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Canada's Black Box of Higher Education Outcomes

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Executive Summary

There are nearly two million students enrolled in Canadian universities and colleges at any given time. Higher education is a large sector, with public institutions' revenues totalling $60 billion annually. The system of post-secondary education is recognized as essential to Canada's prosperity and labour force development, creating economic opportunity, social mobility, newcomer integration, and civic engagement for learners. Yet, there is alarmingly little understanding or analysis of the *outcomes* Canada's higher education system produces—whether to inform public policy, align skills development, or ensure learners (and funders) are getting good value.

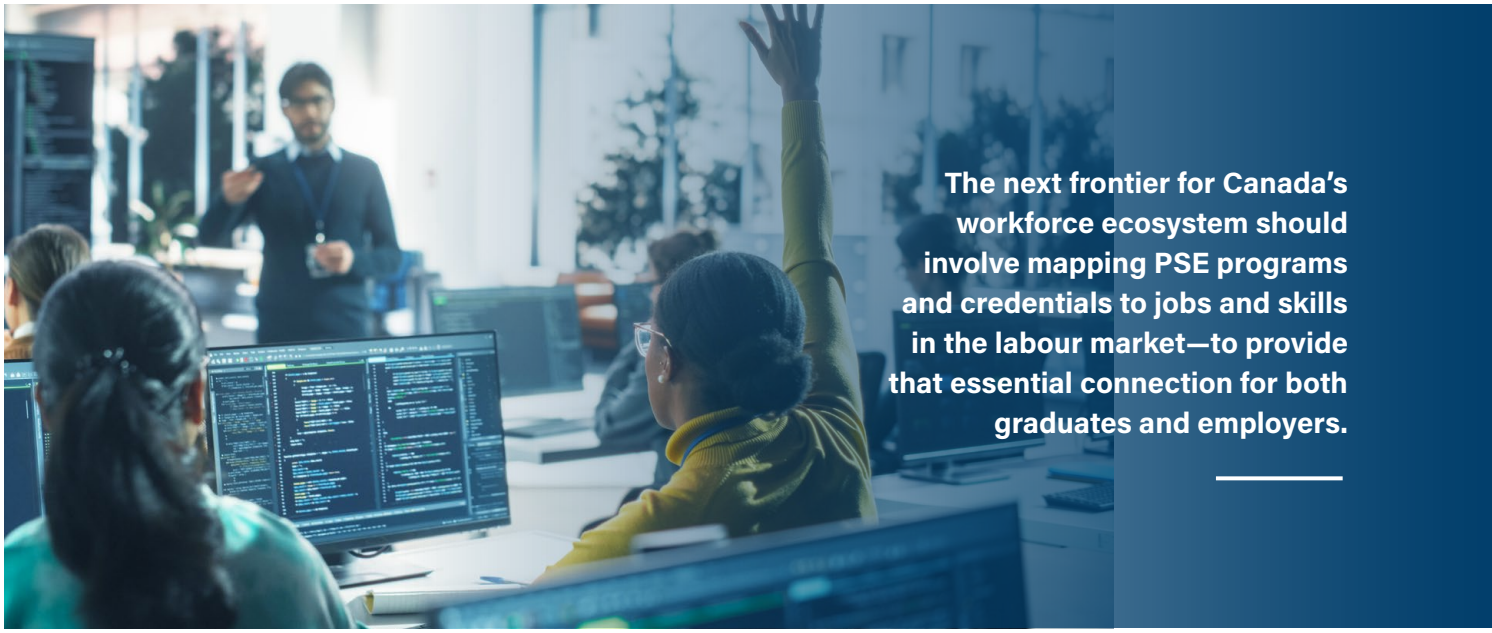
This report investigates the topic of outcomes tracking in Canadian higher education and related notions of quality and value assessment, with the aim of informing better post-secondary policy, education and labour market planning, and learner career pathway navigation.

Why do higher education outcomes matter? In today's rapidly changing and increasingly competitive Canadian post-secondary marketplace, there are three compelling reasons why tracking outcomes is an imperative:

- **Transparency**: To provide learners with the information they need to make informed decisions about education and training options
- **Improvement**: To equip higher education and training providers with the information they need to enhance program delivery, learner experience, and post-completion success
- **Accountability**: To inform governments and oversight bodies that fund and set policies, standards for quality assurance, consumer protection, and performance

In the first section of the report, a review of the current state of higher education outcomes tracking in Canada reveals a number of limitations. Provincial outcomes data are inconsistent and not easily accessible, navigable, or standardized. Data are generally not comparable by institution type across universities and colleges nor with apprenticeships. Data are not available at a granularity that allows assessment and comparison at the institution- and program-level. A key gap across Canada is the absence of graduate skills information that can align post-secondary data with labour market information (LMI). Lastly, there are no reliable data or information sources for new types of alternative credentials such as microcredentials, online certificates, or digital badges. Beyond the provincial level, the other important elements of post-secondary education (PSE) information architecture are described, including inter-governmental institutions, the Government of Canada, and Canadian participation in international initiatives.

The second section scans the post-secondary data and outcomes tracking systems in three peer jurisdictions, the United States, Australia, and the United Kingdom, providing a few general lessons for Canada. First, all three peer countries have national systems and institutions dedicated to post-secondary outcomes data collection and dissemination. Second, the three peer countries offer more timely, nationally comparable data. Third, peer countries offer transparency tools for students and other users that allow for comparison of institutions and programs nationally. Lastly, innovative higher education policy research is a key by-product. The US example especially demonstrates the power of a robust higher education data system with open data access in enabling deep research analysis that drives debate and public policy action.



Based on the findings about Canada's current state and the comparative lessons from peer jurisdictions, the final section identifies a set of five actions that could improve Canada's post-secondary data and information systems—which we refer to as "learning LMI" because it should constitute a key element in Canada's labour market information (LMI) ecosystem.

- **Canada requires pan-Canadian leadership and coordination on higher education outcomes.** Key federal/provincial/territorial bodies like the Canadian Education Statistics Council (CESC), Council of Ministers of Education, Canada (CMEC), Labour Market Information Council (LMIC), and Statistics Canada should be equipped with the mandates and resources to advance this pan-Canadian work.
- **Canada needs national, open-access learning data infrastructure.** Like Canada's three peers, this country needs a pan-Canadian institution to act as a public utility for education data, responsible for the collection, curation, and sharing of raw data for the collective benefit.
- **Policymakers should use funding levers to compel comparable, granular outcomes reporting.** Canada's federal/provincial/territorial governments should similarly use their funding and regulatory levers to compel reporting of data that is comparable across different types of providers and provinces, and detailed at both the provider and program levels.
- **Post-secondary outcomes data should be linked with LMI for jobs and skills in demand.** The next frontier for Canada's workforce ecosystem should involve mapping PSE programs and credentials to jobs and skills in the labour market—to provide that essential connection for both graduates and employers.
- **Learners and workers need better PSE transparency and navigation tools coupled with learning-to-career guidance support.** These tools should be developed with key user groups (e.g., students, parents, K–12 and PSE guidance professionals) and integrated into high school guidance and workforce services to focus support on the learners who need it most.

Measure what matters, as they say. This report is intended as a "Call to Action" to Canada's higher education leaders, policymakers, student groups, and other key stakeholders. It is time to open the black box.



There is alarmingly little understanding or analysis of the outcomes Canada's higher education system produces— whether to inform public policy, align skills development, or ensure learners (and funders) are getting good value.

1. Introduction

There are nearly two million students enrolled in Canadian universities and colleges—representing about 5% of Canada's population in any given year.[1] Higher education is a large sector, with public institutions' revenues totalling $60 billion annually, primarily via grants and investments from federal/provincial governments and tuition and fees paid by learners.[2] The system of post-secondary education is recognized as essential to Canada's prosperity and labour force development, creating economic opportunity, social mobility, newcomer integration, and civic engagement for learners. Yet, there is alarmingly little understanding or analysis of the *outcomes* Canada's higher education system produces—whether to inform public policy, align skills development, or ensure learners (and funders) are getting good value.

Some system- or institution-level outcomes are tracked. For instance, completion rates are about 75% from public university programs in Canada and 60% from public colleges—with wide variation among institutions. The Canada student loan default rate was 7% in 2020, down from 15% in 2010.[3] Full-time employment rates for graduates hover around 80%, and median graduate incomes after two years do exceed the median Canadian personal income.[4] Finnie et al., using a model linking post-secondary and tax data, have undertaken the most significant research on graduate earnings by field of study, with the headline finding that even graduates in lower-earning fields exceed the wages of the typical coffee shop barista.[5] Frenette and Handler, using similar methods, find that short post-secondary programs tend to produce earnings benefits for recently laid-off workers.[6]

Beyond these types of system-level aggregate snapshots, however, there is little public data, information, and analysis to understand the quality or outcomes of *specific* university or college programs of study. This poses an ongoing challenge for post-secondary policymakers, employers, and workforce developers, who struggle to link post-secondary completion and credential data to labour market information (LMI) and skills demand in the economy.[7] This absence of post-secondary information and analysis about outcomes is increasingly recognized as a major barrier for learners. While learners today report job and career outcomes as their primary objectives in attending higher education, they struggle to make informed decisions about what to study and what returns to expect from their studies.[8] This has led to calls for improved post-secondary data and information (we refer to it as "learning LMI"[9]) as a key input to helping students with program choice decisions and career pathway navigation[10]—and for better performance metrics generally.[11]

1 Statistics Canada. (2022, December 7). *Education, Training and Learning Statistics.* https://www.statcan.gc.ca/en/subjects-start/education_training_and_learning

2 Statistics Canada. (2023, August 3). *Revenues of universities by type of revenues and funds (in current Canadian dollars) (x 1,000).* https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3710002601; Statistics Canada (2022, December 7). *Revenues of colleges by type of revenues and funds (in current Canadian dollars) (x 1,000).* https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3710002801

3 Employment and Social Development Canada. (2023). *Canada Student Financial Assistance Program Annual Report 2021 to 2022.* https://www.canada.ca/en/employment-social-development/programs/canada-student-loans-grants/reports/csfa-annual-2021-2022.html#measurement

4 Usher, A. (2022). *The State of Postsecondary Education in Canada, 2022.* HESA. https://higheredstrategy.com/wp-content/uploads/2022/09/SPEC_2022-1.pdf

5 Finnie, R., Afshar, K., Bozkurt, E., Miyairi, M., & Pavlic, D. (2016, July 26). *Barista or Better? New Evidence on the Earnings of Post-Secondary Education Graduates: A Tax Linkage Approach.* Education Ottawa: Education Policy Research Initiative. https://ruor.uottawa.ca/bitstream/10393/42190/1/EPRI-ESDC%2bTax%2blinkage_Report.pdf

6 Frenette, M., & Handler, T. (2022, November 23). *Does taking short postsecondary programs or independent credits benefit recently displaced workers?* Statistics Canada. https://www150.statcan.gc.ca/n1/pub/36-28-0001/2022011/article/00003-eng.htm

7 See for example Rivera, D., Zachariah, J., Rajabi, Y., & Willoughby, R. (2020, May 29). *Ahead by a Decade: Employment in 2030.* Brookfield Institute for Innovation + Entrepreneurship. https://brookfieldinstitute.ca/report/ahead-by-a-century-employment-in-2030/

8 See for example the Labour Market Information Council's public opinion research project, a large-scale survey of individuals and organizations that gathered a clearer understanding of students' access and use of information to make their education, workplace, and career decisions. https://lmic-cimt.ca/data-dashboards/public-opinion-research/

9 We use the term "Learning LMI" as a shorthand to refer to post-secondary program, credentials, and outcomes information and data that could be linked to the occupational and skills data more commonly considered to be labour market information (LMI).

10 See Bonen, T., & Oschinski, M. (2021, January 6). *Mapping Canada's Training Ecosystem: Much Needed and Long Overdue.* Institute for Research on Public Policy. https://irpp.org/research-studies/mapping-canadas-training-ecosystem-much-needed-and-long-overdue/

11 Weingarten, H.P., Hicks, M., Kaufman, A., Chatoor, K., MacKay, E., & Pichette, J. (2019, May 3). Postsecondary Education Metrics for the 21st Century. Higher Education Quality Council of Ontario. https://heqco.ca/pub/postsecondary-education-metrics-for-the-21st-century/

1.1 Objectives, Scope, and Methodology

This report investigates the topic of outcomes tracking in Canadian higher education and related notions of quality and value assessment. With the aim of informing better post-secondary policy, education and labour market planning, and learner career pathway navigation, the report addresses three questions:

1. **How are higher education data and outcomes currently tracked in Canada, and what are the limitations for learners, institutions, and policymakers?**
2. **How does Canada stack up against peer jurisdictions' systems of post-secondary data reporting and outcomes analysis, and what are the relevant lessons?**
3. **What post-secondary system, policy, data reporting, and infrastructure interventions could address gaps in Canada's post-secondary "learning LMI" system?**

Literature review, secondary data analysis, and informal conversations with subject matter experts were used to seek to better understand the gaps in Canadian learning LMI in the first half of this report. This is followed by a review of the policies, institutions, and data tools for outcomes tracking in three peer countries—the United States, Australia, and the United Kingdom—to assess how Canada stacks up and reveal effective approaches and alternative models to learning LMI Canada could model. Finally, the report highlights relevant policy implications and actionable opportunities for Canadian policymakers and the post-secondary system.

2. The Current State: Higher Education Data and Outcomes Tracking in Canada

Debates over higher education outcomes have been long standing in Canada and across the world.[12] While this short paper does not seek to retread that ground, it is worthwhile to establish *why* tracking outcomes is increasingly important. Generally, there are three reasons:

- **Transparency:** To provide learners—as well as parents, career guidance practitioners, and others who assist them—with the information needed to make informed decisions about education and training options
- **Improvement:** To equip higher education and training providers with the information they need to enhance program delivery, learner experience, and post-completion success
- **Accountability:** To inform governments and oversight bodies that establish and enforce policies and oversee funding mechanisms and provider standards for quality assurance, consumer protection, and performance

Despite such compelling reasons, data collection requirements, processes, infrastructures, and norms for tracking outcomes for these objectives remain underdeveloped. There are a few contributing factors. As Weingarten et al. noted, provincial governments and post-secondary institutions have focused on tracking post-secondary *inputs* such as enrolments and expenditures on faculty employment, facilities, student aid, and resources such as library holdings.[13] There has been resistance to efforts to expand tracking of *outcomes* or *impact,* in part from recognition that the mission of universities and colleges extends beyond employment-oriented education and skills development to domains that are ill-suited to quantitative assessment such as learners' personal

12 See for example: OECD. (2022). *Education at a Glance 2022: OECD Indicators.* https://www.oecd-ilibrary.org/education/education-at-a-glance-2023_e13bef63-en

13 Weingarten, H.P., Hicks, M., Kaufman, A., Chatoor, K., MacKay, E., & Pichette, J. (2019). *Postsecondary Education Metrics for the 21st Century.* Toronto: Higher Education Quality Council of Ontario.

and intellectual growth, scientific discovery, civic engagement, and community development. At the same time, in Canada and peer systems, the *quality* of providers, programs, and credentials is assessed through *ex ante* (before) mechanisms, rather than on *ex post* (after) outcomes assessment. This quality assessment occurs primarily through provincial regulatory processes for approving new educational institutions and the ability to award credentials and on qualification frameworks and bodies for approving new programs and associated credentials, including degrees, diplomas, and certificates.[14]

While these quality assurance processes can be a useful proxy for assessing the *potential* outcomes of providers and a new program's design or alignment to labour market demand, they are obviously limiting. This is especially true in today's rapidly changing and fragmenting post-secondary marketplace. Canada's public universities and colleges are now competing with existing and new private career colleges like coding bootcamps, workforce training, and upskilling providers; recently launched private universities and foreign entrants like Northeastern University; and global online platforms like Coursera, LinkedIn Learning, and Google's career certificates. The credential landscape has also become far more complex: research from the United States found that the number of unique credentials has exploded to nearly one million, with more than half in "alternative" formats like microcredentials and digital badges.[15] As in the US, these new types of credentials do not fall under Canada's qualification frameworks.

In sum, why do we believe improving post-secondary outcomes tracking should be a priority today? For governments and higher education policymakers, the absence of robust outcomes tracking makes it far harder to assure quality, consumer protection, and performance in higher education policy and funding. For post-secondary institutions and decision-makers, the absence of consistent outcomes data limits opportunities to improve in a competitive environment and demonstrate value to prospective learners, employers, local communities, and other interested parties.

Most importantly for prospective learners and those advising them, this new marketplace offers not only more choice and varied learning-to-career pathways but also a much more daunting set of options to discern and navigate. Accessible program information can better inform the choices of learners who seek to align career objectives and factors like cost, program structure, and life-fit with outcomes information that assures that completion will yield a good return on investment. While the "last mile" challenge of transitioning graduates into work has received the attention of employers and education institutions, there is also the "first mile" problem. As Dawson and Flynn describe it: "Today's learners need not just funding, but also better insight into the labor market outcomes and career paths that will allow them to spend their time and educational dollars wisely."[16]

2.1 Post-secondary Data in Canada

This section describes the landscape for post-secondary data in Canada as of 2023, including for outcomes tracking. The first part describes data collected and made available by the provinces,[17] and the second, the data collected or aggregated by the federal government and through international bodies. A few examples of initiatives by non-government bodies to aggregate and make accessible data are also highlighted.

14 This section is adapted from Côté, A., Olsen, D., & Hirsch-Allen, J. (2021, November). *Navigating Canada's Messy Education and Training Marketplace for Career-Focused Learning.* Future Skills Centre and Blueprint. https://fsc-ccf.ca/wp-content/uploads/2021/11/FSC-RCP-EdTraining-EN.pdf

15 Credential Engine. (2021). *Counting US Post-secondary and Secondary* Credentials (2021). https://credentialengine.org/resources/counting-u-s-postsecondary-and-secondary-credentials-2021/

16 Dawson, T., & Flynn, M. (2021, April 13). "Building the Workforce of the Future Will Take More Than Money." Barron's. www.barrons.com/articles/building-the-workforce-of-the-future-will-take-more-than-money-51618318773

17 While territories also have jurisdictional authority for post-secondary education in Canada, authors omit them in this study because of their small footprint.



2.1.1 Provincial Post-secondary Data

With higher education under the jurisdiction of the 13 provinces and territories, education ministries across the country are key players in mandating post-secondary education (PSE) outcomes reporting for public (and sometimes private) universities and colleges, tied to policy frameworks and operating, capital, and student aid funding.

Data collected from post-secondary institutions is either pulled directly from student information systems (retention, completion, field of study, grades) or by student survey (satisfaction, employment rates, occupation after graduation). The data are made public or disseminated in several ways. Provincial governments often release the data tables through education-specific or open government data portals and sometimes provide data analysis tools or reports. This data are also reported to federal agencies and reflected in national data sources discussed below. Post-secondary institutions sometimes release the data through their offices of research and analysis. The data tables, or data analysis products, are also disseminated through post-secondary associations or policy research organisations.

The types of post-secondary data collected and made available typically falls into three categories:



Institutional

Capital, operational, research funding

Tuition fees

Enrolment rates



Student

Satisfaction rates

Retention rates

Graduation rates



Graduate

Un/Employment rates

Employment Income

Student debt burden

A pan-Canadian scan of post-secondary data was undertaken, with the analysis focusing on a few key assessment criteria:

- **Availability of data:** Does the province make any data publicly available?
- **Completeness and consistency of data:** Does the data include the three types identified above (i.e., institutional, student and graduate)?
- **Comparability of the data:** Are university, college, and apprenticeship education outcomes available to allow for comparison across institution or pathway type?
- **Granularity of the data:** Are the data broken down by institution and by specific program for the province?
- **Accessibility to data users:** Are the data easily retrieved or accessed through an open, downloadable, machine-readable, tabular format (e.g., through open data portals)?
- **Navigability for students and other users:** Is there a data tool that allows comparisons or visualizations, dashboards, or plotting that enables a smooth user experience for a student and/or non-data-literate user?

A brief description of each province can be found in the sections below, with Table 1 providing a summary of the scan of findings across all the provinces.

A few broad findings stand out. First, **while data are *available* within most large provinces, and sometimes comparable across institution types, it is often a few years behind the last completed school term, limiting its usefulness.** The lack of timeliness makes comparison across jurisdictions difficult, and, in most cases, not possible across all provinces in the same period. Second, **data in most provinces are not *granular* to the level of the institution and field/program**, which makes it challenging for a prospective student, policymaker, or employer to practically assess outcomes for career pathway planning, performance, or job market utility. Third, **while *accessible* as open, downloadable data in parts of the country, data are generally not presented in ways that are easily navigable for non-data users** (like students, parents, or guidance professionals), making analysis across program type, institution, or province very challenging.

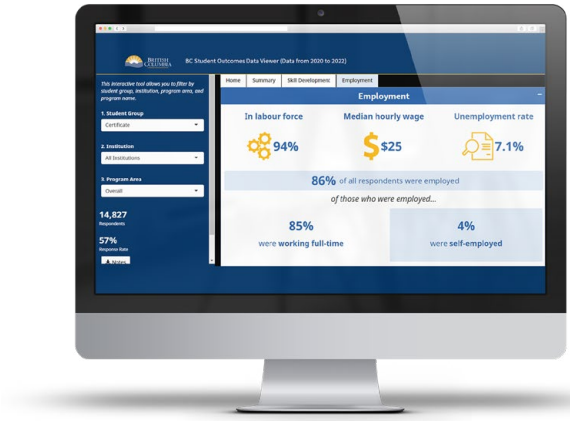
Table 1: Summary of Pan-Canadian Higher Education Data Scan

Categories	BC	AB	SK	MB	ON	QC	NB	PEI	NS	NFLD
Availability (annual reporting, research report)	X	X	X	X	X	X	X	X	X	X
Completeness (i.e., three outcome types: institutional, student, graduate)	X	X	X		X	X				
Comparability (across institution types)	X	X	X	X	X	X				X
Granularity (institution and program specific)	X				X					
Accessibility (open, downloadable, machine-readable)	X		X	X	X					
Navigability (data visualization or dashboard tool)	X		X							

British Columbia

British Columbia's Ministry of Post-secondary Education and Future Skills, with several participating organizations and institutions, annually collects several student surveys on employment, further education, debt, skill development, and program evaluation and satisfaction. It also provides a visualization tool (Figure 1) to navigate and curate the data for interested audiences.[18]

Figure 1: BC Student Outcomes Data Viewer



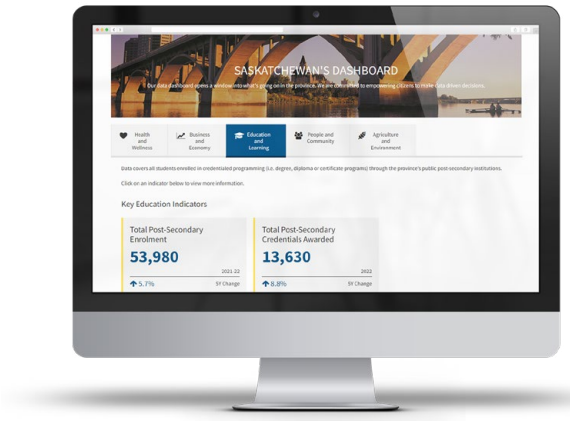
Alberta

Alberta's post-secondary information system reports on satisfaction, debt, and employment outcomes annually.[19] It is available for both college and university graduates. It lacks machine-readable data or the ability to visualize the information.

Saskatchewan

Saskatchewan's Ministry of Advanced Education develops indicators on graduation, enrolments, demographics, and revenues and expenditures annually.[20] Saskatchewan also runs a survey on accessibility, value, and post-graduation employment.[21] It does host a data dashboard that allows for comparability over time and a data download feature.[22]

Figure 2: Saskatchewan's Education and Learning Dashboard



Manitoba

Manitoba hosts their post-secondary education information in machine-readable formats on demographics, enrolment, tuition, and graduation.[23] Manitoba does not conduct any additional surveys, nor do they have a tool to compare data. They did conduct a graduate survey in 2009 but have yet to repeat it.[24]

Ontario

Ontario's Ministry of College and Universities provides the Post-Secondary Education Partners' Gateway, an online policy and data portal for performance indicators from private colleges to public post-secondary institutions.[25] It hosts a few additional surveys for the province, such as the Ontario

18 Government of British Columbia. (Accessed June 2023). "BC Student Outcomes Data Viewer (Data from 2020 to 2022)." https://bcstats.shinyapps.io/so_data_viewer/

19 Government of Alberta. (Accessed June 2023). "Post-secondary system—Data collection and research." https://alberta.ca/data-collection-research.aspx

20 Government of Saskatchewan. (2022). "Post-Secondary Education Indicators Project." https://saskatchewan.ca/residents/education-and-learning/universities-colleges-and-schools/post-secondary-education-indicators-project

21 Government of Saskatchewan. (2022). "Graduate Outcomes Survey." https://www.saskatchewan.ca/residents/education-and-learning/universities-colleges-and-schools/graduate-outcomes-survey

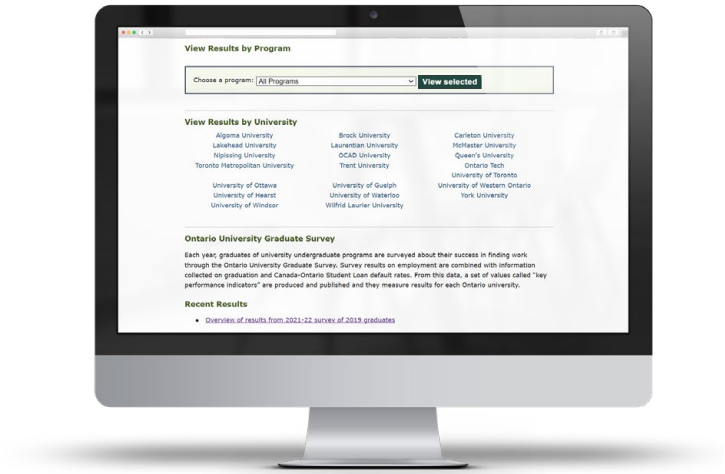
22 Government of Saskatchewan. (2022). "Saskatchewan's Dashboard." https://dashboard.saskatchewan.ca/education-learning

23 Government of Manitoba. (2020). "Post-Secondary Education in Manitoba." https://edu.gov.mb.ca/ald/statistics.html

24 PRA Inc. Research & Consulting. (2009, February 3). *Survey of Graduates: Manitoba Universities and Colleges.* Council on Post-Secondary Education. https://www.edu.gov.mb.ca/ald/pdf/manitoba_graduate_outcomes_survey%20_final_feb_09.pdf

25 Government of Ontario. (2022). "Information for public postsecondary education partners." https://www.ontario.ca/page/information-public-postsecondary-education-partners

Figure 3: Ontario Post-Secondary Education Partners' Gateway



University/College Graduate Survey and College Employment Profile, which portrays the satisfaction, graduation, and employment outcomes post-graduation at the program level for all colleges. The vast amount of information is not easily navigable and lacks a tool to visualize or compare its data across institutions, years, or programs.

Quebec

Quebec's Ministry of Education provides the Ontario Relance survey, which captures the demographics of enrolment, completion, and post-graduate labour outcomes of its technical college and university graduates in annual reports.[26] It does not have any machine-readable data nor does it have information at the institutional level or have a tool to compare data over time or across programs.

Maritime Provinces

The Maritime Provinces Higher Education Commission (MPHEC), which represents the three provinces of New Brunswick, Prince Edward Island, and Nova Scotia, conducts a joint survey on graduate outcomes.[27] While the commission captures fundamental information on students, finances, and labour market outcomes, it lacks data on satisfaction, skills, or any college-level outcomes. It also does not offer any insight at the institutional level. Individually, New Brunswick provides annual reports on the overall post-secondary education in the province.[28] Prince Edward Island has no post-secondary education indicators on their Workforce, Advanced Learning, and Population Department site.[29] Nova Scotia provides annual reports as a more extensive scope of its Labour and Advanced Education Department that provides accountability reporting on university and college finances, graduate employment, and job program uptake.[30]

Newfoundland and Labrador

The Department of Education provides an annual report that details university and college enrolment, graduation, and student debt statistics.[31] It does not include information about graduate labour market outcomes, skill development, or satisfaction, nor is data provided that are downloadable and machine-readable.

2.1.2 National and International Post-secondary Data

Beyond the data reported, collected, and disseminated at the provincial level, other important elements of post-secondary information architecture include inter-governmental institutions, the Government of Canada, and Canadian participation in international initiatives.

The Canadian Education Statistics Council (CESC) is the governing body for the federal/provincial/territorial data system, co-chaired by the provincial Council of Ministers of Education, Canada (CMEC) and Statistics Canada. Among other functions, CMEC supports the portability of educational and occupational

26 Ministry of Education. (2023). "Relance Surveys." https://education.gouv.qc.ca/en/references/indicateurs-et-statistiques/enseignement-superieur/relance-surveys/

27 Maritime Provinces Higher Education Commission. (2023). "Graduate Outcomes Survey." https://www.mphec.ca/research/graduatefollowupsurveys.aspx

28 Government of New Brunswick. (2022). "Publications." https://www2.gnb.ca/content/gnb/en/departments/post-secondary_education_training_and_labour/publications.html

29 Government of PEI. "Workforce, Advanced Learning and Population." https://princeedwardisland.ca/en/topic/workforce-advanced-learning-and-population

30 Government of Nova Scotia. (2023). "Accountability Reporting." https://novascotia.ca/government/accountability/.; Government of Nova Scotia. (2021). *Accountability Report 2020–21*. https://beta.novascotia.ca/government/advanced-education

31 Government of Newfoundland and Labrador. "Post-Secondary Education." https://www.gov.nl.ca/education/post-secondary-education/

qualifications in Canada, skills and competency assessment of students, and prepares reports and sponsors research in education-related statistics. A key initiative coordinated through the CESC is the annual report of The Pan-Canadian Education Indicators Program (PCEIP)[32]—a resource launched in 2000 that aggregates national education indicators in Canada and makes them available on a public website. Spanning K–12 to post-graduate indicators, the report provides the most extensive collection of education data in Canada whilst also providing a socioeconomic portrait of students and institutions. In some cases, provincial ministries cover more specific outcomes related to institutional or program-specific outcomes that are not found in the PCEIP.

Statistics Canada is a critical national source of education data and source of in-house research and analysis. In addition to the Census of Population and CANSIM database of socioeconomic indicators, relevant survey tools include the National Graduate Survey (NGS), Canadian Graduate and Professional Survey (CGPSS), and the Labour Force Survey (LFS). Important recent additions to the post-secondary data architecture include the Postsecondary Student Information System (PSIS) and Education and Labour Market Longitudinal Platform (ELMLP). PSIS is a mandatory national survey for public post-secondary institutions, which annually collects administrative data about programs and courses offered, student registrations, and educational attainment. The ELMLP is a platform that links administrative data about students and registered apprentices with tax data to enable longitudinal analysis of graduate labour market outcomes, including employment income by qualification, field of study, age group, and gender. There is limited access to granular data for assessment at the institution and program level, however; access is generally limited to researchers who complete rigorous security checks to use Statistics Canada's research data centres (RDCs).

Canada participates in international education indicator surveys that offer important sources of comparative education indicators. CMEC and Statistics Canada coordinate national participation in Organisation for Economic Co-operation and Development (OECD) education indicators initiatives, including the Programme for the International Assessment of Adult Competencies (PIAAC),[33] which measures cognitive and workplace skills and how they are developed through education and training systems. Other initiatives Canada participates in include the Consortium for Student Retention Data Exchange (CSRDE),[34] which provides student retention rates at the institutional level in Canada and the US, and the National Survey of Student Engagement (NSSE)[35], which details the post-secondary experience and its effect on student learning and development.

Despite some of the positive developments, there is a recent history of *failed* efforts at creating new learning information infrastructure and institutions in Canada. The Canadian Council on Learning (CCL), established in 2002 as a new national, federally funded institution to report on the progress of learning in Canada, was closed just a few years later. The OECD's Assessment of Higher Education Learning Outcomes (AHELO) initiative, an effort to create an internationally comparative survey, was wound down in 2015, reportedly in face of opposition from universities and their associations in Canada and other rich countries.[36] They are examples of the longstanding tensions around outcomes initiatives generally in higher education, and federal action in provincial jurisdiction for education.

32 Statistics Canada. (2023, August 15). *Education Indicators in Canada: Report of the Pan-Canadian Education Indicators Program*. https://www150.statcan.gc.ca/n1/en/catalogue/81-582-X

33 Programme for the International Assessment of Adult Competencies. (Accessed October 2023). "What is PIAAC?". https://www.piaac.ca/

34 CSRDE. (Accessed October 2023). "About Us." https://csrde.ou.edu/about/

35 National Survey of Student Engagement. (Accessed October 2023). "What does NSSE do?". https://nsse.indiana.edu/nsse/

36 Usher, Alex. (2015, May 15). AHELO: Universities Behaving Badly. Higher Education Strategy Associates Blog.



Other Resources

The organisations highlighted below use government data to organize, collect, and disseminate education information tools, dashboards, and reports. These data are often available to research organisations and institutions but would only be publicly available with the efforts of these teams.

Statistics Canada's Labour market outcomes for college and university graduates *Interactive tool*:[37] The labour market outcomes tool visualizes ELMLP data on earnings to help students, parents, policymakers, and the broader Canadian public make more informed decisions on post-secondary education choices. The data from the platform allows users to track college, apprenticeship, and university earnings over time by field of study, age, gender, region, and graduation cohort using tax-filer data.

The Higher Education Quality Council of Ontario (HEQCO) Post-Secondary *Performance* website:[38] An agency of the Ontario government, HEQCO's data visualization tool aggregates pan-Canadian education indicators for access to education, value to society, and value to students across several categories. Though last updated in 2015, it set a standard for enabling provincial comparisons, providing "value for money" metrics, and offering an easily navigable user experience despite the large amount of data. A Quick Stats webpage offers updated data and visualizations about Ontario's post-secondary institutions.

Higher Education Strategy Association (HESA) State of Postsecondary *Education in Canada* annual report:[39] HESA's annual report provides probably the most comprehensive data-informed analysis of higher education in Canada, covering available indicators for learner enrolment, student aid, graduation, and attainment level, as well as institutional staff and financing, provincial profiles, and international comparisons. The annual analysis is contextualized with explainers, historical information, and post-secondary policy background to provide a rich resource for researchers, policymakers, and other data users.

37 LMIC. (2023, August 14). "Where to find data on student and apprentice labour market outcomes." https://lmic-cimt.ca/where-to-find-data-on-student-and-apprentice-labour-market-outcomes/

38 HEQCO. (2015). "How strongly do Canada's university systems perform?". https://postsecondaryperformance.ca/

39 Usher, A. (2023). The State of Postsecondary Education in Canada, 2023. HESA. https://higheredstrategy.com/publications/state-of-postsecondary-education-in-canada-2023/

2.2 Selected Canadian Analyses of Post-secondary Outcomes

The availability of post-secondary data has enabled some important research and analysis of higher education outcomes. This short paper does not provide a comprehensive review of the literature, but rather highlights a few examples of the use of data and key gaps.

A body of work has focused on the incomplete provincial and national post-secondary data infrastructure as an impediment to understanding the outcomes and impact of post-secondary education in Canada. Pulling from their comprehensive 2015 initiative on post-secondary performance (outlined above), HEQCO found a positive link between post-secondary education and labour market success, individual earnings, citizen engagement, and other indicators.[40] Yet, they also found no correlation between the performance of Canadian universities and the funding they receive, calling for a national refocusing of attention and efforts on tracking outcomes. The report notes, however, that institutions and provinces do not always have the resources or incentive to build out data infrastructure. HEQCO proposed federal/provincial/territorial collaboration in standardizing a core set of indicators for data collection, particularly for colleges. Other studies by HEQCO have focused on gaps in understanding of differential outcomes for equity-seeking and underrepresented communities.[41] [42]

As noted earlier, a group of researchers (Finnie et al.; Frenette, Morisette) have pioneered the use of post-secondary and tax data linking to enable study of graduate earnings longitudinally by field of study.[43] Among the important findings, broad fields of study (STEM vs. non-STEM), gender, immigrant status, degree type, and degree level show significant differences in taxable earnings among Canadian PSE graduates. The body of research suggests PSE attainment, not performance, drives differences in graduate earnings several years after graduation.[44] Another study by Frenette at Statistics Canada linked BC secondary school data with post-secondary and tax data to assess post-graduation earnings based upon high school academic performance and choice of post-secondary field of study.[45] He found that high school grades did not have a significant impact on future earnings after post-secondary graduation, with post-secondary field of study being a more important determinant. Earnings differences could instead be related to "unobserved factors such as non-cognitive skills acquired before postsecondary education" or differences in labour market supply and demand conditions for graduates in differing fields.

Yet, there remain significant research gaps limiting understanding of higher education outcomes in Canada. For example, what broad occupational groups are graduates transitioning to, as differentiated by field of study or specific program? The ELMLP data platform enables linking of graduate and wage data with occupational information, yet, to date, there is a dearth of research on this key question.[46] There are many related research questions about transitions from higher education to the labour market.

Research could also focus on improving transparency for prospective students about post-secondary program options and their learning-to-career pathways. A LMIC survey finds that nearly two-thirds of college

40 Weingarten, H.P., Hicks, M., Jonker, L., Smith, C., & Arnold, H. (2015, March 11). *Canadian Postsecondary Performance: Impact 2015.* HEQCO. https://heqco.ca/pub/canadian-postsecondary-performance-impact-2015/

41 Gallager-Mackay, L. (2015, May 16). *Data Infrastructure for Studying Equity of Access to Postsecondary Education in Ontario.* HEQCO. https://heqco.ca/pub/data-infrastructure-for-studying-equity-of-access-to-postsecondary-education-in-ontario/

42 Au, A., Pichette, J., & Robson, K. (2022, November 30). *Data Infrastructure for Studying Equity of Access to Postsecondary Education in Ontario.* HEQCO. https://heqco.ca/pub/hamilton-community-research-partnership-project-shows-the-potential-benefits-of-data-sharing-coalitions/

43 Finnie, R., Afshar, K., Bozkurt, E., Miyairi, M., & Pavlic, D. (2016, July 26). *Barista or Better? New Evidence on the Earnings of Post-Secondary Education Graduates: A Tax Linkage Approach.* Ottawa: Education Policy Research Initiative. https://ruor.uottawa.ca/bitstream/10393/42190/1/EPRI-ESDC%2bTax%2blinkage_Report.pdf

44 LMIC. (2023, August 14). "Where to find data on student and apprentice labour market outcomes." https://lmic-cmit.ca/where-to-find-data-on-student-and-apprentice-labour-market-outcomes/; Frenette, M., & Frank, K. (2016, March 11). *Earnings of Postsecondary Graduates by Detailed Field of Study.* Statistics Canada. https://www150.statcan.gc.ca/n1/pub/11-626-x/11-626-x2016056-eng.htm

45 Frenette, M. (2023, May 8). *High school academic performance and earnings by postsecondary field of study.* Statistics Canada. https://www150.statcan.gc.ca/n1/pub/36-28-0001/2023004/article/00001-eng.htm

46 Statistics Canada. (2021, October 21). *Overview of the Education and Labour Market Longitudinal Platform (ELMLP) and Associated Datasets.* https://www150.statcan.gc.ca/n1/pub/37-20-0001/372000012021006-eng.htm

and university students reported looking for LMI as they were considering post-graduate degree options.[47] Occupational wages, job openings, and skills are often the most sought-after information when choosing a post-graduate program. LMIC's findings highlight the need for LMI that is timely, frequent, and can inform prospective learners on the outcomes of post-secondary education and its impacts on future careers.

As the next section, which profiles international comparative studies highlights, high-quality and accessible PSE data are enabling innovative research and analysis of student "return on investment" to higher education programs, trends in social mobility across institution types, and new conceptions of higher education "value" for equity-seeking groups that cannot currently be undertaken in Canada due to data limitations.

2.3 Limitations of Canada's Higher Education Data

This review of the current state of higher education outcomes tracking reveals a number of limitations.

Provincial outcomes data are inconsistent and often not timely, frequent, or relevant to evolving labour market conditions. A majority of data available to Canadians in 2023 was collected pre-COVID, with delays in frequency of data collection and incomparability to previous vintages. An era of rapidly evolving world of work post-COVID has shown, for example, while the demand for digitally intensive jobs and skills has not changed significantly, the scope and breadth of general workforce digital skills has increased. [48] Learning LMI data and reporting from higher education institutions and provincial governing bodies are generally less recent, or have not conducted analyses into graduate outcomes in the post-COVID pandemic labour market.

Provincial outcomes data are not easily accessible, navigable, or standardized. Open, machine-readable, downloadable data are available in just half of Canada's provinces. Where data are available, they are often fragmented across government data portals, policy reports, and non-governmental organizations, limiting access for third-party users like education technology (edtech) companies and researchers. The absence of timely, standardized, program-specific data means data are not comparable within regions, over time, or across institutions. For non-data expert users like many students, just a few provinces offer tools to visualize and compare PSE information, often in formats that do not provide a modern user experience.

Data are generally not comparable across universities and colleges or with apprenticeships. The lack of common indicators across institution types is a limitation for prospective students seeking to make program choice decisions. For apprenticeships in particular, the lack of foundational information about wages, training programs, and career opportunities has made it difficult to encourage prospective students into skilled trades in high demand, e.g., residential construction, HVAC retrofitting, and decarbonization sectors.[49]

Data are not granular at the institution- and program-level. Generally, provincially and nationally aggregated data and analysis do not provide the granularity needed to assess or compare among institutions, fields of study, or continuity of studies. Despite researchers' calls for richer information sets to differentiate the quality and outcomes of program offerings in STEM, engineering, and health,[50] key tools like the ELMLP and National Graduate Survey (NGS) that enable pan-Canadian analysis do not offer institution- and program-level granularity.

47 LMIC. (2019, March). *Educational and Career Choices for Students and Parents: The role of labour market information.* https://lmic-cimt.ca/publications-all/lmi-insights-report-no-11-educational-and-career-choices-for-students-and-parents-the-role-of-labour-market-information/

48 The Dais. (2023). *The Skills Algorithm: Digital Skills Demand Across Canada's Labour Market.* Li, V., Kwok, T., Hamza, M. https://dais.ca/reports/the-skills-algorithm-digital-skills-demand-across-canadas-labour-market/

49 Finnie, R., Dubois, M., & Miyairi, M. (2021). *How much do they make? New evidence on the early career earnings of trade certificate holders.* Education Policy Research Initiative & LMIC. https://lmic-cimt.ca/trade-earnings-report/

50 Usher, A. (2022). *The State of Postsecondary Education in Canada, 2022:* Chapter 1, Figure 1.4. HESA. https://higheredstrategy.com/wp-content/uploads/2022/09/SPEC_2022-1.pdf



LMIC's findings highlight the need for LMI that is timely, frequent, and can inform prospective learners on the outcomes of post-secondary education and its impacts on future careers.

A key gap across Canada is the absence of PSE graduate skills information that can align post-secondary data with LMI. The acquisition of skills through a post-secondary program is an essential outcome for transitioning graduates to jobs and careers. For employers, job openings describe the necessary skills to perform the tasks in the role, with recruitment centring on finding candidates who demonstrate those skills. Yet, higher education programs do not commonly or consistently identify or report on which acquired skills will be transferable to a graduate's occupation or career. The Ontario University graduate survey revealed that only about half of respondents agree that the skills and subject knowledge learned in their program of study matches their current occupation.[51]

There are no reliable data or information sources for new types of alternative credentials such as non-credit bearing microcredentials, online certificates, or digital badges. This is made more challenging by the fact that these credentials do not currently fall under provincial/territorial quality assurance systems for institutions, programs, and credentials.[52] There are pan-Canadian bodies that can support coordination on alternative credentials, such as the CMEC, whose Ministerial Statement sets standards for degree education, and the Association of Accrediting Agencies of Canada (AAAC), a pan-Canadian membership network for education accrediting bodies. Still, Credential Engine's count of over one million unique credentials in the United States – with a significant majority taking the form of digital badges, completion certificates and micro-credentials offered by non-academic and MOOC providers – puts into sharper focus the significant transparency and accountability challenges for students, governments, and other stakeholders in the absence of reliable data and outcomes information about these categories of programs.[53]

3. Higher Education Data and Outcomes Tracking in Other Countries

Following the review of the current state of higher education outcomes tracking in Canada, this section reviews the policies, institutions, and data tools for three peer countries—the United States, Australia, and the United Kingdom—to assess how Canada stacks up and reveals effective approaches and alternative models to learning LMI. It concludes with a summary analysis and some lessons for Canada.

3.1 The United States

The United States has a leading post-secondary data system that has enabled a variety of approaches to outcomes tracking. The higher education data collection infrastructure dates to the mid-1960s, with federal legislation gradually increasing reporting requirements over time for the thousands of public and private post-secondary institutions that participate in federal student aid programs. Administered by the Department of Education, data reporting exceeds what is typically collected in Canada in **completeness**, including information on enrolments, cost, and typical student debt load, retention, graduation, post-completion income, and other information. The data are accessible at the **granular** level of institution and program (advocates today call for *student-level* data as well).[54] Because reporting is federally mandated, data are **comparable** nationally across universities, community colleges, and technical and vocational institutions.

This robust system has led to recent non-governmental initiatives to establish common outcomes standards. The Education Quality Outcomes Standards (EQOS) Board, a non-profit backed by large national education and workforce organizations like Jobs for the Future,

51 Ministry of Colleges and Universities. "2021-22 Ontario University Graduate Survey": Section A, 8/23, 7/22. https://www.iaccess.gov.on.ca/OsapRatesWeb/enterapp/overview.xhtml

52 Note that Québec is an exception, as its system of transitional CEGEPs is unique. For details, see CICIC. "Canada's Education Systems." https://www.cicic.ca/Images/contents/PT-Education/Canada-s-Education-Systems-JPG.jpg

53 Credential Engine (2022). Counting U.S. Postsecondary and Secondary Credentials. Washington, DC: Credential Engine. https://credentialengine.org/all-resources/counting-credentials/

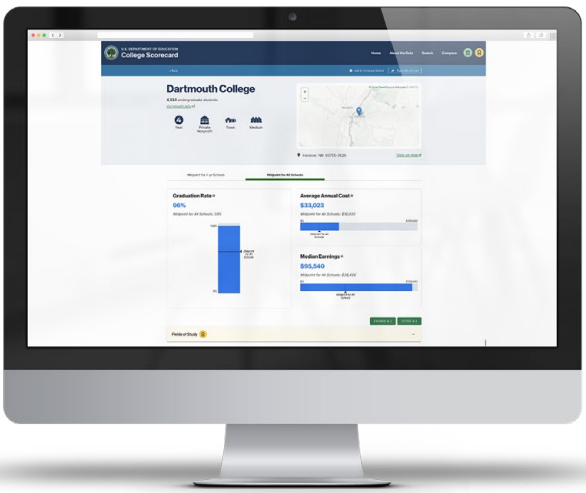
54 See Whistle, W. (2017, November 1). *How Higher Education Data Reporting is Both Burdensome AND Inadequate.* Third Way. https://www.thirdway.org/report/how-higher-education-data-reporting-is-both-burdensome-and-inadequate; and Miller, B. (2016, May 23). Building a Student-Level Data System. Centre for American Progress. https://americanprogress.org/article/building-a-student-level-data-system/

has created a framework of definitions of student outcomes and indicators for use by learners and workers, post-secondary institutions and training providers, governments, investors, and others.[55] At the state level, Texas has been a leader in developing a longitudinal education data system for K–12, higher education, and the workforce. While the data has been described as a "gold mine" for policymakers and researchers, the state has also used the data to offer a one-stop career navigation site called MyTexasFuture.org.[56] Other examples include the US Chamber of Commerce T3 Innovation Network, a public–private initiative to promote interoperability for "talent data."[57]

These types of initiatives are enabled by **data accessibility** through both governmental and non-governmental post-secondary data infrastructure. The US Department of Education's National Center for Education Statistics runs the Integrated Postsecondary Education Data System (IPEDS), a centralized hub that integrates data from institutions and 12 surveys, providing open data tools for search, custom analysis, and download of the raw information.[58] The non-profit National Student Clearinghouse, established in 1993, acts as a shared-service provider for the higher education community, supporting educational reporting, data exchange and access, and research with a focus on understanding student pathways and outcomes. Credential Engine, with a mission to improve transparency about the rapidly expanding higher education credentials marketplace (including new types of alternative and global MOOC platform credentials), offers a registry that makes credential information open and downloadable with a variety of tools.[59]

The US system has also produced a wide range of navigability tools for prospective students, workers, state workforce system staff, and many other users. The most widely recognized is the US *College Scorecard*, a web-based transparency tool launched by the Obama

Figure 4: *College Scorecard* Sample Screen



Administration to allow for user-friendly search and comparison of PSE options.[60] With data for thousands of reporting institutions, it offers basic information about colleges (2- vs. 4-year, public vs. private, location, average annual cost, fields of study/programs) as well as detailed and benchmarked outcomes information, including graduation and retention rates, median earnings, financial aid and debt, and campus diversity (see Figure 4). While *College Scorecard* is an illustrative example, there are many other examples of learning and career pathways tools, visualizations, and other initiatives built to help students and others use the data.

Enabling innovative research on higher education value and ROI

The robust data infrastructure in the US has enabled innovative research and galvanized public and policy debate about notions of quality, value, and return-on-investment (ROI) in higher education. One strand of this work has focused on the financial ROI for learners (and government funders) of investment in higher education programs. New research methods, such as

55 See "Education Quality Outcomes Standards." https://eqos.org; and (2018) Quality Assurance Standards. https://img1.wsimg.com/blobby/go/fd25bcaa-0dca-4fc5-96bc-30c8ae4e5867/Quality Assurance Standards-January-2018(3).pdf

56 Fain, Paul. (2023, October 5). "Data for the People." *The Job* newsletter. https://the-job.beehiiv.com/p/data-people?utm_source=the-job.beehiiv.com&utm_medium=newsletter&utm_campaign=data-for-the-people

57 See US Chamber of Commerce. "The T3 Innovation Network." https://www.uschamberfoundation.org/t3-innovation

58 For more information about IPEDS, *see* National Center for Education Statistics. "About IPEDS". https://nces.ed.gov/ipeds/about-ipeds

59 For more information about Credential Engine's registry, *see* Credential Engine. "Credential Registry." https://credentialengine.org/credential-transparency/credential-registry/

60 See "Find the right fit." US *College Scorecard*. US Department of Education. https://collegescorecard.ed.gov/

think tank Third Way's "price-to-earnings premium" metric, have found that certain programs—such as bachelors of electrical engineering or certificates in registered nursing—provide the highest ROI by allowing graduates to recoup their educational investment in five years or less.[61] Another study found that more than one-quarter of US higher education programs offer *negative* ROI, based on calculations of program costs versus graduates' post-completion earnings.[62] Researchers for the Federal Reserve Bank of St. Louis found that the "college wealth premium" for a four-year bachelor's degree—the extra net worth versus those without a degree—has been declining among all cohorts and is essentially zero for some groups.[63]

Other prominent initiatives have applied a broader lens to considering the quality or value of post-secondary education. The Lumina Foundation, for instance, has proposed a minimum 10% earnings improvement over minimum wage as a core education outcome. Strada Education, a prominent post-secondary think tank and foundation, has focused on post-completion "fulfilment" for learners, which goes beyond ROI and economic outcomes to include personal life fulfilment resulting from education.[64] The Postsecondary Value Commission, supported by the Gates Foundation, convened a diverse group of college leaders, policymakers, researchers, advocates, and students to assess the question "What is college worth?" With the aim of improving post-secondary value and increasing equity, the commission introduced a definition of value, a framework for individual colleges to apply it, and a series of actions, including launching an *Equitable Value Explorer* interactive dashboard tool.[65]

Other US research has centred on the higher education reporting system itself, and the data-backed tools that have resulted. One critique of the systems and its many actors is that the data reporting system is complex and can be burdensome for institutions.[66] Other research has examined how transparency tools are used by students. Two early studies about *College Scorecard* found that the website's effects on student "first step" interest in colleges with better outcome metrics were statistically significant but small,[67] and that a primary effect was pushing well-resourced high school students to colleges that report higher graduate earnings.[68] Critics note *Scorecard* presents an incomplete picture, because the data excludes the 30 percent of college students who do not receive federal grants or student loans.[69]

Efforts are being made to address these critiques, including through legislative action. The federal College Transparency Act (2023) focuses on data collection that would address the *Scorecard* "data gap" and inform a more detailed picture of student economic outcomes and numerous state-level initiatives.[70] Other critics point to evidence that PSE transparency efforts need to be coupled with learning and career guidance support, targeted particularly at the low-income and marginalized students and workers who will benefit most from value and ROI information.[71]

61 Itzkowitz, M. (2021, August 13). *Which College Programs Give Students the Best Bang for Their Buck?.* Third Way. https://www.thirdway.org/report/which-college-programs-give-students-the-best-bang-for-their-buck

62 Cooper, P. (2021, October 19). "Is College Worth It? A Comprehensive Return on Investment Analysis." Foundation for Research on Equal Opportunity. Published on *Medium*. https://freopp.org/is-college-worth-it-a-comprehensive-return-on-investment-analysis-1b2ad17f84c8

63 Emmons, William R., Emmons, Kent, Ana H., & Ricketts, Lowell R. (2019). "Is College Still Worth It? The New Calculus of Falling Returns." *Federal Reserve Bank of St. Louis Review*, pp. 297–329. https://doi.org/10.20955/r.101.297-329

64 Hanson, A.R. (2022, July 20). "Success Beyond Completion: How Can We Best Measure Student Outcomes?." *Strada Education Foundation.* https://stradaeducation.org/report/pv-release-july-20-2022/

65 See Postsecondary Value Commission. "Introducing the *Equitable Value Explorer*." https://postsecondaryvalue.org; and Postsecondary Value Commission. "*Equitable Value Explorer*." https://equity.postsecondaryvalue.org/datatool

66 Whistle, W. (2017, November 1). *How Higher Education Data Reporting is Both Burdensome AND Inadequate.* Third Way. https://www.thirdway.org/report/how-higher-education-data-reporting-is-both-burdensome-and-inadequate

67 Huntington-Kleina, N. (2016, November 16). The Search: The Effect of the *College Scorecard* on Interest in Colleges," Cal State Fullerton. https://www.aeaweb.org/conference/2017/preliminary/paper/hf7A8bfB

68 Hurwitz, M., & Smith, J. (2016, August). "Student Responsiveness to Earnings Data in the *College Scorecard.*" https://www.cuny.edu/wp-content/uploads/sites/4/page-assets/about/administration/offices/oira/policy/seminars/College-Score-Card.pdf

69 Gardner, L. (2023, May 17). "The ROI Riddle." *The Chronicle of Higher Education.* www.chronicle.com/article/better-data-on-graduates-earnings-is-coming-soon-to-a-dashboard-near-you-will-it-make-a-difference

70 See College Transparency Act: 118th Congress. (2023, April 27). "H.R.2957 – College Transparency Act." https://www.congress.gov/bill/118th-congress/house-bill/2957/text

71 See Craig, R. (2023, June 30). "Let Them Eat Data," *Gap Letter.* https://mailchi.mp/gapletter/let-them-eat-data-2612193?e=8a67d07181

3.2 Australia

Australia boasts a well-established and robust system for collecting, analyzing, and disseminating post-secondary education data. These data resources are maintained and made accessible through the collaborative efforts of several organizations and government agencies, providing a wealth of information on student enrolment, academic performance, graduate outcomes, and more. The data types are similar or broader than what is available in Canada (**completeness**), offering **comparability** across universities, vocational education and training (VET) institutions, and other higher education providers, and **granularity** of analysis to the level of the institution and program (called "study area").

From enrolment to employment, the Quality Indicators for Learning and Teaching (QILT) capture a range of Australian PSE student data with the intention to improve higher education quality. Measurement tools include the Student Experience Survey (SES), the Employer Satisfaction Survey (ESS), and the Graduate Outcomes Survey (GOS), supplemented with information on graduate incomes from the Australian Tax Office.[72] The surveys are administered annually across Australia, ensuring a level of national data collection consistency and timeliness that does not exist in Canada. QILT raw data are **accessible**, though not "open" as it must be requested and used for approved purposes.

Integrating the QILT student experience and graduate outcomes data, an online interface provides navigability for prospective students and other non-data-savvy users to compare PSI systems nationwide. The tool, ComparED,[73] allows users to browse 153 institutions and a number of academic disciplines by location, level of study, institution type, and study area. While the student-response rates that inform the data sometimes face sample size challenges, the platform does readily provide current and useful information for prospective students looking to make informed decisions about their academic pathways. Through tax data linkage, median graduate income is available by year of completion, number of years since completion (i.e., 1, 5, or 9), level of study (i.e., undergraduate or graduate), institution, discipline, and subfield classification.

Innovations around Labour Market Skills Linkages and Alternative Credentials

A focus area in Australia has been developing taxonomies and tools for labour market occupations and skills that can be used to link with higher education study areas and outcomes information. The Australian Skills Classification (ASC),[74] adapted from the American O*NET occupational database and Australia's Employability Skills Framework, establishes the taxonomy of competencies, specialist tasks, and technological tool proficiency required for occupations in the Australian labour market. Combined with other PSE outcomes information, it can assist post-secondary institutions, industry, and governments to inform the development of timely, labour market responsive education and training offerings.

Australia has also taken steps to create national quality assurance standards and learner transparency for microcredentials. After supporting the launch of a Microcredentials Platform to assist students in comparing short-course offerings and credit value, the Australian Department of Education introduced the National Microcredentials Framework in 2022. The aim is to bring greater clarity and understanding of the concept to the higher education sector and for learners to be made aware of the value, credit recognition, and portability of microcredentials.[75] A related priority, in collaboration with Australia's states and territories, is updating the Australian Qualifications Framework (AQF). A key component of the new Framework is the "critical information requirements" of providers, to ensure learners have access to complete, consistent,

72 QILT. "QILT: Quality Indicators for Learning and Teaching." https://www.qilt.edu.au

73 Social Research Council. (2023). "ComparED – Explore and Compare Institutions and Study Areas Based on Real Life Student Experiences." https://www.compared.edu.au/

74 Jobs and Skills Australia, "Australian Skills Classification." https://www.jobsandskills.gov.au/australian-skills-classification.

75 See "National Microcredentials Framework." Australia's National Microcredentials Framework: Australian Government Department of Education. www.education.gov.au/national-microcredentials-framework

and comparable information about microcredentials, including learning outcomes, delivery mode, price, required commitment of time or effort, and program assessment.

3.3 The United Kingdom

The United Kingdom (UK) provides a wealth of data on post-secondary outcomes for publicly funded institutions. The UK's Higher Education Statistics Agency (HESA) is part of a not-for-profit company designated by UK government and funded through mandatory fees paid by higher education institutions.[76] The agency was established in 1993 in response to a white paper that advocated for enhanced access and coherence to higher education statistics.[77] *The Higher Education and Research Act* now requires publicly funded institutions to make information available to the agency, which in turn is required to compile and publish the data. It does not, however, collect robust **comparable** data on private colleges and vocational training institutions.

To ensure navigability and data **accessibility**, the agency publishes both dashboards and open, machine-readable data with some **granularity** at an institutional and field of study level in broadly similar types to Canada **(completeness)**:

- student and staff numbers and demographics
- institutional tuition, revenue, and expenditures
- non-completion/retention rates
- graduate employment rates and salaries
- graduate reflections on studies and well-being (e.g., using studies in current job)

Unlike Canada's National Graduates Survey, which is administered only every five years and not released at an institutional and program level, the UK's graduate outcomes are based on an annual survey



administered to all graduates online and by phone approximately 15 months after completion, with a response rate of around 40%.[78] The collected data also supports regulatory frameworks for post-secondary accountability and performance, such as requirements in England for access and participation plans to be prepared by higher education institutions for the Office for Students (OFS) that identify and mitigate risks to equality of opportunity with measurable targets.[79] The OFS, an independent body that reports to Parliament, runs the Teaching Excellence Framework (TEF), a national initiative to assess and rate universities and colleges for excellence above a set of minimum requirements for quality and standards in teaching, learning, and graduate outcomes.[80]

3.4 Lessons for Canada

The scans of the learning data systems in the US, Australia, and the UK, summarized and compared with the Canadian national picture in Figure 5, offer a few general lessons for Canada.

76 HESA. "Who we are and what we do." https://www.hesa.ac.uk/about/what-we-do

77 The Secretary of State for Education and Science, the Secretary of State for Scotland, the Secretary of State for Northern Ireland, & the Secretary of State for Wales. (1991, May). *Higher Education: A New Framework (1991).* Education in the UK. https://education-uk.org/documents/wp1991b/index.html

78 HESA. (2023, May 31). "Graduate Outcomes 2020/21: Summary Statistics – Summary." https://www.hesa.ac.uk/news/31-05-2023/sb266-higher-education-graduate-outcomes-statistics

79 Office for Students. (2023, March 29). "Regulatory notice 1: Access and participation plan guidance." www.officeforstudents.org.uk/publications/regulatory-notice-1-access-and-participation-plan-guidance/

80 Office for Students. (2020). "About the Teaching Excellence Framework." https://www.officeforstudents.org.uk/advice-and-guidance/the-tef/about-the-tef/

Figure 5: Learning Data Summary Table

Categories	CAN*	US	AUS	UK
Availability (annual reporting, research report)	X	X	X	X
Completeness (i.e., three outcome types: institutional, student, graduate)		X	X	X
Comparability (across institution types)		X	X	
Granularity (institution and program specific)		X	X	X
Accessibility (open, downloadable, machine-readable)		X	X	X
Navigability (data visualization or dashboard tool)		X	X	X

***Note**: National assessment for Canada, recognizing that some provinces meet these criteria.

First, all three peer countries have national systems and institutions dedicated to PSE outcomes data collection and dissemination. While Canada's bi-national federation is unique and traditions of university autonomy are strong, the shared federal-state responsibility for higher education in the US and Australia offer useful examples for pan-Canadian coordination.

Second, the three peer countries offer more timely, nationally comparable data. Their national data systems and institutions collect and aggregate key outcomes data from across the country. They also administer national student surveys annually, ensuring widely comparable data and timeliness, whereas Canada's National Graduate Survey (NGS) is administered to a cohort of Canadian graduates every five years with inconsistent follow-ups post-grad.[81] Still, low survey response rates in the UK highlight the potential value of administrative data collection.

Third, peer countries offer transparency tools for students and other users that allow for comparison of institutions and programs. These dashboards or pathways tools, offered by governments or third parties, are powered by robust data systems, open access (API) databases, and granular institutional and field or program-level outcomes. To reach the highest need groups of learners (indeed, most learners), emerging evidence suggests they should be coupled with career guidance support.

Lastly, innovative higher education policy research is a key by-product. The US example especially demonstrates the power of a robust higher education data system, with open data access, in enabling deep research analysis that drives debate and public policy action. Despite a rapidly changing higher education landscape in Canada, data limitations have resulted in very little evidence-informed policy consideration of questions around PSE value, ROI, and equity.

81 Statistics Canada. (2018, May 17). *National Graduates Survey (NGS).* https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=793554

4. Opportunities for Canada: How to Shine Light into the Black Box

Based on the findings about Canada's current state and the comparative lessons from peer countries, this section identifies policy interventions, partnership opportunities, data and technology solutions, or standard setting that could improve Canada's post-secondary learning LMI system.

1. **Call for pan-Canadian leadership and coordination on higher education outcomes.**

   Leadership in building the buy-in, policies, definitions, benchmarks, and data infrastructure for an effective 21st century system of post-secondary outcomes tracking must come from Canada's federal/provincial/territorial governments, as well as from post-secondary institutions and their associations, industry, student groups, and other stakeholders. In post-secondary policy and research communities, concerted coalition-building and advocacy effort is required to overcome the inertia, resistance, and pan-Canadian coordination barriers that have limited progress on outcomes initiatives. **Key federal/provincial/territorial bodies like the CESC and institutions like CMEC, LMIC, and Statistics Canada should be equipped with the mandates and resources to advance this pan-Canadian work.**

2. **Create national, open access learning data infrastructure.**

   Like Canada's peers, this country needs a pan-Canadian institution to act as a public utility for education data, responsible for the collection, curation, and sharing of raw data for the collective benefit. It should adopt structured open data architecture that providers contribute to and users—be they government policymakers, edtech startups, non-profits, or researchers—can access through API, download, and integrate, whether they are using it for transparency and learner navigation tools, commercial products, or policy and research. This "Learning Data Trust" model should be coordinated and built within existing institutions like Statistics Canada and the CESC but could also be integrated within other initiatives like LMIC's recently launched LMI Data Hub or Credential Engine's open credential registry.

3. **Use funding levers to compel comparable, granular outcomes reporting.**

   A key lesson from the US is that their system of education data reporting has been built over decades on the basis of legal reporting requirements tied to federal student aid funding. **Canada's federal/provincial/territorial governments should similarly use their funding and regulatory levers to compel reporting of data that is comparable across provider types and provinces and granular at the provider and program level.** Canada's joint federal/provincial/territorial student financial aid programs are an obvious potential lever. Coordinated through institutions like CMEC and the CESC, common reporting models and data schema should be agreed upon, with provinces compelling reporting via regulation or for receipt of university and college operating grant funding. Borrowing from Australia, this should include a National Alternative Credential Framework, with directives on outcome reporting like their critical information requirements.

4. **Link post-secondary outcomes with LMI for jobs and skills demand.**

   Important work has been done in Canada over the past five years in using LMI to understand the variety of occupations across the labour force (using NOC codes) to map skills bundles to those occupations (using the Skills and Competencies Taxonomy), and to then assess demand for those occupations and skills (using job postings and labour force surveys). Yet, there remains a clear disconnect between education and the jobs and skills in demand in the labour market. Students wonder whether the skills they are acquiring will be relevant by the time they graduate, while employers question whether graduates have the skills for the job. **The next frontier for Canada's workforce ecosystem should involve mapping**



PSE programs and credentials to jobs and skills in the labour market—to provide that essential connection for both graduates and employers. Building this capability should be a key goal of Canada's learning LMI system.

5. **Build better PSE transparency tools coupled with learning-to-career guidance.**

   In Canada, there is no national transparency tool to understand and compare higher education options and outcomes like the user-friendly US College Scorecard or Australian ComparED. While these types of tools require the comparable, granular data and access infrastructure described above, **Canada's PSE outcomes system roadmap should include this type of "ComparED Canada" tool, developed with key user groups (e.g., students, parents, K–12, and PSE guidance professionals), and integrated into high school guidance and workforce services to focus support on the learners who need it most.**

5. Conclusion

Measure what matters, as they say. For Canada's higher education system, with nearly two million students, $60 billion in annual revenues to public institutions, and serving as an essential economic and civic institution for the country, one would think outcomes matter. Yet, as this report highlights, Canada's current systems for post-secondary data and outcomes tracking are inadequate and lag peer countries.

Still, there remains widespread belief in Canada's post-secondary system, in educating Canadians for their careers and civic lives, and in welcoming huge numbers of international students who clearly perceive value in what the country offers. The risk is that as competitive pressures increase in the post-secondary marketplace, relying on reputation will no longer suffice for demanding learners, employers, government funders, and the tax-paying public.

Let this be a "Call to Action" then, to Canada's higher education leaders, policymakers, student groups, and other key stakeholders. It is time to open the black box.

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