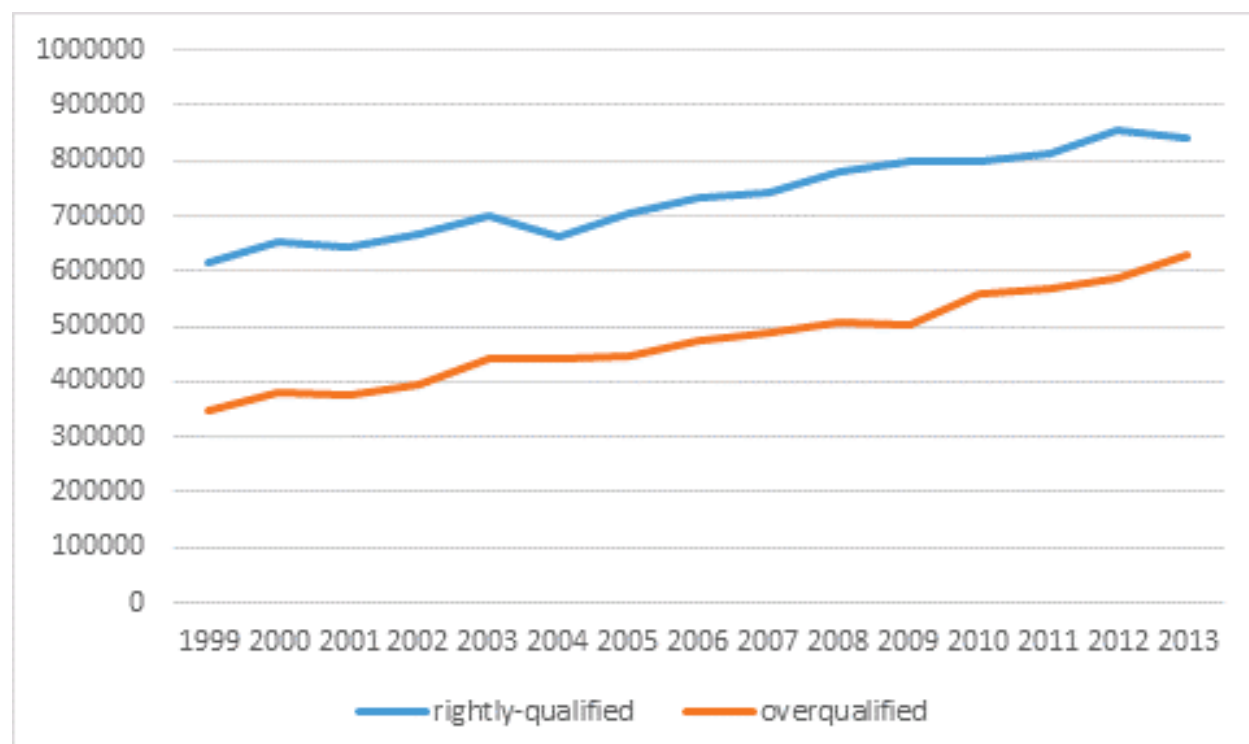
percent of workers aged 25 to 34
with a college degree



Source: Parliament Budget Officer and Statistics Canada

To complicate things, consider the insightful commentary on this topic by Alex Usher of Higher Education Strategy Associates. Usher reformatted the data to produce much less worrisome perspectives. The illustration below looks at the employment and underemployment situation for university graduates, expressed on the basis of the total – and rising – number of graduates.

**CHART 6: RIGHTLY QUALIFIED AND OVERQUALIFIED EMPLOYMENT
CANADIAN OF UNIVERSITY GRADUATES, 1999-2013**



As Usher concluded,

What should you take from all of this? If nothing else, don't forget that comparing university outcomes over time is hard because of the changing size and composition of the student body. Remember: the median student today wouldn't have made it into university 25 years ago. *Average* outcomes were always likely to fall somewhat, both because more graduates means more competition for the same jobs, and also because the average academic ability of new entrants is somewhat lower.

To be fair to the universities, these institutions make impressive contributions to personal development and general education, both of which have significant benefits to the country at large. Indeed, many university faculty resent the suggestion that they have an obligation to prepare people for the work force. Their priority, they assert with strong historical and cultural backing, is to educate and not to train for the workforce. This has led many to argue that governments should do more to support colleges and polytechnics, which are more career focused. Again Mr. Usher challenges the assumption that many university graduates struggle to find meaningful employment and decent incomes. He used data from the National Graduates Survey to argue that:

As for the “skills mismatch” narrative which suggests that we’re putting too many people in university and not enough in college, there’s not a shred of evidence. The trends in the data – both the positive and not-so-positive – are exactly the same in both colleges and universities, which suggests a rough balance between the two where labour-market outcomes are concerned.

None of this is to say that it isn’t rough for grads looking to get established in the labour market these days. It’s just to say that it’s always this rough and that there’s nothing particularly special about the period we’re going through. The system’s working pretty much as it’s supposed to. (Alex Usher, “Here’s Proof that Graduates Aren’t a Lost Generation,” *Globe and Mail*, June 5, 2017)

In other words, it is complicated. And the steady increase in the number of university students and graduates, combined with the declining standards for post-secondary admission at some institutions, has obvious effects on labour market dynamics, particularly in times of slow or stagnant employment growth. But it is also clear that college, polytechnics or university graduation is no ticket to personal prosperity.

Supporting Local and Regional Economies

Post-secondary institutions contribute substantially to local and regional economies. There is, in the first instance, the obvious multiplier effect of university, student, research and employee expenditures and the manner in which they circulate through the economy. But the contribution goes beyond this. The colleges, polytechnics and universities provide trained and able graduates to employers, and consumers for local businesses. Academic and applied research can strengthen regional commercial activity, stimulate business development and expansion, and otherwise promote economic growth. Some institutions take these local connections very seriously and work extensively with business and industry, while others promote more general economic activity in the country.

TABLE 5: UNIVERSITY OF REGINA ECONOMIC IMPACT

University and Federated Colleges, Student Spending, Convocation and Conference Impact	Gross Domestic Product (\$M)	Jobs Supported	Labour Income (\$M)
Regina Region	408.3	4,545	259.0
Rest of Province	133.7	1,874	63.6
Total Province	542.0	6,419	322.6

Indicators	2014-15	2010-11
Enrollment	14,000	13,069
Aboriginal Enrollment	11.3%	8.30%
International Enrollment	1,816	1,255
GDP Contribution Regina (\$M)	408.3	384
GDP Contribution Provincial (\$M)*	542.0	331.9
GDP Contribution National (\$M)	na	319.1
% Regina GDP**	3	4
Individuals Employed by the University	2,995	2,948
Student Spending (\$M)***	150	77

Source: <https://www.uregina.ca/orp/assets/projects-presentations/u-of-r-economic-impact-study-2014-15.pdf>

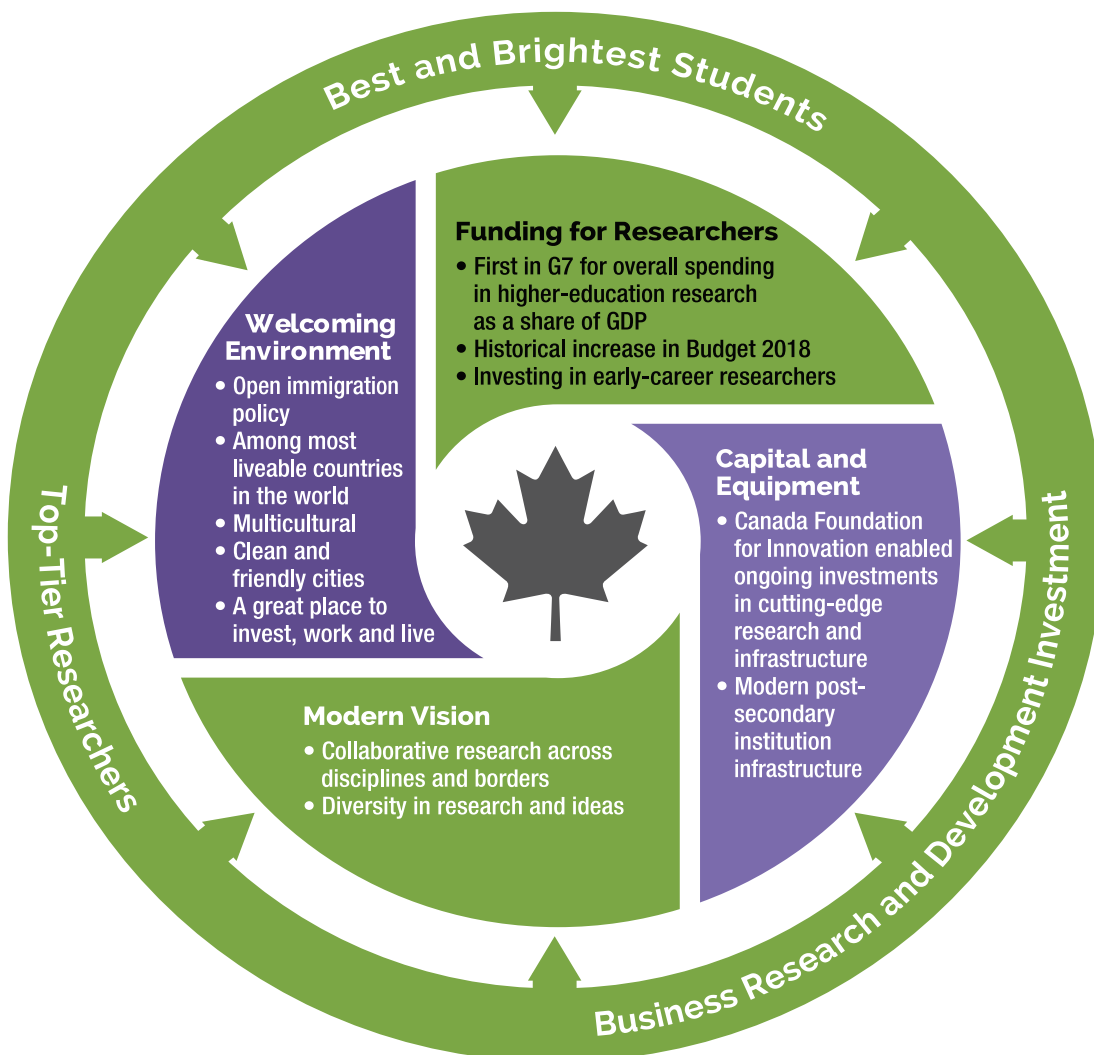
The synergies between post-secondary institutions and local and regional prosperity has been examined extensively, with accelerated attention following the sustained success of such regions as Silicon Valley (Stanford University) and Waterloo Region (University of Waterloo, Wilfrid Laurier University and Conestoga College). These are exceptional cases and, sadly, they are not easily reproduced, particularly when thousands of institutions around the world are trying precisely the same thing. Still, universities such as Memorial (ocean-related industries), Laurentian (mining) and Saskatchewan (agriculture and energy), among others, are tightly connected with the commercial activities of their host regions. The polytechnics and colleges are designed to support regional economic activity and do so quite well.

Liberal arts universities take a more hands-off approach, although the communities around Mt. Allison (Sackville), Acadia (Wolfville), St. Francis Xavier (Antigonish) and Bishop's (Lennoxville) know that their economic well-being hinges on the existence and success of these institutions. These universities have strong connections with local authorities – their activities are tightly intertwined – but the liberal arts schools focus on educational experiences and much less than the research-intensive universities and polytechnics on developing new businesses. Overall, universities make a major contribution to the economy of Canada and its constituent parts, but the net effect is likely less than is generally claimed and expected.

Scholarly Research Contributions

Canadian universities and, to a lesser but increasing extent, the polytechnics and colleges, make a substantial contribution to the world of research. Canada has a robust government funding system for academic research. The triumvirate of the Social Science and Humanities Research Council, Natural Sciences and Engineering Research Council and the Canadian Institutes of Health Research, together with the Canadian Foundation for Innovation and the Mitacs program that supports graduate and post-graduate employment, are highly regarded internationally and provide excellent support for scholarly research. The 2018 budget provided substantially more money for Canadian researchers, available through a highly competitive scholarly review process.

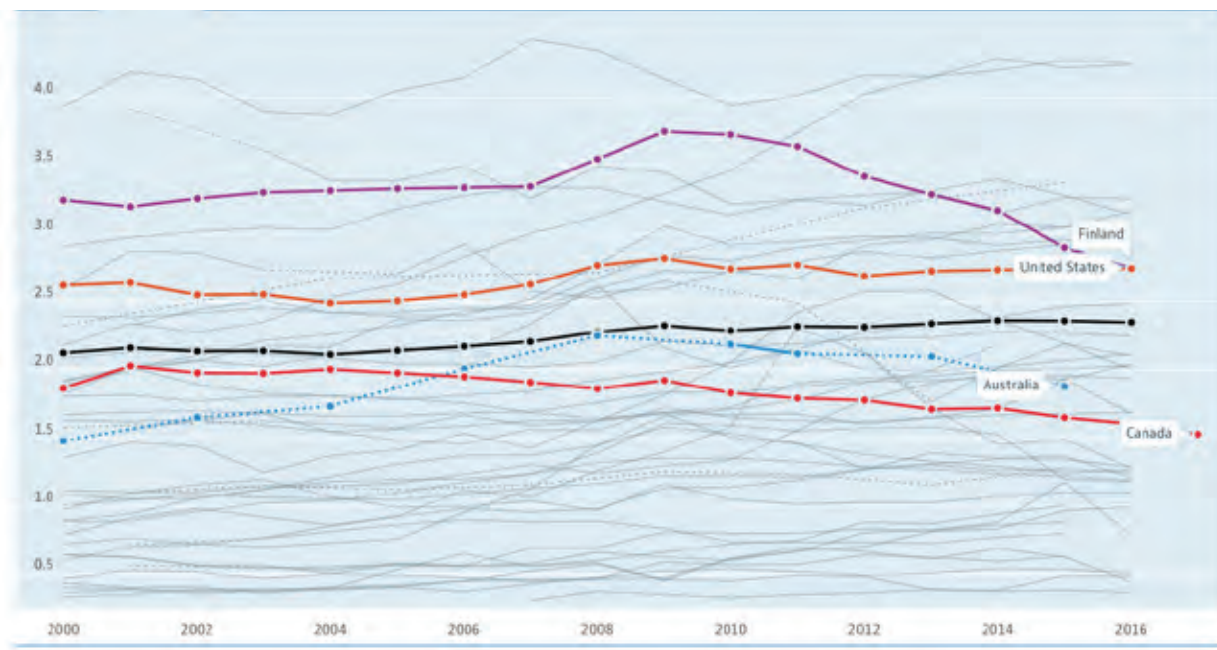
CHART 7: INVESTMENT IN STUDENTS



Source: <https://www.budget.gc.ca/2018/docs/themes/progress-progres-en.html>

The government of Canada has further supported this effort through the faculty support programs, such as the Canada Research Chairs and Canadian Excellence Research Chairs, with facilities and logistical support through the Canadian Foundation for Innovation, and with funding for the indirect costs of research. Canadian business, in contrast, provides much less financial support than the most globally competitive research countries, limiting the funding for researchers and the connections with business and applications that can accelerate commercialization (Ivan Semeniuk, “Canada struggling to capitalize on research and development sector,” *Globe and Mail*, April 10, 2016).

CHART 8: NATIONAL INVESTMENT IN RESEARCH, ACADEMIC AND PRIVATE SECTOR, COMPARATIVE (OECD)



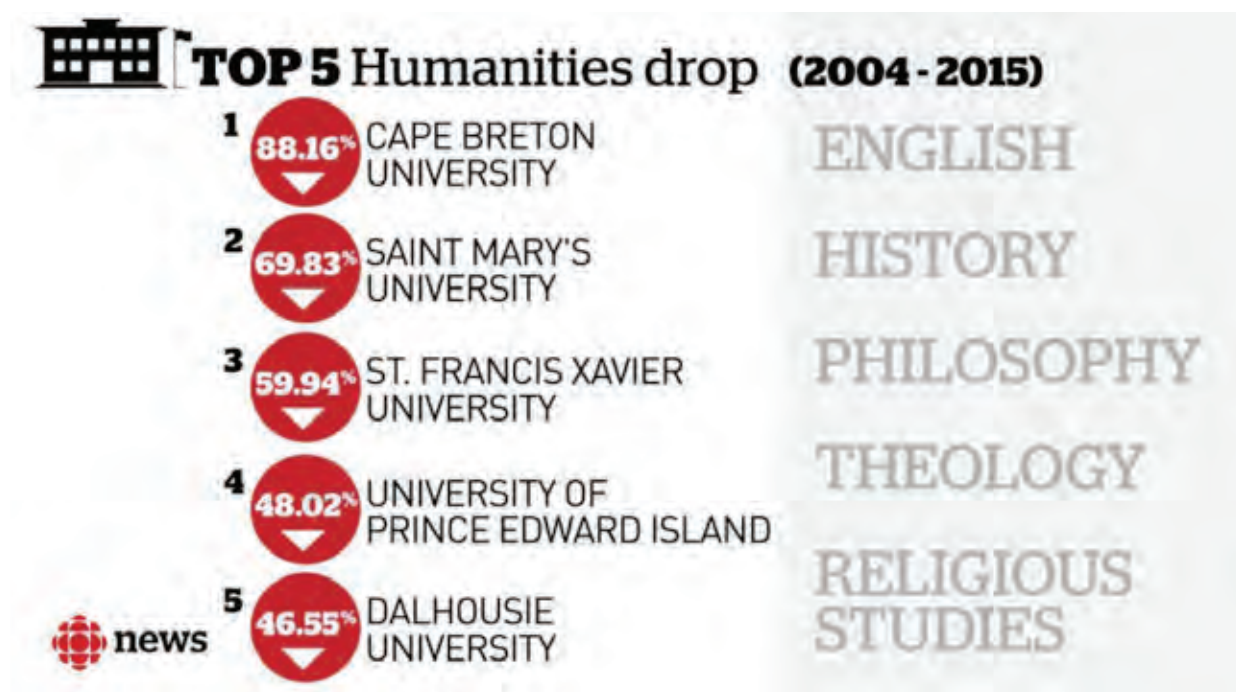
Source: <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>

Canada has an impressive list of world-class scholars, both long-established researchers and emerging stars. The country hosts hundreds of scholarly conferences each year – Vancouver, Toronto, and Montreal are particularly popular venues – thereby re-enforcing its global standing in a wide array of academic, professional, scholarly, and applied fields. The nation attracts thousands of high quality international graduate students, drawn by the availability of funding and access to globally renowned scholars. These international and domestic graduate students, in turn, provide the foundation for future Canadian research excellence and make significant contributions to the world of ideas (Expert Panel on the State of Science and Technology 2018).

Voting with Their Feet

Students adapt to new realities; the system adapts more slowly. Like all valuable goods, a post-secondary education is subject to market forces, which in turn reflect public and individual perceptions and expectations. Over the past 20 years, students have significantly reoriented their educational choices, shifting away from the humanities and, to a lesser extent, the social sciences (Simona Chiose, “As students move away from the humanities, universities adapt,” *Globe and Mail*, April 14, 2017).

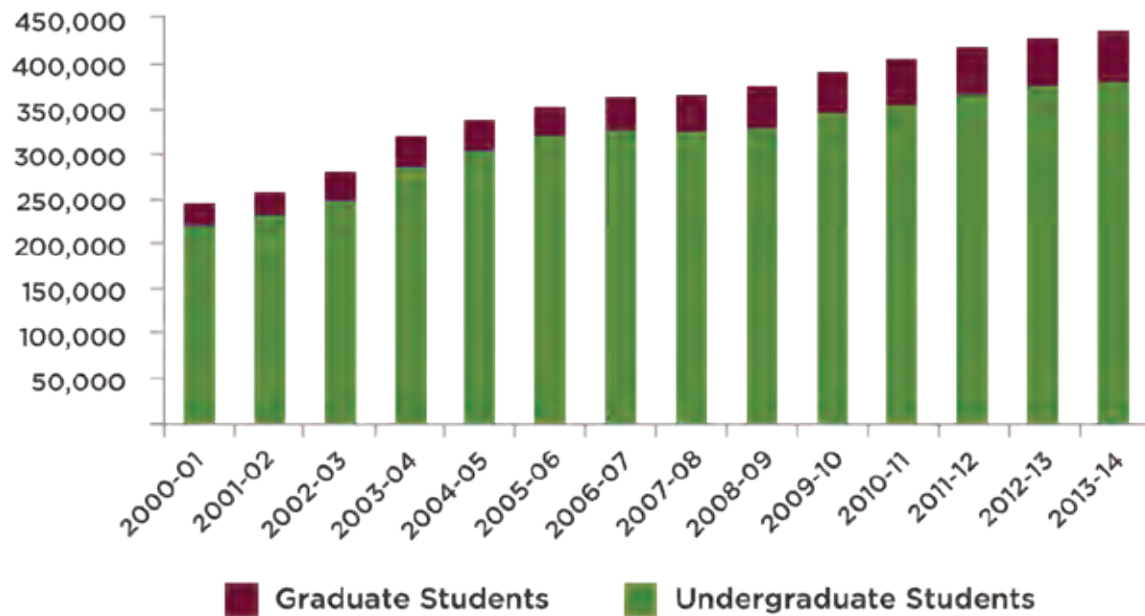
CHART 9: TOP 5 HUMANITIES ENROLMENT DROP



Source: <http://www.cbc.ca/news/canada/nova-scotia/humanities-enrolment-maritime-universities-1.3445694>.

Instead, they have moved toward business studies, new technologies (especially digital media), and the medical fields.

CHART 10: NATIONAL BUSINESS SCHOOL ENROLMENTS, UNDERGRADUATE AND GRADUATE



Source: Council of Ontario Universities

Many university students discover that continuing their studies at a college or polytechnic offers better career opportunities than a stand-alone university degree. The universities have responded to the demand. There has been a sharp rise in the number of professional master's degrees, responding to the clear interest in career preparation. Many, particularly medical and other health science fields, face excess demand, as the applications of medical schools in Ontario show. There are, for example, numerous variations on the Master of Business Administration degree, many charging among the highest university fees in Canada. Likewise, polytechnics and colleges have developed dozens of new programs, focused on emerging sectors with promising employment prospects.

The transitions are dramatic. Business school enrolments have climbed steadily. Arts enrolments have plummeted in recent years, suffering from the combination of declining employment prospects and the public's negative perceptions about career opportunities for arts graduates. College and polytechnic enrolments have continued to grow, fueled in part by the demands for retraining (due to the dislocations associated with economic and industrial change) and continuing uncertainty and job prospects. Overall post-secondary enrolments continue to climb, in part because of employment difficulties in the broader economy and the continued political and educational emphasis on advanced education as the key to career success.

TABLE 6: CANADIAN POSTSECONDARY ENROLMENTS, BY PROGRAM TYPE, CREDENTIAL TYPE AND INTERNATIONAL STANDARD CLASSIFICATION OF EDUCATION (ISCED), 2011-2016

International Standard Classification of Education (ISCED) 8	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Total, International Standard Classification of Education (ISCED)	1,995,774	2,021,286	2,047,527	2,055,108	2,034,957
Upper secondary education	40,356	35,079	32,961	32,322	29,238
Post-secondary non-tertiary education	252,510	252,714	256,173	254,136	219,957
Short-cycle tertiary education	335,847	339,183	346,365	350,409	345,351
Bachelor's or equivalent	968,289	992,691	1,007,478	1,014,750	1,012,035
Master's or equivalent	177,018	180,759	184,500	186,588	194,550
Doctoral or equivalent	49,458	50,790	51,561	52,008	52,386
Not applicable	172,293	170,067	168,489	164,898	181,443

Source: Statistics Canada. <http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=4770035&pattern=&st-ByVal=1&p1=1&p2=31&tabMode=dataTable&csid=>

There are regional dimensions to the systemic disconnects. Enrolments in the Atlantic provinces have suffered due to the sharp decline in the number of high school graduates, a situation that is expanding across much of Canada. Post-secondary enrolments have fallen as well. Selected urban centres, however, face continued growth and pressures to expand post-secondary offerings. The Greater Toronto Area, for example, is clamoring for an expansion in institutions, while many small town and regional institutions struggle to fill their first-year classes. There is, community groups and institutions argue, unmet demand in Milton and Brampton, but sharp declines in age-eligible populations in northern and rural Ontario. Meeting enrolment quotas often requires institutions to lower admission requirements or, increasingly, to expand international student recruitment to compensate for the decline in domestic enrolments. Efforts to shift students from areas of excess demand to institutions seeking additional applicants have not succeeded, largely due to Canadians' desire to study close to home and the determination of provincial governments to respond to local demand.

“ Post-secondary enrolments have fallen as well.”

TABLE 7: POSTSECONDARY ENROLMENTS, CANADA, 2011-2016

Geography	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Canada	1,995,774	2,021,286	2,047,527	2,055,108	2,034,957
Newfoundland and Labrador	28,188	28,500	27,207	27,168	27,258
Prince Edward Island	6,696	6,531	6,414	6,552	6,066
Nova Scotia	55,062	54,948	55,620	55,200	54,825
New Brunswick	32,139	31,098	30,564	28,317	27,582
Quebec	511,800	520,491	529,077	535,683	534,069
Ontario	781,668	796,077	814,863	823,914	802,713
Manitoba	60,723	61,416	62,061	61,926	63,390
Saskatchewan	53,214	53,823	53,775	55,524	56,472
Alberta	189,093	191,619	186,600	184,026	185,679
British Columbia	273,126	273,105	277,515	272,808	273,288
Territories	4,062	3,681	3,834	3,993	3,612

Source: <http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=4770019&pattern=&stByVal=1&p1=1&p2=31&tabMode=dataTable&csid=>

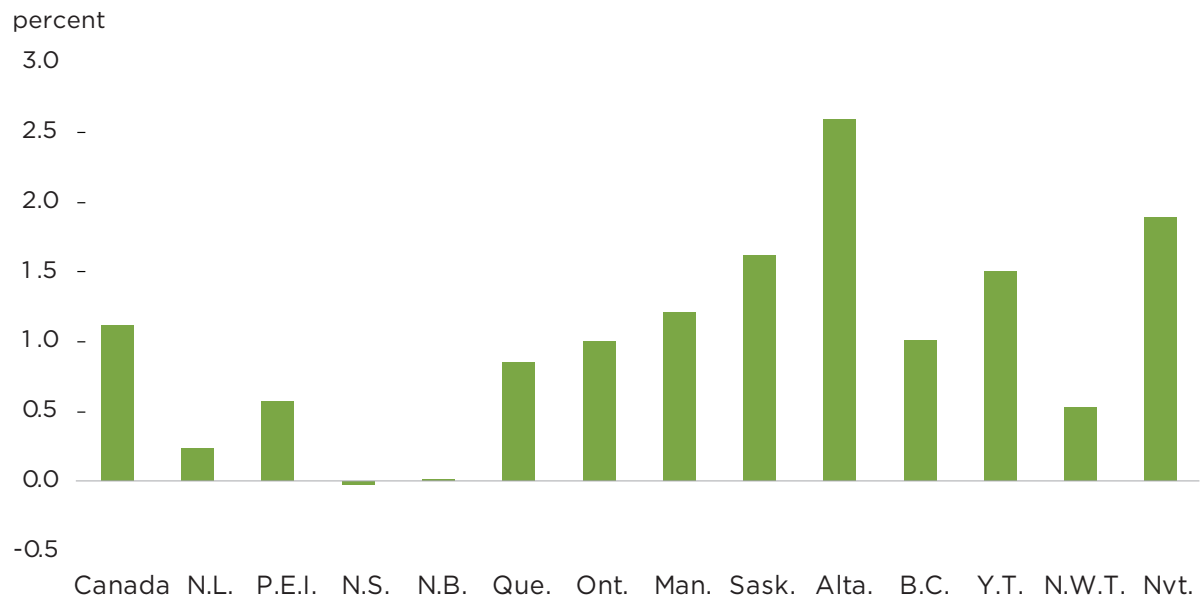
TABLE 8: NOVA SCOTIA, HIGH SCHOOL ENROLMENT DATA, 2008-2017

By Board	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Cape Breton-Victoria	16,006	15,479	15,084	14,522	13,839	13,622	13,278	13,004	12,735
Strait	7,631	7,390	7,281	6,988	6,816	6,628	6,488	6,304	6,287
Chignecto-Central	22,823	22,397	21,994	21,611	21,050	20,593	20,238	19,967	19,941
Halifax	51,993	51,281	50,370	49,651	49,079	48,742	48,311	47,975	48,618
Annapolis Valley	15,239	14,895	14,496	14,141	13,579	13,395	13,142	13,041	13,042
South Shore	7,712	7,510	7,334	7,065	6,852	6,680	6,491	6,471	6,385
Tri-County	7,372	7,152	6,938	6,791	6,494	6,259	6,155	5,916	5,866
Acadian provincial	4,358	4,446	4,634	4,771	4,934	5,109	5,280	5,474	5,693
Total	133,134	130,550	128,131	125,540	122,643	121,028	119,383	118,152	118,567

Source: <https://stats-summary.ednet.ns.ca/historical-board>

The post-secondary system moves more slowly than changes in demography, the economy and the workforce. The population decline in the Atlantic provinces has caused severe challenges for regional PSE institutions, convincing many to market their institutions aggressively overseas. In many ways, this is for the better, as institutions cannot adjust immediately to employment realities nor should they change their programming erratically in continuous pursuit of the perfect match between graduates and career opportunities. At the same time, institutional structures and faculty contracts impose considerable rigidity on post-secondary systems.

CHART 11: AVERAGE POPULATION GROWTH FROM 2011 TO 2014, BY PROVINCE OR TERRITORY



Source: Statistics Canada, Population Estimates Program, 2011 to 2014

The system has built-in constraints and opportunities. Universities, for example, hire tenure-stream faculty to meet existing demand. But 20 years later, when those faculty members are in mid-career,

“Universities cannot simply lay faculty members off, as most employers are able to do.”

student interest in the subject could collapse. However, universities cannot simply lay faculty members off, as most employers are able to do. They have nonetheless adjusted, largely by shifting a large portion of their workforce to enrolment-sensitive contract labour (or sessional faculty), an approach that does not sit well with faculty associations. Colleges and polytechnics are much more adaptable, able to shift faculty and institutional resources between fields of study and ready to adjust their programming to meet student interest and employers' needs.

Innovations in Experiential Learning

When the University of Waterloo opened in 1957, the university launched its operations with a radical experiment in Canadian post-secondary education: cooperation education (McLaughlin 1997). The system was simple. Students combined academic study and training, particularly in engineering and the applied sciences, with paid employment. The Waterloo model, now world-famous, allowed students to complete a four-year degree in five years, while benefiting from five semester-long work placements. Waterloo students have consistently experienced a high graduation rate, a better than average employment rate and higher than average incomes than stu-

dents from comparable programs at other institutions. Waterloo's cooperative education model has been copied globally and is now available in dozens of universities across Canada and many more around the world. More than 80,000 Canadian students per year participate in formal cooperative education programs.

There are many other such innovations, including service learning (focused volunteer engagement), paid and unpaid internships (during studies or after graduation), collaborative research projects with community partners, or research engagement on corporate initiatives.

Many institutions and many programs within universities, colleges and polytechnics try to connect students with employers and to provide opportunities for experiential learning as an integral part of the educational system. The government of Ontario has suggested that it wants to up the ante considerably, calling for mandatory experiential learning at the high school level. But this is an unrealistic aspiration that would put great pressure on an unenthusiastic business community and probably produce similarly uneven and unspectacular results as the requirements in several provinces that students do mandatory "volunteer" placements (LeBold, Pullin and Wilson 1990).

“Many institutions and many programs within universities, colleges and polytechnics try to connect students with employers and to provide opportunities for experiential learning as an integral part of the educational system.”

There are problems with the experiential system, to be sure. Particularly in the United States, the use of unpaid or low paid interns has expanded beyond reasonable levels, causing great concerns about the difficulties of entering the paid workforce (Perlin 2012). Experiential learning is also only as effective as the quality of the placements and on-site supervision. Many students have remarkable experiences, with great mentors, challenging job opportunities, and an easy transition to paid employment. Others, however, find unsatisfactory jobs (or no jobs, as placements are not guaranteed in co-op programs), gain few positive insights into the workforce, and do not learn as much as they hoped about their employment future. As the University of Waterloo warns its students:

Not every co-op student finds a job

The co-op program does not guarantee you employment. Historically, our overall employment rates have varied between 86-99.9 per cent.

You may not find employment for your co-op work term. The majority of unemployed students each term tend to be at the junior level, looking for a first or second work term.

It works the other way as well. Employers are not always keen about the coop-students, and can criticize their work ethic and abilities (hardly a surprise given the inevitable variability of talent and motivation in any pool of workers). The firms do, however, capitalize on what are effectively months-long interview and evaluation processes and can select the students they want back as permanent employees.

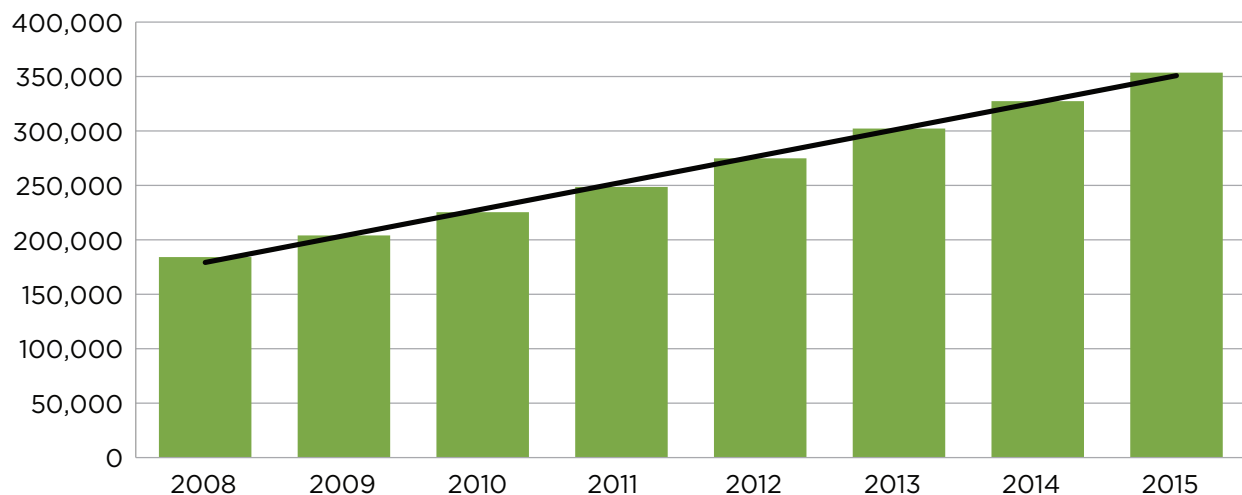
Across the Canadian post-secondary system, colleges, polytechnics, and universities understand the value of experiential learning. Although the initiatives are chronically underfunded – governments applaud the effort but do not appear to understand the full cost and nature of the commitments – they provide useful pathways to employment for thousands of students each year.

While only a relatively small minority of Canadian post-secondary students have experiential opportunities during their diploma or degree programs, those who participate in them typically find that the workplace experiences help them decide where they do and do not wish to work and provide them with a crucial track record of work that helps in an overly crowded employment market.

Attracting International Students

Canada is one of the world's most attractive destinations for international students (Advisory Panel on Canada's International Education Strategy 2012). It lacks the immediate cachet of the world's gold standard – the United States – and the deep historical and cultural traditions of the United Kingdom's system. It also has to offset the dual challenges of time-zone complexity (primarily for Asian students) and ferocious winters for those considering Australia or New Zealand as alternatives.

CHART 12: INTERNATIONAL STUDENT ENROLMENT IN CANADA



Source: This number includes universities, colleges and high schools, with 75 percent at the post-secondary level. <http://monitor.iccf.com/wp-content/uploads/2016/11/canada-enrolment.jpg>.

Still, the nation is consistently among the 10 most popular destination countries for international students, aided in no small measure by the comparatively easy transition from student to work permit holder to landed immigrant. While critics call it a back door to Canadian citizenship, the steady flow of international students provides a steady infusion of well-qualified workers across many sec-

tors. The combination of the experience in Silicon Valley, where more than 50 percent of area tech workers were born outside the United States, and the dominance of international migrants in continental enrolment in science, math, and engineering programs, has established the “new economy” as the symbol of the importance of attracting foreign students to the colleges, polytechnics and universities.

The country’s elite research institutions, in particular, attract large numbers of applications of the lucrative full-fee paying students from many countries, but particularly from China and India. These students help offset declining domestic enrolments – institutions like Cape Breton University would be in deep financial difficulty without these students – and add to the cosmopolitan nature of the student population. These revenue-enhancing students also add cultural diversity to university campuses, providing opportunities for Canadian students to engage with classmates from around the world.

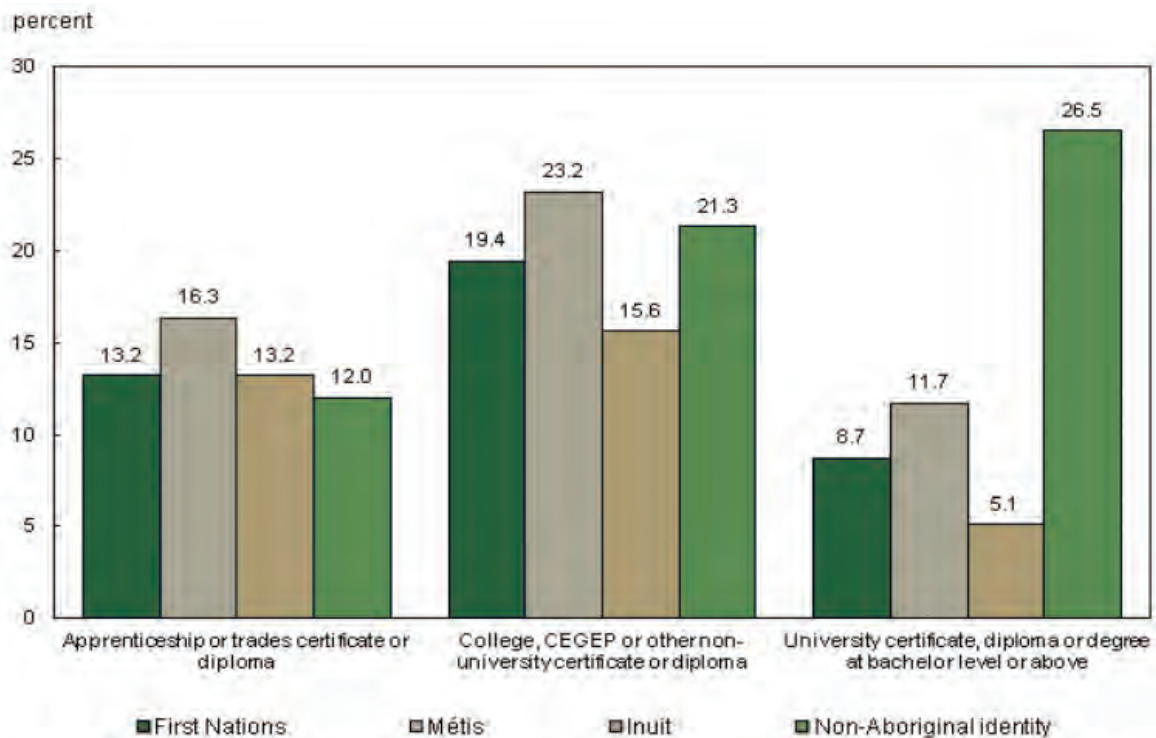
The promise is not achieved all that often. Considerable social distance separates domestic and international students and many universities report that international students gather in language- and culture-based groupings for much of their studies. Furthermore, students who come to Canadian universities with English as a second language can find the transition to an English-intensive environment troubling, particularly outside the sciences and engineering. This, in turn, contributes to less than impressive graduate rates and personal and academic difficulties while in school. These challenges are far from unique to Canada, however; Australia, in particular, struggles with similar issues of social integration and language acquisition.

“The country’s elite research institutions, in particular, attract large numbers of applications of the lucrative full-fee paying students from many countries, but particularly from China and India.”

Inclusiveness and Outreach

In the early 1970s, Canadian post-secondary institutions were bastions of white, male privilege. Women attended in substantial numbers, but typically in programs, from practical nursing to elementary school education, that reflected long-standing female career paths. Similarly, small numbers of Indigenous and ethnic minority students could be found on most campuses. This has changed profoundly. Women constitute a sizeable majority of students, save for at science and technology-heavy campuses like the University of Waterloo (where they dominate the arts faculty enrolments). New Canadians are heavily represented at institutions across the country, particularly in the STEM disciplines. Close to 30,000 Indigenous students attend Canadian PSE institutions – and many more (perhaps another 10,000) would come if federal government funding arrangements matched earlier commitments. Furthermore, the establishment of small-town campuses, particularly by the community colleges and some universities, and the extension of on-line course delivery has allowed place-bound students across the country to continue their studies.

CHART 13: HIGHEST LEVEL OF POSTSECONDARY EDUCATIONAL ATTAINMENT, POPULATION AGED 25 TO 64 YEARS BY ABORIGINAL IDENTITY, CANADA 2011



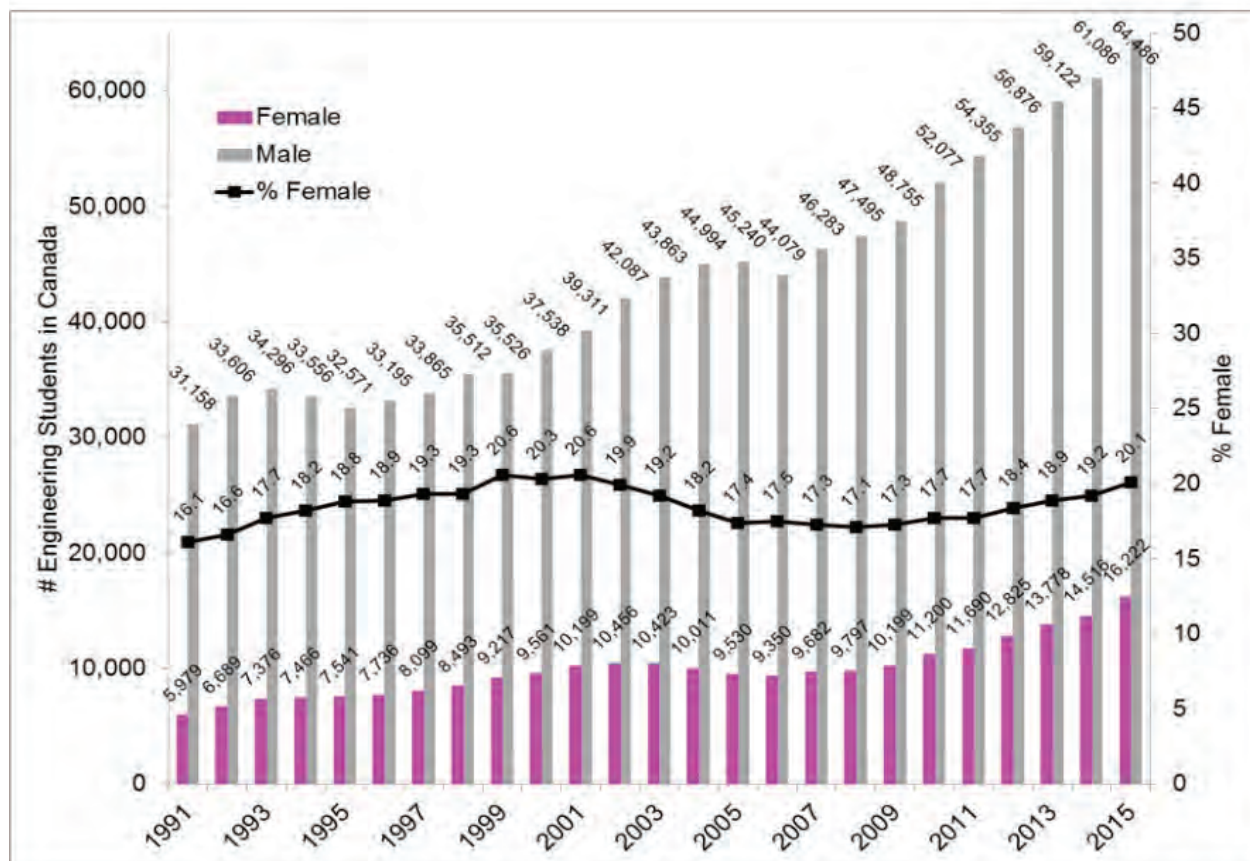
Notes: Excludes data for one or more incompletely enumerated Indian reserves or Indian settlements.

'Highest level of educational attainment' refers to the highest certificate, diploma or degree completed by a person. The three Aboriginal groups are based on the population reporting a single identity of 'First Nations,' 'Métis,' or 'Inuit.'

Source: Statistics Canada, National Household Survey, 2011.

Source: <http://www.statcan.gc.ca/pub/89-645-x/2015001/education-eng.btm>.

CHART 14: FEMALE AND MALE ENGINEERING UNDERGRADUATES, 1991-2015



Source: <http://www.onwie.ca/resources-tools/statistics/percentage-of-female-undergraduates-in-engineering-canada->

The Canadian post-secondary system is remarkably inclusive. The institutions are at the leading edge of the acceptance and celebration of gay, lesbian, and transgender people, for example. Bastions of privilege and exclusion remain – engineering programs struggle to attract large numbers of women and comparatively few men enter nursing – while others have fallen (education, accounting, law, and veterinary medicine, for example) over the past few decades.

Other problems remain. The number of low income students is not keeping up with general enrolment growth, for example (Chamber and Deller 2010). But the presence of a sizable number of Indigenous students has enriched campus life and expanded opportunities for young First Nations, Métis and Inuit people. So it is with multiculturalism. Canadian institutions are models of inclusion and acceptance, contributing greatly to the broader inclusion of all peoples into the Canadian economy.

Accessibility

For many politicians, accessibility is one of the core principles of post-secondary education. This can be taken to extremes – Ontario’s seemingly relentless expansion of the university and college system being a good case in point – but the reality is that advanced education is readily accessible in this country. There are more than enough spaces at Canadian institutions to accommodate all of those who wish to study. The problem is that program access is restricted in some instances and students do not always get into their institution of choice. The contrast to the experience with the top American institutions – where high income parents routinely spend tens of thousands of dollars trying to game the admissions process – has no real counterpart in Canada.

“By international standards, the Canadian system is comprehensive and accessible.”

By international standards, the Canadian system is comprehensive and accessible. Weak students can get into remedial or transition programs or open access institutions. The wide distribution of colleges, polytechnics and universities, combined with online education, ensures that all students with the interest and motivation (and money) can find an institution that will take them in. There is a cost to this approach, including the acceptance of many students who fail to complete their studies. But it cannot be said that the country has not made a consistent and largely successful effort to make sure prospective students are able to pursue an advanced education.

Canadian institutions succeed, in part, by being comparatively inexpensive. Colleges and polytechnics provide education and training at reasonable cost, with financial support for those in need. The federal, provincial and territorial governments help out with a vast array of job training and employability programs, many of which incorporate post-secondary education.

University students do an excellent job promoting the idea that tuition fees are much too high. They are right, but really only for students from low-income families. Canadian institutions and governments do a very good job of providing financial support for students through a combination of grants, bursaries, scholarships, and loans. Parents can, depending on their income, gain tax savings as well.

The net cost of a Canadian post-secondary education, when available institutional and government assistance is factored in, is quite low, particularly compared to the ruinous rates charged by the most expensive American institutions and even the high tuition fees that are now commonplace in the United Kingdom and Australia.

TABLE 9: TUITION FEES, SELECTED CANADIAN UNIVERSITIES (CANADIAN DOLLARS), 2017

University	Canadian Students	Foreign Students	Province
Acadia University	6,661-7,944	15,903-15,903	Nova Scotia
Algoma University	6,143-6,143	15,952-15,952	Ontario
Bishop's University	2,328-7,228	15,943-17,808	Québec
Brandon University	3,336-3,544	6,672-7,089	Manitoba
Brock University	6,197-6,378	22,094-22,094	Ontario
Cape Breton University	5,677-6,960 *	13,920-13,920 *	Nova Scotia
Dalhousie University	5,917-7,200	16,164-16,164	Nova Scotia
McGill University	2,328-7,228	15,943-17,808	Québec
McMaster University	6,329-6,329 *	19,238-23,986 *	Ontario
Memorial University of Newfoundland	2,550-2,550	8,800-8,800	Newfoundland & Labrador
Mount Royal University	5,442-5,442	17,687-17,687	Alberta
University of Toronto (includes colleges)	6,400-11,520	31,000-42,560	Ontario
University of Victoria	5,368-5,368	17,368-17,368	British Columbia
University of Waterloo (includes colleges)	6,420-7,800	24,830-26,210	Ontario
University of Western Ontario (excludes colleges)	6,338-6,338	22,004-24,643	Ontario
Université de Montréal	2,328-7,228	17,808-17,808	Québec

Source: <https://www.univcan.ca/universities/facts-and-stats/tuition-fees-by-university/>

DOMESTIC TUITION AND FEES, SELECTED INTERNATIONAL INSTITUTIONS (LOCAL CURRENCY), 2018

University of California, San Diego	\$13,900.00
University of Michigan	\$63,600.00
University of Hong Kong	\$42,100.00 HK
University of Melbourne, Australia	\$6,444.00 to \$10,754.00

Source: Institutional websites. Note that there is considerable variation in what is covered by fees.

Attracting Private Donations

Canadian institutions suffer from a substantial amount of donation envy. American colleges and universities attract hundreds of millions of dollars in contributions each year. Several – Harvard, Stanford, Yale, Princeton, and a few others – routinely complete billion-dollar fund-raising campaigns. Harvard, for example, has an endowment of more than \$38 billion, the largest PSE endowment in the world. Even a less famous United States institution – New York University – has an endowment of \$3.6 billion. Only a handful of non-American universities – Cambridge and Oxford among them – can count on comparable financial resources, which they use to maintain their elite research status to attract the top students. The Australian National University, that country’s best research institution, has a modest \$1.1 billion endowment.

Canadian universities lag well behind these flagship institutions. The University of Toronto, the University of Alberta, and McGill University, with many more students than Harvard, are among the small number of Canadian universities with an endowment of more than \$1 billion. Even a top-flight university, like the University of Waterloo, has less than \$350 million in long-term assets. An impressive polytechnic, Northern Alberta Institute of Technology, has a miniscule \$45 million in its endowment fund. On the surface, therefore, Canadian universities do not compete with the top American institutions in terms of fund-raising.

TABLE 10: LARGEST UNIVERSITY ENDOWMENT (TOP 20 GLOBALLY)

Rank	University	Country	Amount
1	Harvard University	US	\$34.5 Billion
2	Yale University	US	\$25.4 Billion
3	The University of Texas System	US	\$24.2 Billion
4	Stanford University	US	\$22.4 Billion
5	Princeton University	US	\$22.15 Billion
6	King Abdullah University of Science and Technology	Saudi Arabia	\$20 Billion
7	Massachusetts Institute of Technology	US	\$13.18 Billion
8	University of Pennsylvania	US	\$10.7 Billion
9	Texas A&M University System	US	\$10.5 Billion
10	University of Michigan	US	\$9.7 Billion
11	Northwestern University	US	\$9.6 Billion
12	Columbia University	US	\$9 Billion
13	University of Notre Dame	US	\$8.37 Billion
14	University of California System	US	\$8.3 Billion
15	University of Cambridge	UK	\$7.577 Billion
16	University of Chicago	US	\$7 Billion
17	Duke University	US	\$6.84 Billion
18	University of Oxford	UK	\$6.8 Billion
19	Washington University in St. Louis	US	\$6.46 Billion
20	Emory University	USA	\$6.4 Billion

TABLE 11: TOP IN CANADA (ONLY 3 LISTED)

Rank	University	Amount
63	University of Toronto	\$1.6 Billion
88	University of British Columbia	\$1.14 Billion
92	McGill University	\$1.2 Billion

Source: <https://thebestschools.org/features/richest-universities-endowments-generosity-research/>

But in international terms, Canadian institutions do well in terms of external support. Colleges and polytechnics have enjoyed consistent success in their efforts secure millions of dollars in equipment donations and other support from the private sector. Many companies provide money for scholarships, internships, and collaborative research projects. Even communities from Saskatoon (Canadian Light Source), Squamish (Quest University), Stratford (University of Waterloo-Stratford) and Milton (an evolving partnership with Wilfrid Laurier University) have contributed money to campus development.

Canadian institutions have become resourceful and creative in their partnerships with philanthropists, companies, alumni and other supporters. While they could always use more money, the reality is that Canadian colleges, polytechnics and universities do a reasonably good job at securing financial contributions from non-government sources.

Educational Diversity: Private Universities, Colleges and Training Programs

Discussion about post-secondary education focuses on the publicly funded colleges, polytechnics and universities, which makes sense given the dominant role these institutions play across the country. But there is more to PSE in Canada than this. There are a significant number of private universities in Canada, including the best-known ones: Trinity Western University and Quest University. Religious universities – Crandall University, Briarcrest College, Redeemer University College, Tyndale University College, among others – have a surprisingly large footprint in Canada. Fairleigh-Dickinson, for example, has a freestanding campus in Vancouver. Several American and international universities operate through local privately owned institutions. For example, the University of Hertfordshire (UK) offers a Master of Science in International Management in conjunction with Vancouver Island University.

The private college system is much larger and more complex. There are literally thousands of privately operated career-oriented and training colleges and institutions. These range from large multi-campus operations, like Sprott-Shaw College or CDI College, to individually owned schools that offer hair-dressing, aesthetics, dog grooming, IT training or other such job-specific work. Many of the private institutions focus on short courses and an emphasis on a rapid transition to the workforce. As the government of British Columbia said about their private post-secondary institutions:

Private post-secondary institutions complement public universities, colleges and institutes, giving students more options and flexibility. Private institutions help ensure students are gaining education, skills and experience to be first in line for the significant job openings expected in the next decade.

Private post-secondary in B.C.

More than 350 private institutions bring diversity to the post-secondary system in B.C. and expand the range of training available, including:

- o 19 private and out-of-province public institutions with authority to grant degrees under the B.C. Degree Authorization Act.
- o More than 330 private training institutions (includes career training institutions and English as a Second Language schools).
- o 13 theological institutions with a private act to grant degrees in theology.

Put together, the Canadian post-secondary education system is more comprehensive and expansive than most prospective students and their parents appreciate. There are literally hundreds of university, college and polytechnic programs available from publicly funded institutions and many hundreds more at privately owned facilities. Diversity is a hallmark of Canadian educational offerings.

Canadian PSE Challenges

But all is not well, of course, as would be expected in any large, complex, and multi-level system. Here are some of the major issues facing polytechnics, colleges and universities as they struggle, often with declining or stagnant budgets and uncertain government financial support, to cope with 21st-century realities. (Auld, 2005)

REGIONAL DEMOGRAPHICS

PSE institutions require a steady flow of qualified, motivated, and well-prepared students to flourish. In many parts of the country, the number of fully qualified high school graduates and mature learners has been dropping. In others, particularly in the major cities, population growth has been more rapid than the capacity of institutions to absorb the demand. Given that a relatively small number of students are willing to move out of their home province, institutions are vulnerable to demographic changes.

The country has substantial excess capacity in some programs and institutes, particularly in the Maritime provinces and on the prairies, and unmet student demand in a handful of large Canadian cities. Moving students from Toronto or Halifax to Fredericton or Saskatoon is challenging enough; getting them to consider relocating from Montreal, Calgary or Vancouver to Cape Breton University or Algoma University in Sault St. Marie is much more difficult.

The ebbs and flows of immigration, historical birth rates and international movements determine the number of students completing high schools and, directly, the number of potential applicants for post-secondary institutions. Colleges, universities and polytechnics require major investments

of government funds to construct and substantial ongoing commitments. But a steady stream of students is the life-blood of the system. Governments have, since the 1960s, been reasonably good about responding to unmet region-specific needs. They have been much less decisive about reducing regional capacity when demographic trends turn in the opposite direction.

DELIVERING ON THE BASICS

Employers have substantial expectations for the people they hire. They want basic skills (which vary depending on the jobs), a solid work ethic, reliability and integrity. They look for people who will grow in their jobs, perhaps moving on to new opportunities within the organization. Canadian businesses and government agencies continue to hire large numbers of college, polytechnic and university graduates. It is fair to say that they are not uniformly impressed. Comments from employers show a significant level of dissatisfaction with the abilities and motivation of newly hired workers (Borwein 2014, Simon, 2013). (Post-secondary institutions, in turn, suggest that employers should have a more active role in training their employees.)

This is not a problem that should be placed directly at the feet of post-secondary institutions. The problem, of course, is that colleges, polytechnics and universities declare that they are preparing their students for the workforce and, particularly in the technical and trades areas, claim that their graduates are work-ready. Experience suggests that this is not, probably more than ever, uniformly true.

PUBLIC AND EMPLOYER DISSATISFACTION

Universities, in particular, face considerable scrutiny and criticism from the general public. Colleges and polytechnics, in contrast, have been comparatively immune from such attacks, largely because of their practical and career-oriented training. The reasons are general and specific. Controversial research and public statements attract frequent criticism, even though producing ideas and sparking debate is fundamental to the existence of the university. The mishandling of protests, controversial speakers and the perceived dislike of conservative views on college, polytech and university campuses has added to public and political criticism of the sector (MacKinnon 2018). Radicalized students – from the mass strikes in Quebec universities to protests against Israel and repeated incursions into the cultural wars – organize demonstrations and critique university administrations. For citizens focused on more mundane issues – paying rent, buying food, providing for the family – the esoteric and intellectual debates of the modern campus seem curiously disconnected from reality.

“Universities, in particular, face considerable scrutiny and criticism from the general public. Colleges and polytechnics, in contrast, have been comparatively immune from such attacks, largely because of their practical and career-oriented training.”

Graduates contribute to the public dissatisfaction. Their experience on campus gives them a series of stories about poor teachers, absentee researchers, odd grading standards, student work avoidance strategies, and administrative quirks. The people who know the colleges, polytechnics, and universities best are often the same ones who happily reveal the shortcomings and absurdities of the system. These stories, combined with the accounts of graduates struggling to find decent employment, contribute to a litany of public commentary about the shortcomings of the post-secondary institutions.

“The greatest challenge facing the post-secondary sector is outside the control of the colleges, polytechnics, and universities.

The cumulative effect of these stories can be significant. Students remember one terrible teacher far longer than half a dozen decent instructors. One administrative injustice or episode of incompetence can undermine a student's memory of their years of study. The most ubiquitous story – the one about the arts graduate working as a barista – has come to symbolize (with just enough truth to give substance to a serious over-generalization) the employment challenges of 21st-century graduates. Public policy is often determined as much by public discussion and widely shared assumptions as by thoughtful analysis and carefully collected data.

Employers have similar comments about Canadian PSE graduates. While companies laud the abilities of many of the graduates that they hire, a significant percentage of company executives also express unhappiness with

the level of preparation and abilities of new employees. Concerns are often expressed about the new hires' work ethic. The most specific critiques focus on writing abilities, basic skills and English language proficiency (even among native English speakers). In intensely competitive environments, where few employers have the time, money or human resources needed to train or retrain workers, these shortcomings have serious ramifications. The country's largest employers, it needs to be noted, generally do not have difficulty securing sufficient and highly talented applicants for open positions. It is the small to medium-sized firms, particularly outside metropolitan areas, that have difficulty generating interest for specialized or technical posts.

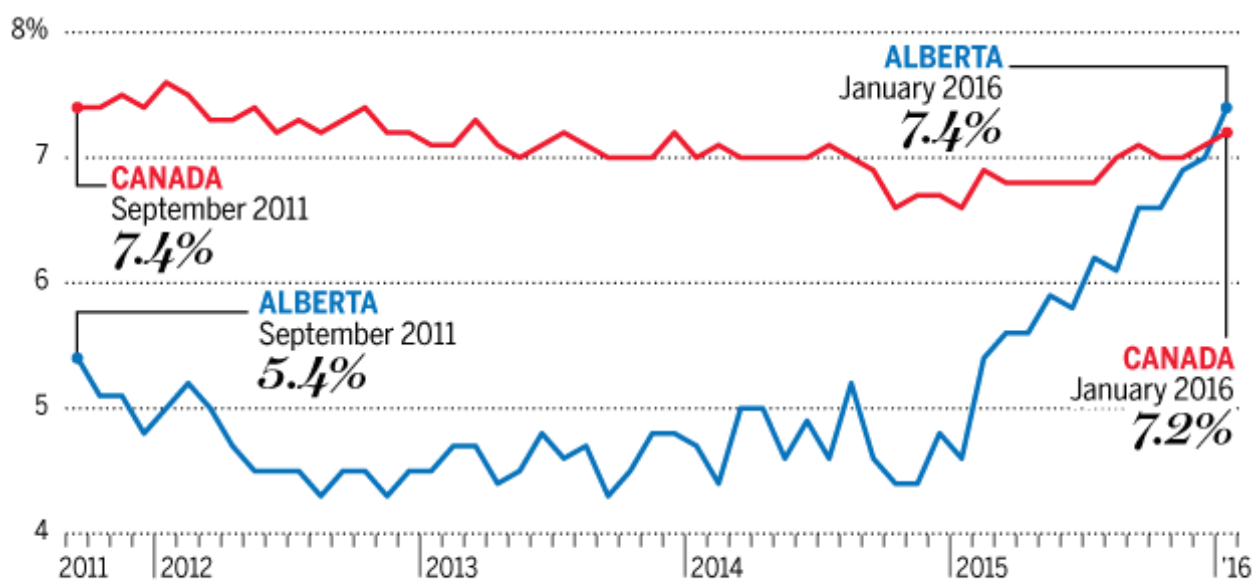
RESPONDING TO ECONOMIC UNCERTAINTY

The greatest challenge facing the post-secondary sector is outside the control of the colleges, polytechnics, and universities. As the events of the past five years have shown, the 21st century is awash in economic uncertainty and a substantial churn in employment. Consider the oil and gas sector. Half a decade ago, the most logical career choice, particularly in Western Canada, was to pursue a career in the energy industry. Institutions trained hundreds of engineers, technicians, environmental scientists, and others associated with the development of the oil sands, shale gas, and conventional oil. The planned construction of thousands of miles of pipelines promised additional billions of dollars in investment – and tens of thousands of jobs in the trades and applied technologies. So young Canadians responded by signing up for the appropriate diploma or degree programs. Then the crash came. In short order, billions of dollars of construction projects were suspended. Protests over pipelines stopped several key initiatives in their tracks. Young people who worked for years to prepare themselves for a lucrative job in the oil patch found themselves fighting for jobs with 20-year veterans.

CHART 15: ALBERTA JOBLESS RATE HIGHER THAN NATIONAL RATE

ALBERTA JOBLESS RATE HIGHER THAN NATIONAL RATE

UNEMPLOYMENT RATE MONTHLY, SEASONALLY ADJUSTED, IN PERCENT



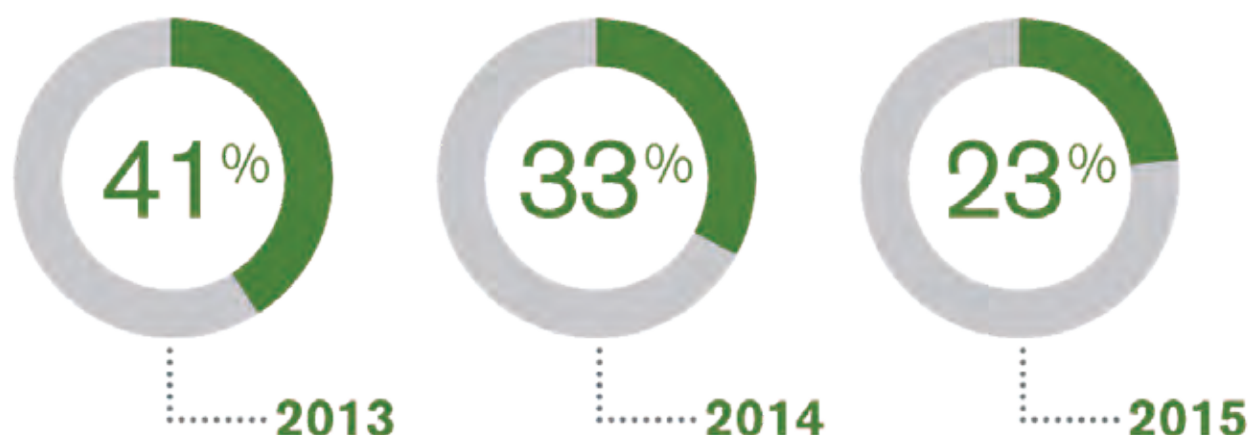
SOURCE: STATISTICS CANADA

NATIONAL POST

Source: <http://business.financialpost.com/news/economy/canadas-economy-loses-5700-jobs-unemployment-rate-bits-two-year-high>

And so it goes across the Canadian economy. Students who planned for a steady job and promising income as a teacher crashed up against a demographic downturn in some provinces that eliminated numerous jobs (although there appears to be an upswing in Ontario and there are critical job shortages in such fields as math and science education and French immersion). Sweeping changes in the legal industry, including technological improvements, appears to be lowering the need for new lawyers. Young people who had completed an undergraduate and a law degree struggle to find the articling position they needed to earn official designation as a lawyer. Even graduate doctors are struggling to find the residency placements that they need to find full time jobs (Allan Woods, "Residency backlog could triple for medical school grads, report warns," *The Toronto Star*, February 13, 2018). The economy remained robust in some areas – accountants, welders and medical technicians seemed to find jobs readily – but surged and declined in across other sectors.

CHART 16: FIRST YEAR UNEMPLOYMENT, ONTARIO TEACHERS, 2013-2015



Source: <http://reports.oct.ca/2015/en/statistics/>

Post-secondary institutions never promised graduates a ready or immediate job – although the recruiting and promotional materials strongly suggest otherwise – and the Canadian economy has endured employment gyrations in the past. The passage of the Baby Boomers from the workplace promised an open and accessible job market for those with the appropriate skills and credentials, however, making the contemporary career challenges that much more disappointing. The combined forces of globalization, technological change, and a shift from an industrial to services-based economy produced unpredictable changes in the workforce.

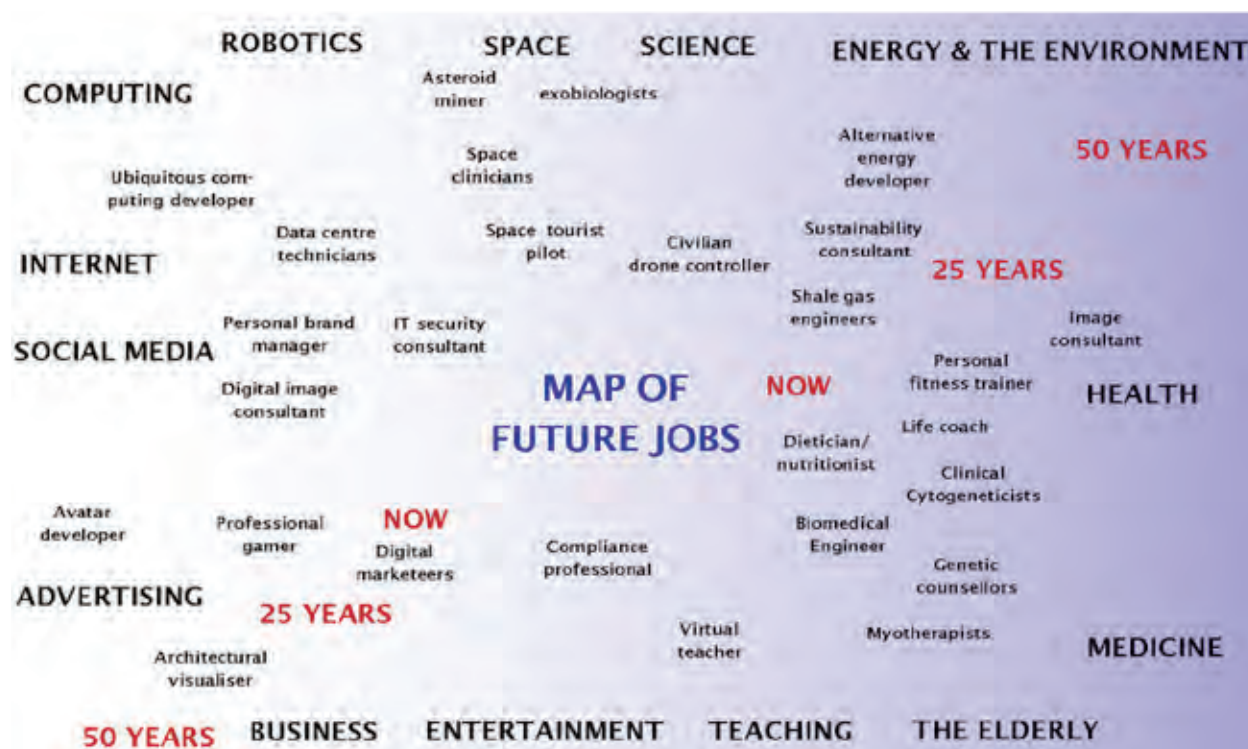
Post-secondary institutions are not responsible for fluctuations in the job market and lack, as do governments, the prescience needed to make sense of the precise needs of numerous economic sectors and to match the job opportunities with diploma and degree graduates. In some respects, but not entirely, institutions are passive players in the economy, offering programs that employers can promote, that students can accept, and that governments can fund. Many actors – and not just the colleges, polytechnics, and universities – are involved in the complex and unpredictable effort to find appropriate careers for Canadians. But institutions market themselves as being employment-related and face high expectations from students, parents, and governments. Indeed, coping with unrealized expectations is a formidable challenge facing the Canadian post-secondary system.

POST-SECONDARY EDUCATION AND UNFOLDING CANADIAN REALITIES

The consensus about the value and significance of post-secondary education is strong and, in most quarters, unassailable. It is obvious that Canada needs trained teachers to teach the students, doctors and nurses to provide health care, accountants to manage financial institutions and business processes, and engineers to support many Canadian industries. The same holds for many apprenticeships and trades graduates, such as the animators and digital designers who fuel the Canadian video game industry, the medical technologists who staff the hospitals and physicians' offices and the industrial technicians that run the manufacturing plants and the natural resource facilities. The national demand for non-specialist university graduates – the arts and science degree holders that have long dominated the university systems – and the lower and semi-skilled graduates from colleges and polytechnics is less certain. Many of these individuals end up having fine careers and earn

decent incomes; others struggle to find appropriate jobs and many return to professional school, graduate school, college or polytechnic for an applied training. To complicate matters, the world of work faces substantial transformation, as robotics, mass digitization, artificial intelligence, and other technological and systemic influences affect the job market.

CHART 17: JOBS OF THE FUTURE



Source: <https://www.kent.ac.uk/careers/Choosing/future-jobs.htm>.

TABLE 12: CAREERS 2030

Organic Voltaics Engineer	Furniture Refurbishing Technician	Recyclable Design Specialist
Marketing eMediamaker	Big Data Wrangler	Agroecologist
Multi-Marketer	Purchase Prediction Analyst	Wearable Technology Therapist
Systems Tangilizer	Integrated Roofing Systems Designer	Firefighter
Fashion Designer	Gamification Designer	Makeshift Structure Engineer
Localizer	Robot Counsellor	Rewilder
Tele-surgeon	Renewable Energy Engineer	Nostalgist
Canada Online Coach	Digital Currency Advisor	Ecosystem Auditor
Big Data Analyst	Police Officer	Aesthetician
Early Childhood Educator	Online Community Manager	Insurance Product Manager

Source: <https://careers2030.cst.org/jobs/>

The problem lies not with the majority of college, polytechnic, and university graduates, but rather the minority who either fail to complete their programs (the cohort that gets the least attention in the discussion of post-secondary education) or who struggle after graduation. No one who follows post-secondary education in Canada would suggest that it fails all students. But if close to 30 percent of university students fail to complete their programs, if several universities, colleges and polytechnics have only half their incoming students graduate, if 15 to 25 percent of graduates fail to find stable and appropriately-paid work in a timely fashion, then it is fair to say that significant parts of the advanced education system are not working effectively.

“ If 15 to 25 percent of graduates fail to find stable and appropriately-paid work in a timely fashion, then it is fair to say that significant parts of the advanced education system are not working effectively.

Equally, these same data indicate that the Canadian economy is not working well, particularly for young Canadians. The country has witnessed a series of major challenges, including the rise of contingent or temporary labour (including, ironically, the post-secondary institutions that rely heavily on part-time and non-tenured workers), the growth of comparatively low-paid service work, the decline of unionized work outside the public sector, and the recent plunge in manufacturing and resource development (Vosko 2006). No less a figure than Finance Minister Bill Morneau warned Canadian young people that they had to get used to these contemporary realities, which he argued would persist into the future (“Get used to the ‘job churn’ of short-term employment and career changes, Bill Morneau says,” *National Post*, October 22, 2016.).

The problems are manifold and they are not easily resolved. The “new normal” is not favourable to young people, at least not judged against the patterns of the recent past, and, as many observers are arguing, the continued advance of disruptive technologies threatens further workforce transformations. The current system, driven largely by students and parental choices,

and to a lesser extent by professional controls and government controls on enrolment, produces too many graduates in some sectors and not enough in others, with the mismatches varying across the country and switching over time. That Canadian students can now seek credentials internationally – through a growing number of online institutions or specialized programs in other countries (many programs in the United States, law in Australia, medical and veterinarian schools in the Caribbean and Mexico) undermines Canadian efforts to control graduate numbers.

Government efforts at managing graduate numbers and market demand often run up against the outmigration of high demand graduates, including physicians, finance specialists, and computer scientists. Orchestrating an ideal match between education production and workforce needs is next to impossible and would almost certainly interfere with government efforts to coordinate the production of specialized workers.

Concern about graduates’ options is forcing governments and institutions to experiment or expand work-ready initiatives. The cooperative education program pioneered by the University of Waterloo has a growing number of imitators and government encouragement to expand the system further. One of the problems, beyond the additional expense of running an effective cooperative education

program, is the shortage of suitable cooperative placements, particularly in a stagnant or uncertain economy. At present, there are few obvious and viable options or strategies available to PSE institutions, in large measure because the corporate and employment environment is just as important as the educational offerings in determining the match of graduates and opportunities.

RIPPLES IN THE CANADIAN ECONOMY

Canadian governments spend billions of dollars on their colleges, polytechnics, and universities. While there are important educational, citizenship-building, and social aspirations associated with these institutions, governments, parents, and students generally agree that the primary goal for the system is making sure that graduates are ready for employment. This is why most students go on to post-secondary education studies. It is why families and governments invest hundreds of millions of dollars each year in tuition fees, books and supplies and living expenses. This is why young people – and a large number of mature learners looking for new opportunities – devote years to their academic, technical, and professional preparation.

As the economy shifted, due to forces beyond the control of the government of Canada, provincial and territorial governments and the institutions, the match between the degrees and diplomas on offer, the degree holders, and the job market became more detached.

While a certain amount of the problem rests with the study choices of students and the program offerings by institutions – a substantial number of students select programs without much thought to employability and institutions continue to offer diplomas and degrees that do not hold much job potential – the greater challenge rests with the changing national and international job market. A generation or two ago, the Canadian economy offered a variety of “default” jobs for those unable to find something directly in their field: entry level government positions, training posts with banks and major corporations, and with relatively easy transitions to the professions, particularly law and education. University students, because there were comparatively few of them and because the job market was expanding, had reasonably strong prospects of converting their diplomas and degrees into decent careers, above average incomes, and good life prospects.

“A generation or two ago, the Canadian economy offered a variety of “default” jobs for those unable to find something directly in their field.

That was then, and this is now. The job market is changing. There is a shift to a more specialized workforce, with wage and opportunity premiums for those with advanced technological and scientific skills, particularly in engineering, computing, design, and related fields. Some of these highly specialized openings, such as petroleum engineering, are tied to the strength and weakness of economic sectors such as oil and gas development. When those industries decline, as is happening with the Canadian energy sector, what were hitherto promising and exciting fields of study and work become zones of high unemployment and limited prospects for new graduates. In other areas,

medicine being a good example, demand has been strong and is expected to be strong. But even areas such as the financial sector that were promising for years have seen substantial job losses and changes as financial institutions make transitions to a technology-driven future.

“There is no simple solution to the complex and multi-faceted challenges facing Canadians seeking to make their way in the 21st-century economy.”

The point is simple. The verities of the past have been threatened. There are still many impressive and well-paid jobs available to well-trained and competitive applicants. Those with specialized credentials, from nursing to economics to accounting, will continue to have options, particularly if the individuals are geographically mobile (which is more of a challenge than most people acknowledge, particularly it seems in Montreal, Ottawa, Toronto, and Vancouver). Those with more general credentials and non-specialist degrees will struggle. Some professions, particularly law and education, are likely to provide fewer openings than graduates, although again the willingness to move to smaller and more remote centres typically increases the prospects of finding an appropriate job.

Technological innovation, which carries the reality of current changes and the prospect of dramatic transformations in the near future, complicates the situation. High tech companies are in urgent need of advanced specialists – firms working in the emerging field of the semantical web struggle to find Canadian talent or skilled personnel willing to move to Canada – while those offering more general positions are typically inundated with applications. Many companies, including some of the country’s largest and most profitable firms, are eliminating jobs due to technological innovations. Even entry level employees, like counter clerks at McDonald’s, are losing their jobs to digital technologies. These dislocations and many others send ripples across the economy.

Policy Options

There is no simple solution to the complex and multi-faceted challenges facing Canadians seeking to make their way in the 21st-century economy. Education and training by themselves are not the solution. Together with a comprehensive engagement with employers, PSE institutions have made major contributions to responding to the realities of the contemporary workforce. The government, through its 2017 skills and training agenda, has devoted a great deal of effort to managing the pitfalls of Canadian federalism and to balancing the involvement of government, PSE institutions and employers in develop an effective plan for going forward.

Within this context, several steps are available to partners in the preparation of Canadians for the contemporary world of work.

- The country's high schools need to improve their advising systems to ensure that students are aware of the full range of educational and training options and work possibilities.
- PSE institutions need to review their classes and programs to determine the degree to which they prepare students for available jobs and, outside the students' course work, provide students with practical advice on gaining access to jobs.
- Canada needs a robust, time-sensitive system for identifying jobs, employment rates and other work-related data. The current system lags so far beyond current realities as to provide little relevant real-time information and even less evidence of pending changes in the employment market. While PSE institutions offer a vast array of continuing education courses and programs which can be developed quickly and are often offered by professionals in the field of study, such programs should have a higher profile within the Canadian landscape.
- Students require accurate and up-to-date information on the employment outcomes from college, polytechnic and university programs. This information should relate study programs to work and career outcomes.
- Work experience imbedded within study programs provides students with excellent opportunities to prepare for future work. It is wrong, however, to assume that employers can and should shoulder the costs and consequences of providing widespread work experience. Instead, K-12 and PSE institutions should look at providing student-run and staffed commercial and administrative activities within their operations, with a view to encouraging students to develop work skills and experience before they graduate.
- The country needs to offset its obsession with diploma and degree credentials and access to institutions with a more nuanced understanding of how to move people into the workforce and how employers (government and business) can best signal their downstream workforce requirements.
- The country's institutions need to shift more rapidly (some are already doing this) from credentials to competencies and, in concert with this process, to provide more short-courses and modularized study opportunities that allow students to respond, just in time, to emerging workforce needs. If, as appears possible, credentials decline in importance as the entry ticket to employment, it is vital that institutions provide direct and tested evidence of the individuals' competence in desired skill sets.
- The country needs more inter-regional mobility to encourage students to relocate to institutions where there are study slots available and where training opportunities align with job opportunities.

- Canada needs a substantial, forward-looking jobs creation strategy, one that focuses on the emerging technology-driven economy. A collaboration of the private sector, government agencies and PSE institutions is required. Canada must become a leader in the development of new economy workforce strategies that focus equally on job creation and the provision of education and training for available jobs.

NEXT STEPS: QUALITY ASSURANCE, GOVERNMENT INVESTMENTS AND SYSTEM OUTCOMES

The challenges facing Canadian PSE institutions are formidable, and they share their uncertainty, expectations, and difficult choices with the federal, provincial, and territorial governments in Canada. Governments are prepared to put money and policy effort into PSE, but in return they want a responsive and effective education and training system. They want results, likely defined by employment rates, income levels, and the placement of college, polytechnic, and university graduates in appropriate jobs. Governments will take their lead, in all likelihood, from employers and business and by the general prosperity of the regional and national economy. PSE institutions cannot control these broader forces; it is not the fault of polytechnics and universities that job opportunities for petroleum engineering positions eroded or that thousands of trades people in the oil patch and

central Canadian manufacturing sector lost their jobs. But these, it seems, will be the metrics by which PSE institutions are judged.

“There is no simple solution to the complex and multi-faceted challenges facing Canadians seeking to make their way in the 21st-century economy.”

Government and public expectations are expanding as the complexity and technological foundations of the Canadian economy shift, in some instances with tectonic force. These place PSE institutions in an extremely difficult position of having to anticipate, if they can, short, medium and long-term changes in the Canadian workforces. The logic of the new economy requires institutions to change programs, adjust student advising and adapt in-course instruction to focus on the requirements of the workforce. It requires a shift to pragmatic approaches to education and training and away from a focus on students' preferences. The new approach will require institutions to be data-intensive, both in terms of the students' experiences and their post-graduation outcomes. At present, Canada has insufficient information gathering to monitor post-secondary outcomes effectively. To continue to be favoured recipients of government support, universities, colleges and

polytechnics are going to have to be much more proactive and transparent in sharing information about their role in the Canadian economy.

In the coming years, PSE institutions will have to be far more effective in providing assurances of quality at the institutional, academic unit and program level. They will have to work with government to provide much better information about student outcomes, workforce needs and institutional

responses. To protect the billions of dollars in annual investments and to ensure the continuation, if not the expansion, in that funding, colleges, polytechnics and universities will have to be much more effective in measuring and documenting their impact.

Canada needs the post-secondary institutions in this country to be effective and proactive. The country needs the colleges, polytechnics, and universities to lead the workforce transition and to work with employers and governments to define the workplace needs of the rapidly changing economy. Canada requires, equally, these same institutions to be at the forefront of understanding the new economy and creating the jobs and business that will define and determine 21st-century prosperity. Canadian institutions did a fine job from the 1960s through to the 2000s in preparing students for the opportunities that lay before them. It is much less clear that they are doing as well at present, in substantial measure because the world of work and opportunity is changing underneath the structures and processes that served the country well in the past.

In the next report in this series, the Macdonald-Laurier Institute looks at the quality assurance measures in place in Canada, using Ontario as the primary case study. This report documents the difficulties with quality assurance at present and relates this to the ever-increasing demands from government, parents, students, employers, and the general public for information on outcomes and also from the government for evidence of value for money investment. Career paranoia has a growing grip on Canadians, and economic uncertainty is fuelling both the interest in advanced education and training and concerns about the effectiveness of post-secondary institutions. Governments have repeatedly told Canadians that post-secondary education is central to national prosperity and competitiveness. They have convinced most Canadians. Now, the challenge is to prove that the assumption is correct, that investments in post-secondary education provide a strong return, and that the institutions are delivering on the implicit promises that drive high levels of attendance, high tuition fees, and high expectations.

References

- Advisory Council on Economic Growth. 2017. "Building a Highly Skilled and Resilient Canadian Workforce Through the FutureSkills Lab." Ottawa.
- Advisory Panel on Canada's International Education Strategy. 2012. "International Education: A Key Driver of Canada's Economic Prosperity." Ottawa.
- Allahar., James E. Cote and Anton L. 2007. *Ivory tower blues: A university system in crisis*. Toronto: University of Toronto Press.
- Aoun, Joseph E. 2017. *Robot-proof: Higher Education in the Age of Artificial Intelligence*. Cambridge, Mass.: MIT Press.
- Auld, D., 2005 Selling postsecondary education; The role of private vocational and career colleges. CD Howe Institute, Toronto, Ontario.
- Borwein, Sophia. 2014. *The Great Skills Divide: A Review of the Literature*. Higher Education Quality Council of Ontario.
- Bramwell, Allison, and David A. Wolfe. 2008. "Universities and regional economic development: The entrepreneurial University of Waterloo." *Research Policy* 37.8 1175–1187.
- Bramwell, Allison, Jen Nelles, and David A. Wolfe. 2008. "Knowledge, innovation and institutions: global and local dimensions of the ICT cluster in Waterloo, Canada." *Regional Studies* 42.1 101–116.
- Cameron, David. 2001. "Postsecondary education and Canadian federalism: Or how to predict the future." *The Canadian Journal of Higher Education* 31.3.
- Caplan, Bryan. 2018. *The Case Against Education: Why the Education System is a Waste of Time and Money*. Princeton University Press.
- Chamber, Tony, and Fiona Deller. 2010. "Chances and choices of low-income students in Canada and England." In *Recognizing and serving low-income students in higher education: An examination of institutional policies, practices, and culture*, by ed Adrianna Kezar. Routledge.
- Cross, Philip. 2017. *Business Investment in Research in Canada Falls Far Behind Other Industrialized Countries*. Fraser Institute.
- Davis, Scott and Hammack, Floyd M. 2016. "The Channeling of Student Competition in Higher Education: Comparing Canada and the U.S." *The Journal of Higher Education*, 76:1 (The Journal of Higher Education, 76:1, 89-106.).
- Doern, Bruce. 2008. *"Polytechnics" in Higher Education Systems: A Comparative Review and Policy Implications for Ontario*. Toronto: Higher Education Quality Council of Ontario, 2008.
- Expert Panel on the State of Science and Technology. 2018. *Competing in the Global Innovation Economy: The Current State of R&D in Canada*. Council of Canadian Academies.

- Hicks, Martin. 2013. *The Diversity of Ontario's Colleges: A Dataset to Inform the Differentiation*. Toronto: Higher Education Quality Council of Ontario, 2013.
- LeBold, Toni, Richard Pullin, and James Wilson. 1990. "Cooperative education in Canada." *Journal of Cooperative Education* 26.2 7-13.
- MacKinnon, Peter. 2018. *University Commons Divided: Exploring Debate & Dissent on Campus*. Toronto: University of Toronto Press.
- Martin, Elizabeth, and Cameron MacLaine. 2016. *The Role and Value of Private Career Colleges in Canada*. The Conference Board of Canada.
- McAfee, Andrew, and Erik Brynjolfsson. 2014. *The Second Machine Age*. WW Norton.
- McLaughlin, Ken. 1997. *Waterloo: The unconventional founding of an unconventional university*. Waterloo: University of Waterloo.
- Perlin, Ross. 2012. *Intern Nation: How to earn nothing and learn little in the brave new economy*. Verso Books.
- Shaienks, Danielle, Tomasz Gluszynski, and Justin Bayard. 2008. *Postsecondary education, participation and dropping out: Differences across university, college and other types of post-secondary institutions*. Statistics Canada, Culture, Tourism and the Centre for Education Statistics.
- Simon, Bernard., 2013 *Skills development in Canada: so much noise, so little action* (Ottawa: Conference Board of Canada).
- Stonechild, Blair. 2006. *The new buffalo: The struggle for Aboriginal post-secondary education in Canada*. Winnipeg: University of Manitoba Press.
- Usher, Alex. 2008. "Rankings 2.0-The Future of University Rankings." *Evaluation in Higher Education* 2.2 51-75.
- Vosko, Leah, ed. 2006. *Precarious Employment: Understanding labour market insecurity in Canada*. . McGill-Queen's Press-MQUP.
- Wolfe, David A., and Jen Nelles. 2008. "The role of civic capital and civic associations in cluster policy." In *Handbook of Research on Innovation and Clusters: Cases and Policies*, by Charlie Karlsson. Edward Elgar.
- Young, Glen A. Jones and Stacey J. 2004. "'Madly off in All Directions': Higher Education, Marketisation and Canadian Federalism." *Markets in Higher Education* (Glen A. Jones and Stacey J. Young. "'Madly off in All Directions': Higher Education, Marketisation and Canadian Federalism." *Markets in Higher Education*. Springer, Dordrecht, 2004. 185-205.).

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Endnotes

- 1 <https://www.canada.ca/en/innovation-science-economic-development/news/2017/06/government_of_canadalaunches50-millioncodingprogramforyoungcanad.html>
- 2 These debates are far from unique. See Cote and Allahar, 2007, which shows how these debates were active a decade ago.
- 3 For a positive commentary on the Lab, see Henry Weingarten's blog, <<http://blog-en.heqco.ca/2017/02/harvey-p-weingarten-futureskills-lab-a-step-in-the-right-direction/>>, 28 February 2017. For a more critical review, by Sean Speer of the Macdonald-Laurier Institute, see <<https://www.macdonaldlaurier.ca/ottawas-futureskills-lab-is-another-economic-central-planning-mistake-sean-speer-in-the-financial-post/>>.
- 4 Polytechnics Canada produces excellent research on the evolution and impact of their institutions. It can be found at <<http://www.polytechnicscanada.ca/>>.
- 5 College and Institutes Canada is the main advocacy organization of these important institutions. Further information can be found at <<https://www.collegesinstitutes.ca/>>.
- 6 For the political background on this topic, see Jones and Young, 2004, 185–205, and Cameron, 2001.
- 7 For a Statistics Canada study of this situation, see Shaienks, Gluszynski & Bayard, 2008.
- 8 <https://www.timeshighereducation.com/world-university-rankings/2017/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats>
- 9 For an interesting commentary on the topic of institutional choice, see Davis & Hammack, 2016, 89–106.
- 10 See also Hicks, 2013.
- 11 <<https://www.univcan.ca/>>.
- 12 The best source, while still being built, is the Education Policy Research Initiative at the University of Ottawa, <<https://socialsciences.uottawa.ca/education-policy-research-initiative/>>.
- 13 Max Blouw, then the Chair of the Council of Ontario Universities and President of Wilfrid Laurier University, provided a stalwart defense of the educational function of universities. See “Universities should educate—employers should train,” *Globe and Mail*, updated April 7 2018. <<https://www.theglobeandmail.com/opinion/universities-should-educate-employers-should-train/article14078938/>>.
- 14 Alex Usher, “An Interesting but Irritating Report on Graduate Overqualification,” 16 November 2015 <<http://higherstrategy.com/an-interesting-but-irritating-report-on-graduate-overqualification/>>.
- 15 On the general theme of scholarly and business-related research, see *Innovation Canada: A Call to Action* <http://rd-review.ca/eic/site/033.nsf/eng/b_00287.html>. Also see, for example, the *University of Regina's Economic Impact assessment*, <<https://www.uregina.ca/orp/assets/projects-presentations/u-of-r-economic-impact-study-2014-15.pdf>>.

- 16 On the Waterloo innovation eco-system, see the excellent studies by David Wolfe and his colleagues.
- 17 See the commentary from Universities Canada on the 2018 budget: <<https://www.univcan.ca/media-room/media-releases/budget-2018-makes-historic-investment-canadas-research-future/>>.
- 18 The problem is more general than just in research. See Cross, 2017.
- 19 For further information, see Cooperated Education and Work Integrated Learning Canada <<https://www.cewilcanada.ca/about-us.html>>.
- 20 <<https://uwaterloo.ca/co-operative-education/why-co-op/employment-statistics>>.
- 21 See also *Canada's International Education Strategy*, <<http://international.gc.ca/global-markets-marches-mondiaux/education/strategy-strategie.aspx?lang=eng>>.
- 22 <https://qz.com/1029860/more-silicon-valley-tech-workers-were-born-outside-the-us-than-in-it/>.
- 23 Paul Davison, "From STEM to STEAM: Preparing Students for the Challenge of Change," <<https://www.univcan.ca/media-room/media-releases/from-stem-to-steam/>>.
- 24 For an excellent commentary on Indigenous post-secondary education, see Stonechild, 2006.
- 25 For a glimpse into the world of fund-raising, see the website of the Council for the Advancement and Support of Education, <https://www.case.org/Browse_by_Professional_Interest/Fundraising.html>. For the private sector side of the enterprise, check out Ketchum Canada International (<http://kciphilanthropy.com/lang/en/>).
- 26 For a valuable introduction to the sector, see the work of the National Association of Career Colleges <<http://nacc.ca/?>>. See also Martin and MacLaine 2016. See also the now-dated report by Statistics Canada, *Canada's Private Colleges: The Lesser Known Players in Postsecondary Education* <<http://www.statcan.gc.ca/pub/11-621-m/11-621-m2006036-eng.htm>>.
- 27 <<https://news.gov.bc.ca/factsheets/private-post-secondary-institutions-in-bc>>.
- 28 Large employers have generally indicated their satisfaction with recent hires, which they attribute to the large number of applicants they get for competitions. <<http://www.ceocouncil.ca/wp-content/uploads/2014/01/Preliminary-report-on-skills-survey-Jan-20-2014-2.pdf>>.
- 29 One of the best books in the large and often overly apocalyptic field is McAfee and Brynjolfsson 2014.
- 30 Zach Spicer, Norm Olmstead and Nicole Goodman touched off an important debate in Canada with the publication of a report on the brain-drain in the high-tech sector: *Reversing the Brain Drain: Where is Canadian High Tech Talent Going?* <<https://brocku.ca/social-sciences/political-science/wp-content/uploads/sites/153/Reversing-the-Brain-Drain.pdf>>.
- 31 For program details, see UR Guarantee: <https://www.uregina.ca/urguarantee/>.



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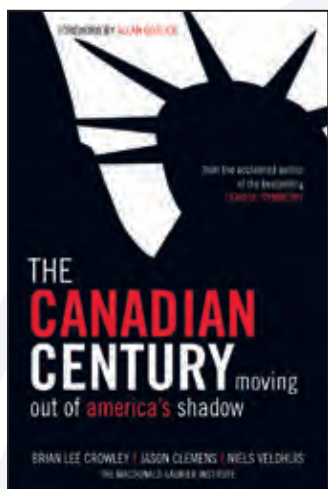
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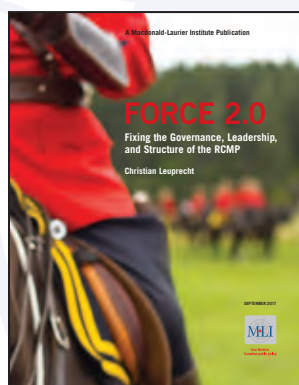
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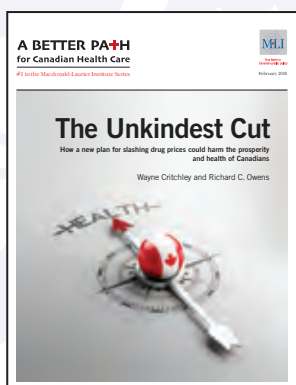
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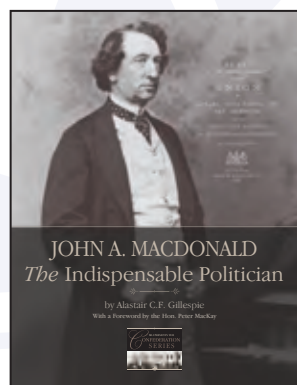
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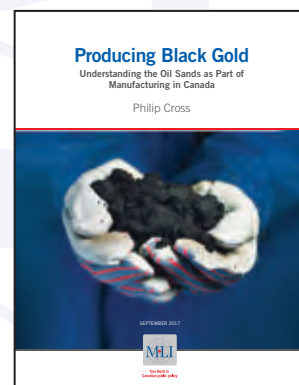
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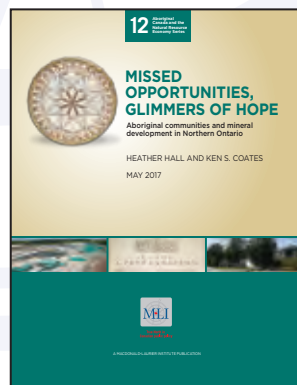
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In five short years, the institute has established itself as a steady source of high-quality research and thoughtful policy analysis here in our nation's capital. Inspired by Canada's deep-rooted intellectual tradition of ordered liberty – as exemplified by Macdonald and Laurier – the institute is making unique contributions to federal public policy and discourse. Please accept my best wishes for a memorable anniversary celebration and continued success.

THE RIGHT HONOURABLE STEPHEN HARPER

The Macdonald-Laurier Institute is an important source of fact and opinion for so many, including me. Everything they tackle is accomplished in great depth and furthers the public policy debate in Canada. Happy Anniversary, this is but the beginning.

THE RIGHT HONOURABLE PAUL MARTIN

In its mere five years of existence, the Macdonald-Laurier Institute, under the erudite Brian Lee Crowley's vibrant leadership, has, through its various publications and public events, forged a reputation for brilliance and originality in areas of vital concern to Canadians: from all aspects of the economy to health care reform, aboriginal affairs, justice, and national security.

BARBARA KAY, NATIONAL POST COLUMNIST

Intelligent and informed debate contributes to a stronger, healthier and more competitive Canadian society. In five short years the Macdonald-Laurier Institute has emerged as a significant and respected voice in the shaping of public policy. On a wide range of issues important to our country's future, Brian Lee Crowley and his team are making a difference.

JOHN MANLEY, CEO COUNCIL
