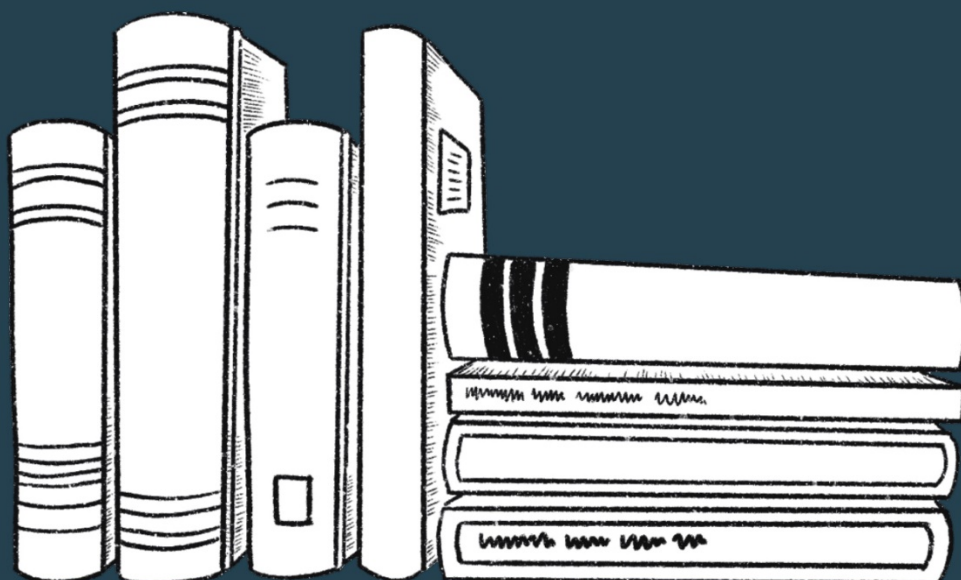


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Exploring Shifts in Applied Research and Faculty Workload at Ontario's Public Colleges

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Introduction

In recent decades, Ontario’s public college sector has undergone two significant expansions to its original mandate. First, in 2000, government enacted the *Postsecondary Choice and Excellence Act* (PECEA), allowing colleges to offer four-year degrees in applied areas of study.¹ Most Colleges of Applied Arts and Technology (CAATs) were permitted to offer up to 5% of their total programming as degrees, and CAATs designated by government as Institutes of Technology and Advanced Learning (ITALs) were permitted to offer up to 15%.² The second expansion came in 2002, when government enacted the *Ontario Colleges of Applied Arts and Technology Act*, authorizing public colleges and faculty to conduct applied research — i.e., research that focuses on “specific industry, community or public sector problem[s], with the goal of providing measurable and immediate social and/or economic benefits and resulting in incremental innovation” (Holmes, 2017).³ The Postsecondary Education Quality Assessment Board (PEQAB)⁴ has since encouraged this research through its requirement that college degree programs should allow students to apply theory to practice through “laboratory, *applied research* [emphasis added], and work experience” (PEQAB, 2022). Moreover, PEQAB requires that at least half of the courses in any college degree program be taught by faculty with a relevant terminal credential (PEQAB, 2022) — and many with this qualification (often a PhD) enter academia with the expectation that they will conduct research as part of their workload.

This brief explores the effects of the college sector’s expanding mandate by considering: (1) the scale of research taking place at Ontario’s public colleges; and (2) how the role of faculty may have changed (e.g., regarding expectations, daily tasks and time allocation) since the introduction of college degrees. To this end, we present data on applied research funding — in particular, grant receipts from the Natural Sciences and Engineering Research Council’s (NSERC) College and Community Innovation (CCI) program, which give an account of federal dollars provided for applied research between 2004-05 and 2020-21. We also present data from the annual CAAT Academic Workload Survey, which compiles academic workload data (and faculty functions) recorded through

¹ While all bachelor’s degrees share certain requirements (e.g., admissions standards, duration and breadth), a bachelor’s degree in an applied area of study is distinct in that it is shaped by “a technical or professional education ... [as well as] application of theory to practice, of learning by doing, and of converting personal experience into knowledge and skills through laboratory, applied research, and work experience” (PEQAB, 2022).

² As of 2022, there are five ITALs: Conestoga, George Brown, Humber, Seneca and Sheridan. In April 2022, government raised degree caps to 10% for non-ITALs and 20% for ITALs and authorized colleges to offer three-year bachelor’s degrees in applied areas of study (Government of Ontario, 2022).

³ For example, Conestoga’s applied research practice includes projects focused on recycling technology, food processing, cybersecurity and seniors care (Conestoga, 2022).

⁴ PEQAB is a government agency that provides degree program requirements and reviews college degree programs for ministerial consent.

Standard Workload Forms (SWFs). Our findings form a baseline for further exploration: in addition to demonstrating how public colleges have evolved since the early 2000s, shifts in applied research activity and faculty workload provide insight into the potential effects of further expansions to the sector’s mandate — including government’s April 2022 decision to increase degree granting caps and introduce three-year college degrees (Government of Ontario, 2022).

Research Questions and Methodology

This brief poses the following research questions:

- How has applied research activity changed since NSERC began offering grants through its CCI program? How much research is taking place and which colleges are participating?
- How have faculty workload trends changed since college degrees were introduced?

To do so, we present two datasets, each built by HEQCO from publicly available data:

- 1) NSERC CCI grants received by college faculty from 2004-05 to 2020-21; and
- 2) CAAT workload survey results from 1999-00 to 2017-18.

Dataset 1: NSERC CCI Grant Receipts

Using NSERC’s online awards database, we compiled a list of CCI grants awarded to faculty at all 24 public colleges in Ontario from 2004-05 to 2020-21. This period captures all NSERC fiscal years in which grants have been awarded through the CCI program (excluding 2021-22, for which data is not yet publicly available).

The data are an indicator of the amount of applied research being conducted at Ontario’s public colleges: between 2004-05 and 2018-19, federal dollars made up nearly two-thirds of college research funding, and more than half of those federal dollars were distributed through the CCI program by NSERC in collaboration with the Canadian Institutes of Health Research (CIHR) and Social Sciences and Humanities Research Council (SSHRC) (StatsCan, 2020).

Note that these data present two limitations. First, the amount of money spent on research projects is only one measure of the amount of research occurring; there is no direct relationship between CCI grant funding and research activity. Second, colleges rely on institutional funds and contributions from industry partners (both cash and in-kind) to

fund research activity, and public data on these funding sources is limited and inconsistent across public colleges.

Dataset 2: CAAT Academic Workload Survey Trends

We compiled data from the CAAT Academic Workload Surveys published from 1999-00 to 2017-18 (excluding 2002-03 and 2004-05, for which survey data is not publicly available) (Ministry of Labour, 2019). This data is collected through Standard Workload Forms (SWFs) and reflects two snapshot periods — one in the fall, another in the spring — as well as year-end totals. Specifically, we looked at Table 7, which includes data on all four faculty workload functions:

- **Teaching contact hours**, which represent time faculty spend in the classroom teaching students;
- **Attributed hours of preparation**, which represent time faculty spend preparing for classroom activities;
- **Evaluation and feedback hours**, which represent time faculty spend evaluating and grading students' work; and
- **Hours for complementary functions**, a catch-all category that represents administrative tasks and other activities “appropriate to the professional role of the teacher” (Collective Agreement, 2021).

This data includes only full-time faculty, meaning part-time faculty are not represented. It also does not distinguish between degree and non-degree faculty. Further, the Collective Agreement between faculty and colleges says little about how applied research activity is represented or should be recorded within the four workload categories, making it difficult to determine the effect that applied research may have had on the workload data presented in this report.

Data Presentation

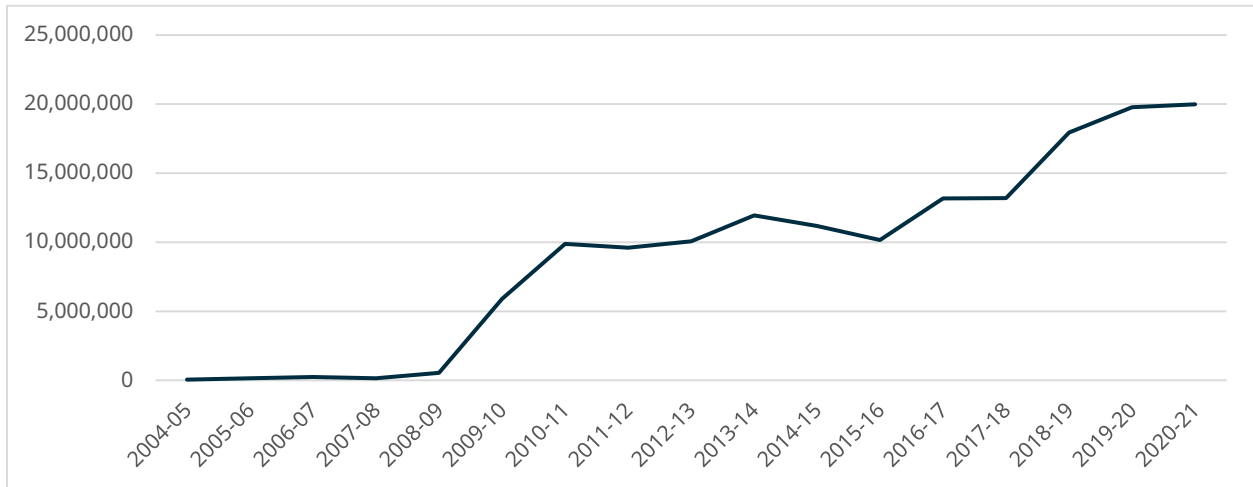
NSERC CCI Grant Receipts

Total NSERC CCI grant funding has increased significantly since the program's launch in 2004-05, which indicates that the amount of applied research being conducted at Ontario's public colleges has increased significantly as well. Figure 1 shows two main growth periods: 2008-09 to 2010-11, when total funding for all colleges grew from under \$1 million to approximately \$10 million; and 2015-16 to 2020-21, when total funding grew from just over \$10 million to approximately \$20 million. These periods correspond with the CCI program receiving permanent (non-pilot) status in 2008 (Government of Canada, 2014) and the federal government's *Economic Action Plan 2015*, in which it committed to

investing an additional \$46 million in the CCI program starting in 2016 (Government of Canada, 2015).

Figure 1

Total Annual NSERC CCI Grant Funding Received (CAD\$) by Ontario Public Colleges, 2004-05 to 2020-21



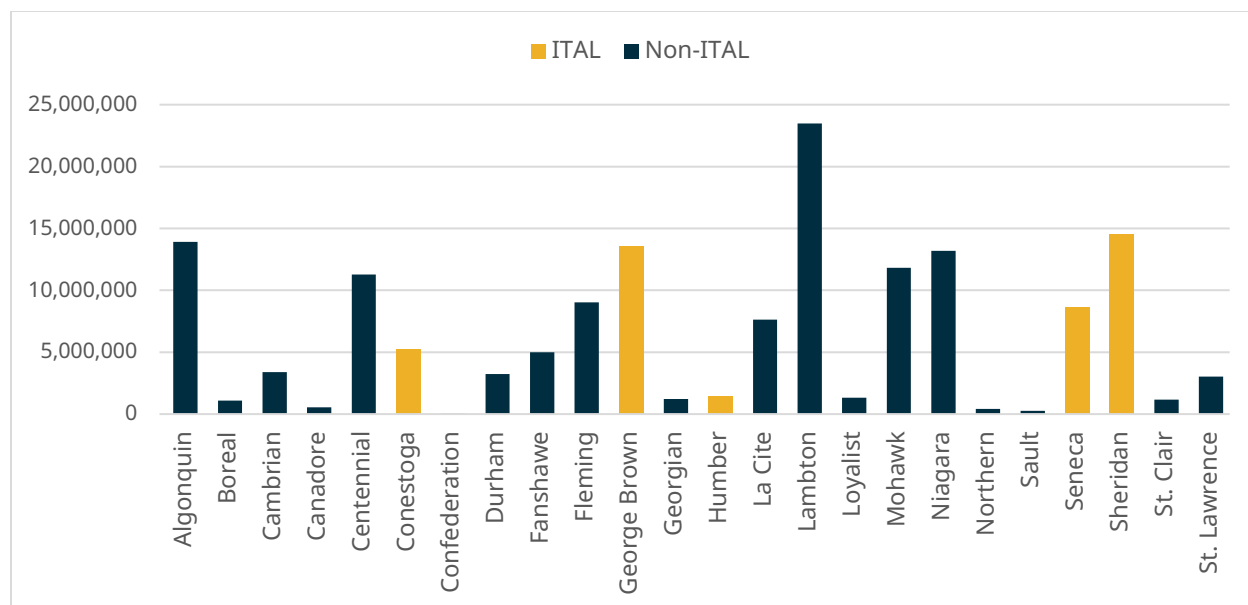
Source: NSERC Awards Database (NSERC, 2022)

Note: This figure shows the total amount of NSERC CCI grant dollars (CAD) received by public colleges in Ontario from academic years 2004-05 to 2020-21.

All 24 Ontario colleges received CCI grant funding between 2004-05 and 2020-21 (Figure 2), though half (12 colleges) accounted for most of the funding — 86%, or just over \$132 million. Lambton College, the top recipient, received just under \$25 million in total, while Algonquin, Centennial, George Brown, Mohawk, Niagara and Sheridan each received between \$10 and \$15 million in total. On average, ITALs received more funding than non-ITALs — just under \$9 million versus just over \$5 million — though there was significant variation within each group.

Figure 2

Total NSERC CCI Grant Funding (CAD\$) by Ontario Public College, 2004-05 to 2020-21



Source. NSERC Awards Database (NSERC, 2022)

Note: This figure shows the total amounts of NSERC CCI grant dollars (CAD) received by each of the 24 public colleges in Ontario, from 2004-05 to 2020-21.

This data suggests that applied research is not limited to the leading degree-granting colleges (see Appendix A) or to colleges designated as ITALs. Several of the top degree-granting colleges — Sheridan, Seneca, Conestoga, George Brown and Algonquin — were among the top CCI grant recipients. However, Lambton, Niagara and Mohawk also ranked among the top CCI grant recipients, despite each offering three or fewer degrees in 2021 (Appendix A) and none being designated as an ITAL. Moreover, in 2020, each of these three institutions ranked among the top 10 on Research Infosource’s list of Canada’s top research colleges (Research Infosource, 2021). Proximity to industry appears to be driving applied research at these colleges: Lambton faculty have partnered with the Sarnia-Lambton region’s manufacturing and renewable energy industries; Niagara faculty with wineries, coffee roasters and restaurants in the Niagara region; and Mohawk faculty with the Hamilton region’s manufacturing and energy industries (NSERC, 2022). These examples demonstrate ways in which the sector has responded to community-level needs and fulfilled its mandate to enter into partnerships with local business and industry.

Because these data include only one source of research funding, we cannot use it to draw

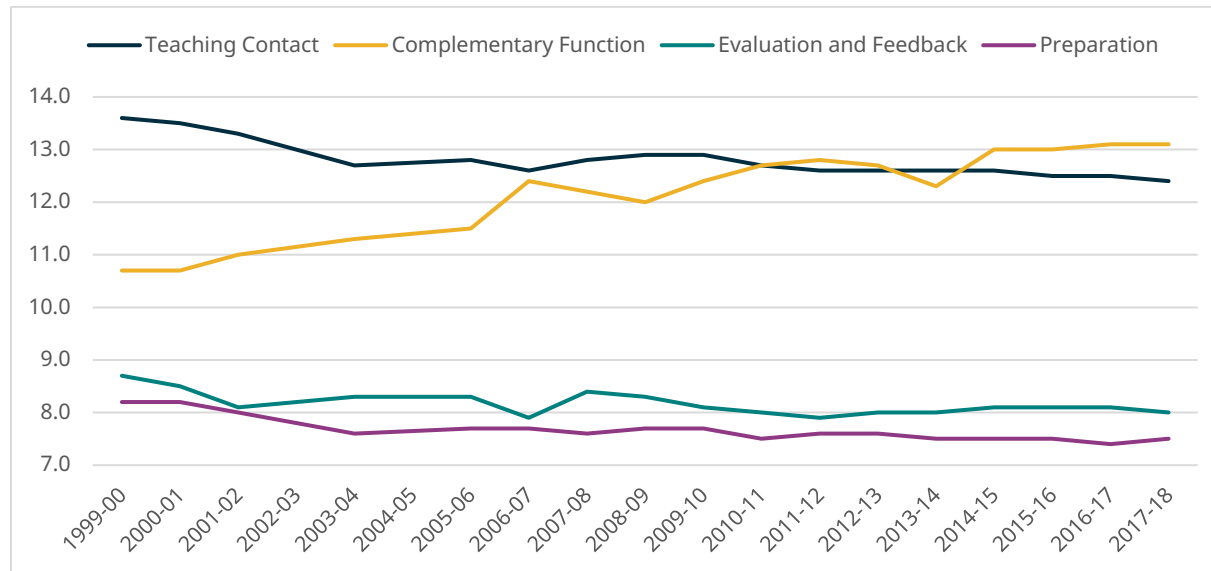
broad conclusions about the amount of applied research being conducted at each college. For example, Humber was among the bottom half of CCI grant recipients, yet in 2018-19, it reported over \$11 million in research funding; two-thirds of this came through institutional funds and only 3% came from external grants (such as NSERC's CCI program) (Humber College, 2020). Humber also ranked second on Research Infosource's list of Canada's top research colleges in 2020 (Research Infosource, 2021).

CAAT Academic Workload Survey Data

CAAT Academic Workload Survey data (Figure 3) indicate that from 1999-00 to 2017-18, the role of college faculty became less teaching-intensive, on average, across the sector. During this period, average weekly teaching contact hours decreased steadily from 14.2 to 12.4; this was accompanied by corresponding decreases in preparation hours (from 8.8 to 7.5) and evaluation and feedback hours (from 9.5 to 8.0). In contrast, complementary function hours grew considerably, from 9.5 to 13.1 per week. These shifts occurred in the context of steady average total workload hours, which remained constant at approximately 41 hours per week.

Figure 3

Average Workload Hours per Week by Category, All Colleges, 1999-00 to 2017-18⁵



Source. CAAT Academic Workload Surveys, 1999-00 to 2017-18

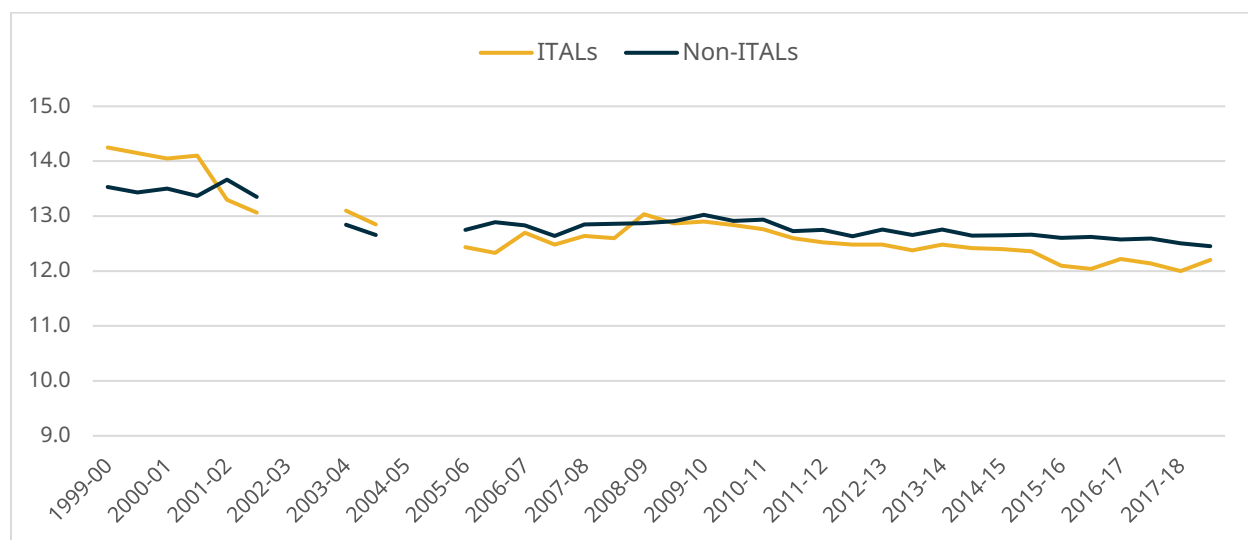
Note: This figure shows the average workload hours per week that college faculty dedicated to teaching contact, preparation, evaluation and feedback, and complementary functions from 1999-00 to 2017-18.

⁵ To illustrate trends more effectively, this chart contains only winter semester values, which were consistently higher than fall values. Additionally, we used connecting lines in years where data were unavailable (2002-03 and 2004-05). For a complete dataset, see Appendix A.

Faculty at ITALs saw a greater shift toward complementary function hours and away from teaching, preparation and evaluation hours. This suggests that some colleges — those in and around the Greater Toronto Area, which offer the most degrees — have, on average, seen greater changes to workload trends since government expanded the sector’s mandate in the early 2000s. From 1999-00 to 2017-18, average teaching contact hours among ITAL faculty decreased by more than two hours per week (from 14.3 to 12.2), while non-ITAL faculty teaching contact hours decreased only one hour per week (from 13.5 to 12.5) (see Figure 4). Each group experienced similar corresponding trends in preparation hours and evaluation and feedback hours. In contrast, average complementary function hours among ITAL faculty increased by nearly four hours per week (from 9.3 to 12.9), while non-ITAL faculty experienced an increase of only three hours (from 10.2 to 13.2) (see Figure 5).

Figure 4

Average Teaching Contact Hours per Week, ITALs versus non-ITALs, Fall 1999 to Winter 2018

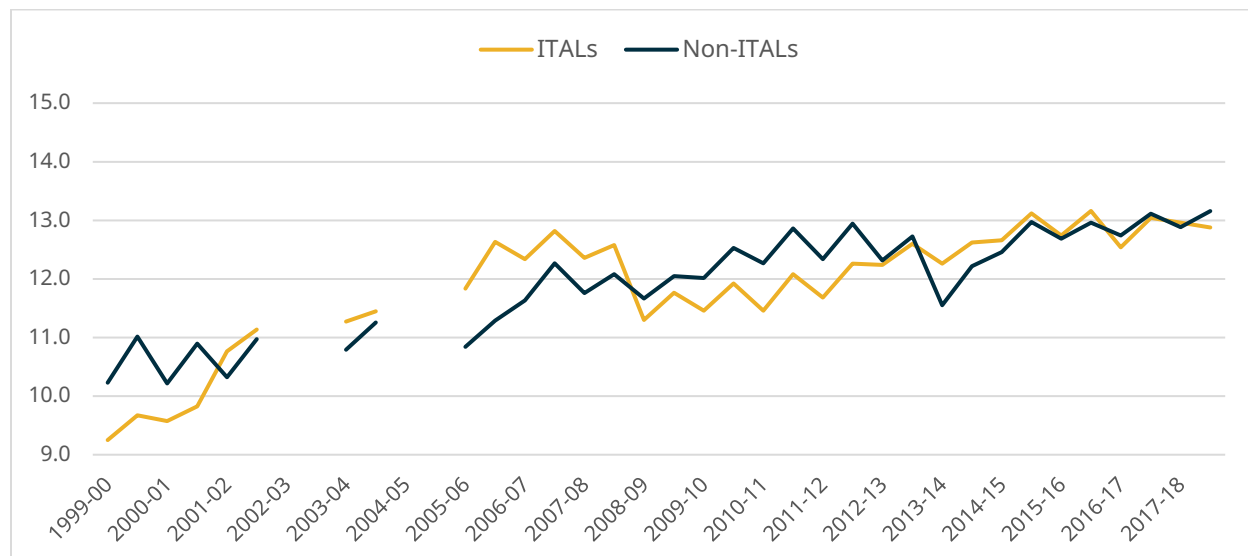


Source. CAAT Academic Workload Surveys, 1999-00 to 2017-18

Note: This figure shows the average teaching contact hours per week between ITAL and non-ITAL college faculty from 1999-00 to 2017-18.

Figure 5

Average Complementary Function Hours per Week, ITALs versus non-ITALs, Fall 1999 to Winter 2018



Source. CAAT Academic Workload Surveys, 1999-00 to 2017-18

Note: This figure shows the average complementary function hours per week between ITAL and non-ITAL college faculty from 1999-00 to 2017-18.

Conclusion and Recommendations for Future Research

Since the introduction of bachelor's degrees and applied research into the college sector, applied research activity has increased substantially — spread across a variety of institutions, and often in partnership with local industry — as evidenced by increases in NSERC CCI grants awarded to public colleges. In addition, full-time faculty positions at colleges have become less teaching intensive and more focused on complementary functions (which include administrative tasks). These trends have likely impacted institutional cultures, faculty recruitment, retention strategies and operating costs in numerous ways deserving of closer analysis.

Future research should revisit the datasets presented in this report to further explore the effects of the college sector's expanding mandate. In particular, researchers should focus on connections between applied research and faculty workload: for example, how is applied research activity reflected in faculty workload hours? What proportion of complementary function hours are spent conducting research? This information is currently not included in the CAAT Academic Workload Survey. Researchers should also focus on what motivates college faculty to engage in applied research, how colleges

approach funding this research (e.g., relying on institutional funds versus external grants and/or partner contributions), and the interaction between research and PEQAB's requirement that colleges recruit faculty with terminal credentials. For example, how do research opportunities affect colleges' ability to attract PhD-trained faculty? And in turn, how has an increasing number of PhD-trained faculty affected the amount of research taking place? Additionally, there may be other factors, beyond applied research and the introduction of degrees, that influence faculty workload trends, including differing characteristics of each college — such as location, student population and number of staff.

The datasets presented in this report may also inform a discussion of costs associated with the college sector's expanding mandate, particularly in light of government's April 2022 decision to increase degree granting caps and introduce three-year college degrees.⁶ As colleges offer more degrees, they will likely need to conduct additional applied research in order to meet PEQAB's degree requirements. Similarly, they will need to hire additional PhD faculty, many of whom will want to conduct research. And because colleges did not receive increased funding with the recent degree expansion, they will need to fund new research themselves or lean more heavily on existing sources (grants, partner contributions and so forth). Further, because the role of full-time faculty has become less teaching intensive in recent years, colleges may need to compensate by hiring additional part-time faculty. These considerations are especially relevant in the context of the recent freeze in PSE funding and existing sustainability issues within the sector.

⁶ In 2022, HEQCO published a report on costs associated with college bachelor's degrees for students, government and postsecondary institutions (see [*College and University Baccalaureate Degrees: Another Look at Costs*](#)).

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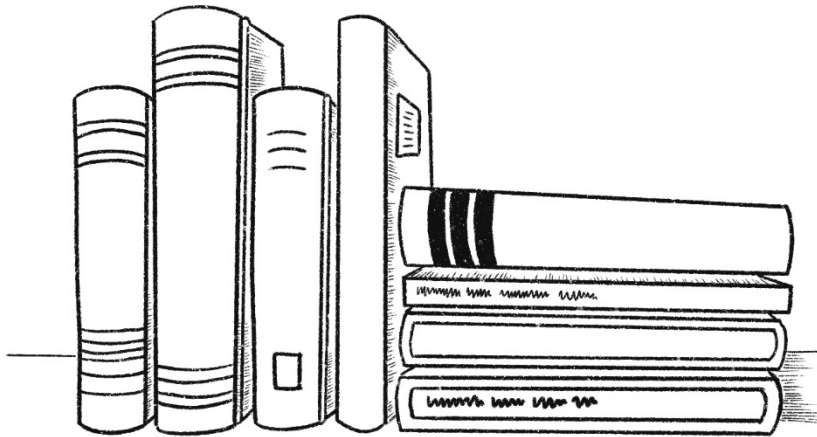
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Exploring Shifts in Applied Research and Faculty Workload at Ontario's Public Colleges

Appendices

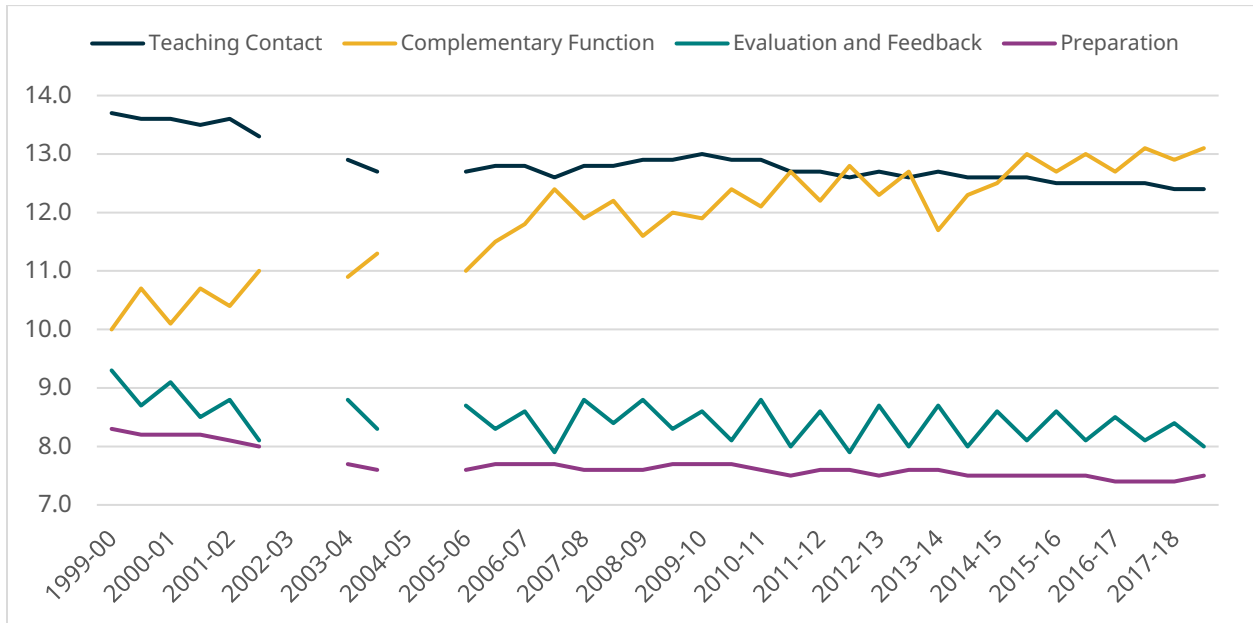
Appendix A: College Bachelor's Degree Programs, November 2021

College	Bachelor's Degrees	Bachelor's Degrees as % of Total Programs	Total Programs
Humber (ITAL)	32	15.8%	203
Sheridan (ITAL)	28	21.4%	131
Seneca (ITAL)	22	12.0%	183
Conestoga (ITAL)	17	7.4%	229
George Brown (ITAL)	13	7.9%	164
ITAL Total	112 (AVG = 22.4)	12.3%	910 (AVG = 182.0)
Algonquin	13	6.5%	200
Georgian	10	6.2%	161
Fanshawe	9	4.1%	220
Durham	6	3.9%	155
St. Lawrence	4	4.4%	90
Centennial	3	1.6%	187
Mohawk	3	1.9%	161
Niagara	3	2.4%	123
St. Clair	3	2.8%	109
Canadore	2	1.7%	116
La Cite	2	2.2%	89
Boreal	1	1.1%	90
Cambrian	1	1.0%	104
Lambton	1	1.0%	98
Loyalist	1	1.0%	99
Northern	1	1.4%	69
Sault	1	1.3%	76
Sir Sanford Fleming	1	0.7%	145
Confederation	0	0.0%	75
Non-ITAL Total	52 (AVG = 3.4)	2.3%	2,167 (AVG = 114.1)

Source: MCU-APS Table (Nov. 2021).

Note: This table provides a list of ITAL and non-ITAL colleges in Ontario with corresponding numbers of bachelor's degree programs, that number as a percentage of the institution's total programs, the total number of programs at the institution, and grand totals and averages for both ITAL and non-ITAL colleges. Parameters include collaborative nursing degrees (81400) and exclude programs not marked as active in the MCU-APS Table.

Appendix B: Complete Dataset for Figure 3: Average Workload Hours per Week by Category, All Colleges, 1999-00 to 2017-18



Source. CAAT Academic Workload Surveys, 1999-00 to 2017-18

Note: This figure shows the average workload hours per week that college faculty dedicated to teaching contact, preparation, evaluation and feedback, and complementary functions from 1990-00 to 2017-18 as a complete dataset, reflecting spaces in years in which no data were available and beyond winter terms only.