

Student Pathways into Ontario Colleges' Bachelor's Degrees: Patterns of mobility, student characteristics, academic and labour market outcomes

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Executive Summary

Ontario Colleges have been offering bachelor's degrees since 2002, and they have grown steadily: in 2020 there were 3,896 graduates across the 12 colleges that offer college degrees.¹ Associated with this expansion, colleges have been developing a variety of pathways into their degree programs, including course credit, bridges, preparatory pathways, and block transfer. However, a significant knowledge gap exists in terms of profile of students who take these pathways, the amount of advanced standing that has been provided, and whether their academic and labour market outcomes are comparable to non-transfers. This study addresses this knowledge gap by analyzing the sociodemographic profile, educational background, pathway to degree entry, and academic outcomes of baccalaureate students at five of Ontario's colleges, who comprise 85% of degree enrolment.

Research questions include:

- 1) To what extent do students enter college degrees from previous PSE? How much advanced standing and/or transfer credit is applied?
- 2) What are the student characteristics by pathway? Does the diploma-to-degree pathway increase the diversity of degree students?
- 3) Academic Outcomes: Do college students who enter a degree program with advanced standing fare as well as students completing the full four years?
- 4) Does graduate satisfaction, labour market outcomes, or further education, six months after graduation, differ by pathway?

Methodology

The sample for the current study included all students who enrolled in a degree at one of Seneca, Conestoga, Sheridan, George Brown, or Humber College between fall of 2015 and winter of 2018 (n=21,036). Students were then followed until winter of 2020. Within each institution, individual students were followed from high school, through other PSE (if applicable), to college degree entry and either graduation or the point they left the degree. For a subset of graduates, their records were linked to the KPI Graduate Satisfaction Survey. Information on gender, age, status in Canada (international, Canadian-born, non-international), neighbourhood income (census), and region of origin in Ontario were collected for sociodemographic information. High school records were analyzed to determine grade averages and course type most commonly taken (college or university preparatory). Previous educational pathway was determined based on records submitted to the institution for external transfers, and enrolment records for those who previously attended their own institution. Students were then assigned to the appropriate pathway of high school direct, high school non-direct, internal college transfer, external college, university, or both college and university. Students who had previously attended their own college were a part of a stand-alone analysis with a variety of pre-degree information and data collected. The incidence and amount of block transfer credit (advanced standing) provided towards the degree was also collected across all transfer pathways.

Measured outcomes include enrolment status at years one, two, and three after entry (retained or graduated from initial degree program), graduation rate within four years, and overall GPA in the

¹ In comparison, the three Northern Ontario universities have a combined 4400 bachelor degree graduates.

degree. In addition, the 2017-18 graduates were linked to the 2017-18 KPI Graduate Satisfaction Survey, and employment and satisfaction outcomes were analyzed. Both descriptive and regression techniques were used in the study.

Results

Student Profile

Over half of the degree entrants (55%) had obtained some form of postsecondary education after high school, with over a third of students having previously attended their own college, 17% having attended a university, and over 11% having attended a different college before entering their college degree. Many students had attended more than one institution type. Overall, a fifth of all degree entrants had obtained advanced standing (block credit). Within the transfer population, 35% had obtained block credit, with internal college transfers having obtained the most block credit on average, and university transfers having obtained the least.

Health and community service areas had the highest share of transfer students, at 64 and 67%, respectively. Community service and hospitality areas each had the highest proportion of students who transferred internally (37 and 39%, respectively), with the health area having the highest proportion from university (31%). Degrees in the community service area had the most entrants with block transfer, with creative and applied arts having the least. Creative and applied arts and health areas more often drew students from preparatory access programs, rather than transfer or block pathways.

Since four of the five colleges were in the Greater Toronto Area, GTA colleges and universities were the primary sending institutions, with York, University of Toronto, and Toronto Metropolitan University being the top three institutions, followed by GTA colleges.

Students who transferred from university or entered the college degree directly from high school were more likely to be from higher income neighbourhoods, compared with non-direct entrants and college transfers. Students who transferred from college, either their own or an external college, were the least likely to have taken university preparatory courses in high school and to have obtained the grades and courses required for admission to a college degree. Instead, college transfers often relied on transfer pathways for degree access.

Females, older students, domestic students not born in Canada, and low-income students were the most likely to have taken a block transfer pathway. Of the 31% of students who transferred within their own colleges, almost half obtained block credit. A further 25% had taken a preparatory credential, which enabled admission directly into the degree. Students primarily transferred within similar program areas, with 76% having previously graduated, and 77% had a pre-degree average of B or better.

Student outcomes

Overall, 75% of degree students continued into their second year of their degree program, 68% of entrants either graduated or continued to the third year of their degree of entry, and 65% obtained a B average or better. Descriptive and regression analysis was performed on three separate populations: 1) the full population comprising transfers and non-transfers, 2) transfers only, and 3) internal transfers, i.e. those who previously attended their own college. Some differences in outcomes were explained by sociodemographic factors, pathways, degree program area, academic background, and college of attendance.

Pathway of entry: In the full population, transfer students outperformed non-transfer students across all outcomes studied. Within specific pathways, students who took a non-direct pathway from high school underperformed in all measured outcomes, whereas students from university outperformed in terms of grades. Despite having weaker HS backgrounds, in general, previous college students (from both internal and external) performed similarly to those entering directly from high school in terms of retention and grades and were more likely to graduate within four years.

Degree entrants who took block pathways outperformed those who had not in terms of all measured outcomes, including retention rate, graduation rate, and grades. For example, 77% of block students obtained a B average or better, compared with 61% of those without block credit. In addition, 81% of block transfers were retained or had graduated in their degree program in their first year, compared to 74% without block transfer credit. In terms of graduation rates, 72% of block students graduated within four years, compared with 41% of those without block. Within the transfer populations, those who transferred and obtained block credit also outperformed those who did not obtain block credit, an effect that was seen in both descriptive and regression models.

Sociodemographic background: Gender, age, status in Canada, and neighbourhood income had differing effects on outcomes, dependent on the population of analysis. In the full population males, younger students, students from low- or mid-income neighbourhoods, and domestic students not born in Canada often had weaker outcomes in the models studied. However, within the transfer population, older students had lower retention and graduation rates but higher grades. Additionally, in this population males and domestic students not born in Canada had lower graduation rates and grades but were just as likely to be retained, whereas students from high-income neighbourhoods were more likely to be retained, but not to get better grades. Within the internal transfer population (those transferring to a degree within their own college), these characteristics were either not significant or the results were reversed. For example, male students and students from lower-income neighbourhoods did not differ on most of the outcomes, whereas older students had weaker outcomes, and domestic students not born in Canada had stronger outcomes for some of the outcome measures.

Academic background: High school grades and course selection were both important influences on academic outcomes in the full model and within most of the transfer models. Within the transfer population, having graduated with a college or university credential previously was also a positive influence on all outcomes. However, in the internal transfer population, it was pre-degree grades, and not high school grades or course selection, that affected retention and graduation rates. However, grades in high school remained a significant influence on grades in college. This demonstrates that for transfer students, performance in postsecondary before transfer is likely of more importance than high school grades, and in particular, course stream in high school (college versus university preparatory), particularly for graduation rates and grades.

Program area: Students from degrees in community service, creative and applied arts, and health areas generally outperformed other program areas across all populations and models studied. In terms of students who transferred internally, students who took preparatory programs as degree access programs (no block credit), had higher retention rates than other pre-degree programs, but a lower share of those with a B grade or higher. When compared to those who came directly from high school, those from preparatory programs had higher retention rates and a similar proportion with a B or better.

Graduate Outcomes: Preliminary results from the 2017-18 Graduate Survey showed that students completing their degrees within three years had stronger labour market outcomes, in terms of earnings and job relatedness and satisfaction six months after graduation.

Key findings and recommendations

Key findings of the study indicate that pathways into college degrees are very diverse, with the block transfer pathway, in particular, serving as a pathway for diverse students. As well, in general, students transferring from other postsecondary education into a degree outperform non-transfers, and those with a block transfer (advanced standing) outperform others in terms of grades, graduation, and retention rates.

Recommendations include providing more support or bridging for students who enter non-directly from high school; encouraging academically strong diploma students to transfer into degree programs within their own colleges; enhancing and expanding other college-to-degree pathways and university-to-college degree pathways. In addition, to increase degree access, Ontario college certificate level preparatory programs could be created or enhanced.

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Introduction

Ontario Colleges have been offering bachelor's degrees since 2002 and they have grown steadily: in 2020 there were 3,896 graduates with 12 colleges offering college degrees.² Associated with this expansion, colleges have been developing a variety of pathways into their degree programs, including course credit, bridges, preparatory pathways, and block transfer. However, a significant knowledge gap exists in terms of profile of students who take these pathways, the amount of advanced standing that has been provided, and whether their academic and labour market outcomes are comparable to non-transfers.

Available evidence suggests that a large proportion of students enter college degrees from a variety of postsecondary backgrounds. Results from the KPI Student Satisfaction Survey data for degree students (non-nursing, 2011-2018), show that 6% report a previous degree, 15% report incomplete university, 19% report a previous college diploma, and 6% report incomplete college. Notably, the proportion of degree students with a previous college diploma has risen from 16% in 2011-12 to 21% in 2018-19.³

Another major knowledge gap is the sociodemographic and academic characteristics of those students who transfer into college degree programs. It is widely known that students who attend college, rather than university, are more likely to report a disability, to be the first in their family to attend postsecondary, to be Indigenous, and to be lower income (Zhao, 2012; Ford, Shek-wai-Hui, & Nguyen, 2019; Statistics Canada, 2022). Within the five major degree granting colleges in Ontario who were a part of the current study, the KPI Student Satisfaction Survey showed there were some differences in degree students versus certificate and diploma students: degree students were more likely to report having a parent who attended postsecondary (75% vs 65%), less likely to report being Indigenous (1.7% vs 2.8%), but there was no difference in those reporting a disability (16%) (CRSM custom analysis).⁴ At Seneca College for the years 2007 to 2014, 8% of high-income students whose parents also had a university degree entered a Seneca degree program, compared to just 3% of those whose parents did not have a degree and were low income (Steffler, McCloy, & Decock, 2018).

A report by Skolnik, Wheelahan, Moodie, and others (2018) proposed that laddering of college diplomas into college degrees had the potential to reduce social inequality of degree-level education in Ontario. Ontario College's KPI student satisfaction survey provides some evidence for this theory: students entering college degrees with a previous college credential were more likely to report a disability (20% vs 15%) and to be a first-generation student (29% vs 22%)⁵ than students with a high school diploma only.

Currently, admission standards for Ontario college degrees are similar to universities', requiring a minimum of six university or mixed preparatory course from high school, often with a minimum average of 65%. Those who do not have this high school academic background need to take a college credential

² In comparison, the three Northern Ontario universities have a combined 4400 bachelor graduates. The five colleges in the current study had 3314 graduates.

³ Skolnik (2018) reports that in 2014, PEQAB lifted some restrictions on the maximum amount of transfer credit/block that could be provided for transfer from diploma programs.

⁴ Data was from the 2013-14 to 2018-19 KPI Student Survey for parent education and disability, and from 2015-16 to 18-19 for Indigenous status. Grad certificates and nursing baccalaureates were removed from the analysis.

⁵ Data was from the 2013-14 to 2018-19 KPI Student Survey for parent education and disability for the five colleges included in the current study. Nursing baccalaureates were removed from the analysis.

and transfer into the degree with advanced standing or credit or take a college preparatory program or other accepted college programming for admission. It is well known that students from some underrepresented groups do not select or are directed away from the academic stream courses in high school (Dooley, Payne, & Robb, 2016; Robson, Maier, Anisef, & Brown, 2019). Analysis at Seneca college showed that, for the years 2007-2014, 72% of entrants who had a parent with a degree took more than half of their senior high school course in university or mixed preparatory streams, versus only 53% for those whose parents did not have a degree (Steffler, McCloy & Decock, 2018). These previous findings show that the lower share of underrepresented students in degree programs can be traced to course selection in high school. The pathway from college to a degree, either as transfer or admission enables students who may not have had the aspirations or knowledge of requirements for a degree in high school to be able to enter it later in their academic careers.

Several reports have analyzed the academic outcomes of college to university transfer students in Ontario, with varying results. A study of students transferring into Trent University found transfers obtained similar grades but had higher graduation rates than direct entry students (Missaghian & Hon, 2022). They also found an association between greater amounts of transfer credit and higher graduation rates. At Brock University, 46% of college to university transfer students graduated within four years versus 36% for direct entry students; however, the transfer students were more likely to graduate from 3-year than 4-year degrees. By six years, 66% of non-transfers graduated, versus 58% of transfers (Martinello & Stewart, 2015). Grades were similar for each group. In contrast, at the University of Toronto (U of T), 69% of direct entry versus 40% of college to university transfer students graduated over the 15-year time span of the study (Davies & Pizarro Milian, 2020). Differences between findings may be attributed to the extent that transfer pathways and articulation agreements are developed at each institution. Both Trent and Brock have far more articulation pathways and thus more credit granted than U of T, which is likely causing the difference in findings, as well as U of T having higher entering admission averages. Therefore, the students entering directly from HS at U of T may have been relatively stronger academically. Much of this research looked at students who had moved from college to university, without including whether those students moved within pathways with advanced standing or transfer credit. In other research, specific to a well-established transfer pathway, Seneca's business graduates who transferred from a 3-year diploma into the third year of a Toronto Metropolitan University 4-year business degree had strong outcomes, with 43% graduated within two years and 73% graduated within three years (McCloy, Williams, Childs, & DuManoir, 2019).

Trent University was able to compare the full range of pathways into their degrees and separate those entering through articulation agreements from those who were not (Drewes, Maki, Lew, et al, 2012). They found that students entering Trent through an articulation agreement had the highest grade average (74%), followed by those transferring from another university (73%), with students directly from high school having a 67% average. A similar result was seen for retention rates. Interestingly, when the program level of entry was controlled for (e.g. with one-year credit compared with the progress of second year direct entry students) persistence was similar.

Transfer into college degrees has rarely been studied in Ontario. One report from Conestoga College compared the academic outcomes of students who entered with advanced standing from a diploma versus other degree students, using the 2007-2011 entering degree cohorts (Gorman, Phelps, & Carley, 2012). The study showed that students who entered the degree with advanced standing from a diploma earned higher grades (3.9 vs 2.6 GPA) and were less likely to drop out of the degree. Although female

students were more likely to stay in their program in the non-transfer population, within the transfer population there was no difference. In terms of transferring from university to a college degree, there have been two Seneca studies that included these groups. In one study, focusing on students who entered a business degree from two local universities (comprising 12% of the total degree population), they performed less well than their peers, with both lower retention and lower GPAs. Within this specific population, the university students had weak university backgrounds, with 85% having a university average of D or lower (McCloy et al, 2019). Similarly, York University students who transferred into Seneca degrees in any area also had a weak university average of 58%; however, at Seneca, they obtained an 80% average. Comparative grades of their non-transfer peers were not studied (Smith, Decock, Lin, Sidhu, & McCloy, 2016).

The labour market outcomes of college diploma to college degree students have not been studied in Ontario. However, earnings of college to university transfers relative to university and non-transfers has been recently investigated. Utilizing Statistics Canada's postsecondary records linked to tax records, Finnie, Dubois, and Miyairi (2021) showed that college students who transferred to a university baccalaureate degree earned as much as other university students who switched from another university, but they earned less than those who graduated from their initial universities. This study, however, removed those who completed within three years of entry, thereby removing transfers with the most advanced standing.⁶ Another study followed a 1973 Ontario high school cohort, and found that university non-transfers and university to college transfers had similar occupational status and earnings, both of which were higher than college-to-university transfers (Anisef, Robson, & McDonald, 2020). The current study is able to do some preliminary analysis of labour market outcomes by linking students to the Ontario KPI Graduate Outcomes Survey and by comparing those who graduated within three years to those who took longer than three years to graduate.

Admission and transfer pathways into degrees

In Ontario the Postsecondary Education Quality Assessment Board (PEQAB), which recommends Ministerial consent for new degrees and degree renewal at Ontario's colleges, sets the minimum admission standards for degree entry and quality assures colleges' transfer credit policies (PEQAB, 2021).

Admission criteria include:

- HS graduation with six university or university/college courses at the Grade 12 level, a minimum average of 65%, and any additional requirements, *or*
- Mature students (19+) with PSE which is deemed the "equivalent" of Ontario high school requirements may gain admission to the degree without having the high school requirements. As well, several colleges offer specialized preparatory credentials that enable admission to the degree.

Transfer credit policies include:

⁶ 27% of Seneca business students who transferred to York or Ryerson graduated within two years of entry (2013-2017) (McCloy, Williams, Childs, DuManoir, 2019).

Block transfers: These are pathway agreements between programs of high affinity that generally require a credential and a B average, and sometimes also bridging. Students receive credit for a group of courses or credits and enter the degree at an advanced semester, as prescribed in the agreement.⁷

Transfer Credits: Students moving outside pathways may get transfer credit for individual courses upon approval by the college, often requiring a 65% grade for a credit to be transferred to a college degree program.

Study rationale and research questions

College degrees have become a significant part of degree granting in Ontario, and especially with the recent approval of colleges to offer stand-alone Bachelor of Science in Nursing degrees, will continue to expand.⁸ The research focus in Ontario has been primarily on students transferring from college diplomas to degrees, and occasionally on university degrees to diplomas. However, it has been very limited on transfer from college non-degrees or university degrees to college baccalaureate degrees. The profile of students taking the college diploma to degree pathway, the extent, and the outcomes have rarely been studied. In addition, as part of the formal degree consent renewal process, Ontario colleges are expected to track the academic outcomes of pathway students:

Colleges need to separately track diploma to degree students through the third and fourth year of the degree program. If their persistence, graduation rates and final marks fall significantly below those of students who went through all four years in the degree program, additional elements to bridge the degree of difficulty into third year will need to be introduced. (PEQAB Manual for Public Organizations, 2021, p.62)

Therefore, this study addressed the following questions:

- 1) To what extent do students enter college degrees from previous PSE? How much advanced standing and/or transfer credit is applied?
- 2) What are the student characteristics by pathway? Does the diploma-to-degree pathway increase the diversity of degree students?
- 3) Academic Outcomes: Do college students who enter a degree program with advanced standing fare as well as students completing the full four years?
- 4) Six months after graduation, do graduate satisfaction, labour market outcomes, or further education differ by pathway?

Methodology

The project was led by Seneca's Centre for Research in Student Mobility, in collaboration with the institutional research offices of George Brown, Conestoga, Sheridan, and Humber Colleges.

The population included all students who entered a college bachelor's degree program between the fall of 2015 and winter 2019. Students were then followed until winter 2020. Students were excluded if they

⁷ These agreements are posted on each college's website (eg. <https://www.senecacollege.ca/pathways/guide/seneca.html>) as well as in Ontario's transfer and pathway guide for a comparison of all Ontario pathways (<https://search.ontransfer.ca/>).

⁸ <https://news.ontario.ca/en/release/55741/ontario-offering-greater-choice-for-nursing-students>

had enrolled in a degree program at their own college before fall of 2015 and if their student record had no course attempts throughout their degree enrolment. This may happen if, for example, a student enrolls in a degree but withdraws without academic penalty. Collaborative degree programs also were excluded from the study. One exception was the Bachelor of Science Nursing at Humber College, which delivered all four years of the degree (with the University of New Brunswick conferring the degree) and provided complete academic records. The other colleges in the study who offer collaborative nursing were excluded since delivery was either shared with a university partner or records were not requested.⁹

The data collection relied exclusively on administrative databases. Participating colleges were provided with a template of requested data, and, to protect student privacy, were asked to mask student IDs. This enabled the researchers to link across provided datasets. The study was initially approved by the multi-college REB, with final approval by the individual colleges. Additionally, bilateral data sharing agreements were signed between individual colleges and Seneca.

Within each institution, the student data was linked across all sources (when available and applicable), which enabled the tracking of individual students from high school, through other PSE (if applicable), to college degree entry and either graduation or the point they left the degree. For a subset of graduates, their records were linked to the KPI Graduate Satisfaction Survey. Assurances were made that the variable definitions were consistent across colleges, and the datasets were appended. Both descriptive and regression techniques were used to estimate the outcomes by pathway, and to control for differences between the profiles by pathway.

Demographics

Gender, age, international status, country of birth, and permanent postal code (or any postal code on record) were collected. Age was provided as month and year of birth and was converted to the age of the student when they first entered the degree program (September for fall starts, January for winter starts, and May for spring/ summer starts). Age was truncated, rather than rounded; for example, a student who was 18.9 years old at the start of their degree was given the age of 18 years of age. Status in Canada was derived from international status and country of birth, using the three derived categories of international; non-international (domestic) and born in Canada; and non-international (domestic) and not born in Canada.

Neighbourhood income: As an estimate of each student's household income, their postal code was matched to household income data from the 2016 census. Using the six-digit postal code in the college's student information system, each student from Ontario was assigned to a 2016 Dissemination Area (DA) using a 2016 Statistics Canada postal code conversion file (PCCF). A student's neighbourhood income group was derived by splitting the DAs into income terciles of low, medium, and high, based on the average pre-tax household income for Ontario households. International students, students with invalid postal codes, and students with postal codes that did not map into an Ontario dissemination area were excluded from the neighbourhood income analysis.

⁹ The Bachelor of Science in Nursing is no longer a collaborative degree but is fully provided by the colleges.

Region of Ontario: Students with valid Ontario postal codes (including international students) were grouped regionally using the first digit of the postal code.¹⁰

High School records

For each student who attended an Ontario high school, full high school records containing individual course codes, semester taken/ completed, and the grade were obtained. To be included in the high school analysis, a student had to have taken a minimum of six grade 11 or 12 courses in the Ontario curriculum.¹¹ The following variables were then derived to describe a student's HS academic background:

- HS average: Two averages were calculated; one was the crude average of all grades 11 and 12 courses taken, the other was the average of the six best grade 12 U or mixed courses taken (if applicable).
- "STEM" and "non-STEM" average: STEM included grade 11 and 12 courses in math, science, technology, or computer science (first letters of subject code M, S, IC, T); non-STEM included all other courses.
- College eligibility: Based purely on high school grades and courses taken, a variable defined as "college degree eligible" was created.¹² This was identified as anyone with at least six grade 12 U/M courses and an average grade in their top six grade 12 U/M courses of at least 65%.
- Courses failed: The total number of failed Grade 11 or 12 high school courses was calculated to better indicate whether the student struggled in high school. Since repeated courses often are not included in a student's admission average, this variable provides an additional dimension to a student's academic background.
- Mostly U course type: A variable was also generated to identify whether a student took mainly university or college preparation courses, defined as "mostly U" and "mostly C," respectively. A student was classified as having taken "mostly U" high school courses if a minimum of half of the Grade 11 or 12 courses taken were of a university (U) or university/college (M) type.

Previous Postsecondary

Transfer Pathway: Students without a record of any previous postsecondary attendance were considered non-transfers. PSE records consisted of a transcript submitted through OCAS, a transfer credit request (declined or granted) through their college from any PSE, or a record of previous enrolment at their own college. This group was further subdivided by age into HS direct entry (less than 20 years of age at start of degree) and HS non-direct entry (older than 20 years of age at start of degree).

Transfer students with a previous PSE record were further subdivided into the following pathways:

¹⁰ Central=L, Metropolitan Toronto=M, Southwestern=N, Northern=P, Eastern=K

¹¹ See Ontario Ministry of Education (2011). The Ontario Curriculum Grades 9 and 12. Course descriptions and prerequisites, <http://www.edu.gov.on.ca/eng/document/curricul/secondary/descript/descri9e.pdf>

¹² Note that in some cases a student may have gained eligibility through obtaining out of province high school grades as well as having the minimum of six Ontario Grade 11/12 courses, or through the pre-double cohort curriculum (Ontario curriculum pre-2003). In the definition used here, they would be considered "ineligible" since the out of province records were not available.

- Previous student at own college (only): previously attended own college with no record of attendance at another institution (unless unknown or other).
- Previous college: attended a college (may have been own college plus external college, or unknown or other).
- Previous university: those who had a record from a university only (unless unknown or other).
- Previous college and university: those who had a record from both a college and a university (unless unknown or other).
- Previous other: includes training programs or courses not clearly linked to an institution (e.g., CGA).
- Previous unknown: name not provided or not able to be identified as an institution.

Pre-degree variables (Internal transfers): Colleges were requested to provide enrolment and grades data for all semesters and all programs a student had been enrolled in, before, during, and after the degree.¹³ From this, “pre-degree” variables were created, including the number of credits passed, pre-degree GPA, pre-degree program credential, pre-degree program area, and whether the student graduated from their college before entering the degree.¹⁴ The most recent program and credential enrolled in was used to determine pre-degree program area and credential. However, all passed course credits, regardless of pre-degree program, were counted as pre-degree credits. Similarly, whether a student had ever previously graduated from their own college was used as the graduate flag, regardless of whether it was the most recent program. The pre-degree GPA was reported somewhat differently across the colleges, with some colleges reporting students’ cumulative GPA, which would be a composite of all courses taken previously at their college, whereas other colleges reported the program GPA of the last program enrolled in before entering the degree.

Transfer (course) credit: Although all colleges provided data on number of transfer credits (separate from block credit/advanced standing), some colleges did not provide internal transfer credits. Due to the inconsistencies and some data quality issues, transfer credit was not used in the analysis. However, it was used in determining the student pathway. For example, if a student submitted a course from a university to be considered for transfer credit, that information was used to label them as a previous university student.

Block credit/advanced standing granted: Pathway agreements that allow students to transfer between specific programs and institutions lay out which students are eligible to receive a defined block of credit based on their previous education. These students are generally admitted to an upper-level semester. Generally, the agreements are between highly related programs and require graduation with a specific GPA for admission. For the current study, there was some variation on how block credit was reported. Block credit information was provided by each college in one or more of the following ways:

- The level of entry in the degree program at college (semester, year of study).
- Number of block courses or block terms, *or*
- A degree program code differing from the non-pathway degree program code designating a block pathway was taken (but same degree conferred).

¹³ Some institutions, rather than providing individual terms before the student entered the degree, provided derived or summative data.

¹⁴ One of the five colleges did not provide the number of pre-degree credits.

The number of block terms provided was then determined, based on how the data was provided. For example, when semester of entry was used, if someone entered a degree at semester four, they had three block terms. If the number of block courses was provided, it was converted to semesters based on an estimate of five courses per semester (10 block credits equivalent to two block semesters). In the case of program code specific to a block program, the number of block terms was determined from the pathway detail on the college website (which was also checked against semester of entry in the degree). In all cases, the block values were spot-checked against pathway details provided on college websites.

Academic program outcomes

Degree program and area: The student’s degree program name and program area were determined as the first degree program entered between the fall of 2015 and winter 2019; progress after subsequent switching to other degree programs within the college was not tracked.

Program area: Both pre-degree programs and degree programs were initially grouped according to seven program area groupings that were derived from MCU’s occupation cluster classification system, described in an earlier report by McCloy & Liu (2010). This classification was revived, and some adjustments were made (Appendix 1).

- Programs that were determined to be preparatory programs (Ontario college credential that is intended for further postsecondary) but were not labelled as such within the MCU preparatory cluster, were placed in the preparatory category.
- Computer science/information technology and related programs were moved from the business program area to engineering/ technology.
- Legal/law related programs were moved from business to community service.
- Recreation therapy/health promotion was moved to health from community service.
- Public relations was moved to creative and applied arts from the business area.
- Health administration/information was moved to health from the business area.

Grades: Four of the five colleges had GPAs on a 4-point scale, with one college using a percentage scale (/100%) for all degrees except nursing. To harmonize the variety of grading schemes, GPAs were converted to letter grades, based on the conversion provided on college websites (Table 1). Descriptive results are shown by letter grades; for regression models, the pre-degree grades use the individual letter grade categories, and the dependent outcome measure of degree GPA is reported as the binary outcome of % with A or B vs C or less.

Table 1. Grading scheme by college

	George Brown		Seneca		Humber	Humber Nursing	Sheridan		Conestoga	
	GPA	%	GPA	%	% GPA	GPA	GPA	%	GPA	%
A	3.7-4	80-100%	4	80-100%	80-100	3.7-4.3	3.6-4	80-100%	3.7-4	80-100%
B	2.7-3.6	70-79%	3-3.9	70-79%	70-79.9	2.7-3.6	3-3.5	70-79%	3-3.6	70-79%
C	1.7-2.6	60-69%	2-2.9	60-69%	60-69.9	2-2.6	2-2.9	60-69%	2-2.9	60-69%
D	1-1.6	50-59%	1-1.9	50-60%	50-59.9	1-1.9	1-1.9	50-59%	1-1.9	55-59%
<D	0-0.9	<50%	0-0.9	<50%	0-49.9	0-0.9	0-0.9	<50%	0-0.9	<55%

Note: GPAs were rounded to a single decimal place, e.g., a GPA of 3.65 was rounded to 3.7; 3.64 was rounded to 3.6

Enrolment status and graduation rate: Enrolment status was determined at one, two, and three years after entry (Table 2). This means, for example, that for students admitted in the fall of 2015, their status in fall of 2016 would be considered their year-1 enrolment status; year-2 would be their status in the fall of 2017, etc. Since the spring/ summer semester is not usually a traditional enrolment term, students' status was counted for the summer and subsequent fall term. Additionally, cohorts were restricted so that for year-2 retention the entry year of 2018-19 was excluded (summer of 2018 onward), since they did not have the potential to be enrolled two years from entry (data collection point ended in the winter of 2020). Likewise, for year-3 retention, the entry years of 2017-18 and 2018-19 were excluded. Enrolment status at each year of the study was then determined as one of the following:

- Retained in the degree program of entry,
- Switched to a different program within their college (degree or non-degree),
- No longer enrolled at that time point (not retained),
- Graduated within the past year (excluding current semester, at year 1, 2, or 3).

Table 2. Determination of enrolment status

Degree entry term	Enrolment status		
	Year 1	Year 2	Year 3
Fall 2015	Fall 2016	Fall 2017	Fall 2018
Winter 2016	Winter 2017	Winter 2018	Winter 2019
Spring 2016	Spring/ Fall 2017	Spring/ Fall 2018	Spring/ Fall 2019
Fall 2016	Fall 2017	Fall 2018	Fall 2019
Winter 2017	Winter 2018	Winter 2019	Winter 2020
Spring 2017	Spring/ Fall 2018	Spring/ Fall 2019	
Fall 2017	Fall 2018	Fall 2019	
Winter 2018	Winter 2019	Winter 2020	
Spring 2018	Spring/ Fall 2019		
Fall 2018	Fall 2019		
Winter 2019	Winter 2020		
Cohort Size	21046	15357	9958

Graduation Rate: In addition to enrolment status, graduation rates within two, three, and four years were determined (Table 3). Admit terms from winter 2017 onwards were excluded for the four-year graduate rate analysis (not followed for minimum of four years; winter 2020 last term) and admit terms for winter of 2018 were excluded for the three-year graduation rate analysis (not able to be followed for minimum of three years).

Table 3. Determination of graduate rates

Degree entry term	Graduation status		
	Graduate within 2 years	Graduate within 3 years	Graduate within 4 years
Fall 2015	<Fall 2017	<Fall 2018	<Fall 2019

Winter 2016	<Winter 2018	<Winter 2019	< Winter 2020
Spring 2016	<Spring/ Fall 2018	<Spring/ Fall 2019	By Winter 2020
Fall 2016	<Fall 2018	<Fall 2019	By Winter 2020
Winter 2017	<Winter 2019	<Winter 2020	
Spring 2017	<Spring/ Fall 2019	By Winter 2020	
Fall 2017	<Fall 2019	By Winter 2020	
Winter 2018	<Winter 2020		
Spring 2018	By Winter 2020		
Fall 2018	By Winter 2020		
Cohort Size	20229	14551	9231

For the regression models, a binary outcome variable was derived at each time point, showing retention or graduation in the degree of entry. Within the transfer populations, graduation within three and four years were also used as outcomes. This analysis enables a comparison of students who graduated within four years of entering their degree.

Graduate outcomes

The 2017-18 KPI Graduate Survey file was used to compare outcomes six months after graduation. Colleges were asked to provide the linking key which links the KPI Graduate Survey's de-identified case number. All records matching the 2017-18 KPI graduate survey file were compared with the other graduates for graduate satisfaction, employment rate, hourly salary, employment in a related job, and further education. Since data was collected up until winter of 2020, any graduates from the current studies' dataset graduated within three years of entry. Therefore, effectively a comparison was made between those who had graduated within three years of degree entry (presumably with advanced standing), and those who had enrolled more than three years earlier.

Analytic methods

The current study presents the results of both descriptive and regression techniques. Descriptive results for each outcome of interest are presented by selected characteristics. To control for the independent effects of variables, regression models were used for each outcome of interest. Dependent variables included retention or graduation after one, two, and three years, graduation within four years, and grades of B and above. Since these variables were designed as dichotomous variables, taking values 0 or 1, logistic modelling was employed for the econometric analysis. For all regression analyses, the dataset was restricted to individuals with complete data for all variables included in the regression model.

For each outcome of interest, three populations were analyzed:

1. Full population:

The entire population of degree students in the study period was considered, which included all students with data for socio-demographic and program-related variables, such as: gender, age, status in Canada, degree program area, and pathway. Both transfers and non-transfers were included in this population.

2. Internal and external transfers:

This population included transfer students only, who may have previously been enrolled at their own college, another college or university, or another type of PSE. The amount of block credit and whether their student records indicated any previous graduation from a previous PSE was added to the models.

3. Internal transfers:

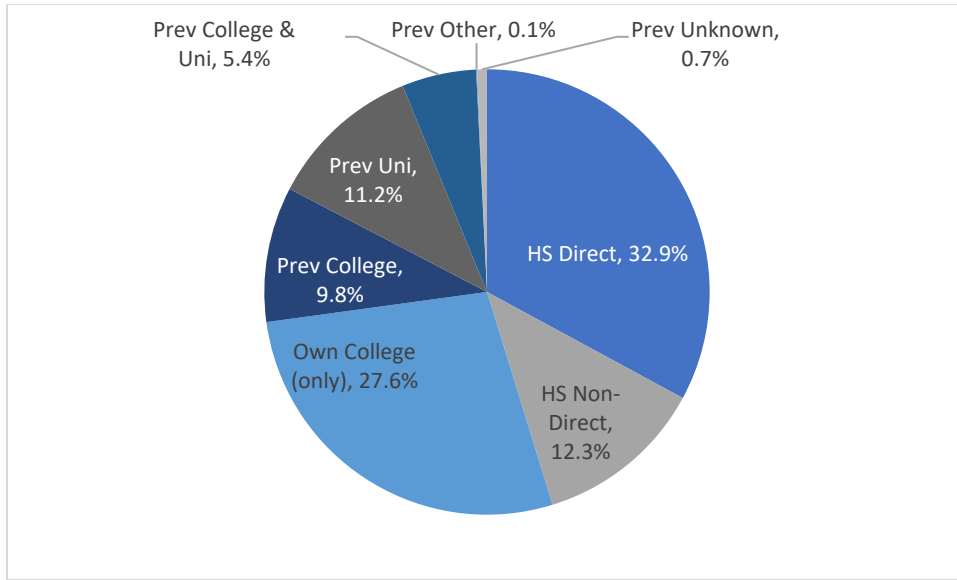
This population included those who had attended their own college, but who may also have attended another college. Pre-degree characteristics (described above) were added.

Each of the three populations had a second analysis that was specific to the Ontario population with HS grades. This sub-population included all variables described above with the addition of high school data, Ontario region, and Ontario neighbourhood income tercile. All international students, those who did not attend HS in Ontario, those who did not submit high school grades to Seneca upon college entry, and those whose postal code did not match the Census neighbourhood income data were excluded.

Results

There were over 21,000 students who entered degree programs between the fall of 2015 and winter of 2019 at the five colleges in the study. Pathways into college degrees were very diverse; only 33% of students came directly from high school (HS); 12% had a non-direct path from HS; 28% had only previously attended their own institution; 10% came from another college (but may also have attended their own); 11% came from university; and 5% from both a college and university (Figure 1). Over half of the degree entrants (55%) had some form of education after HS. In total, over a third of students had previously attended their own college, 17% attended a university, and over 11% attended a different college from their own before entering their college degree.

Figure 1. Student pathway distribution



Profile by transfer student pathway

Figure 2 shows the distribution of entering pathways by participating college. A similar trend of a diversity of pathways and a high share of transfer students was evident at each college. The percentage coming directly from high school ranged from 29 to 35%, while the next most common pathway, from their own college, ranged from 23 to 32%.

Figure 2. Student pathway distribution by college

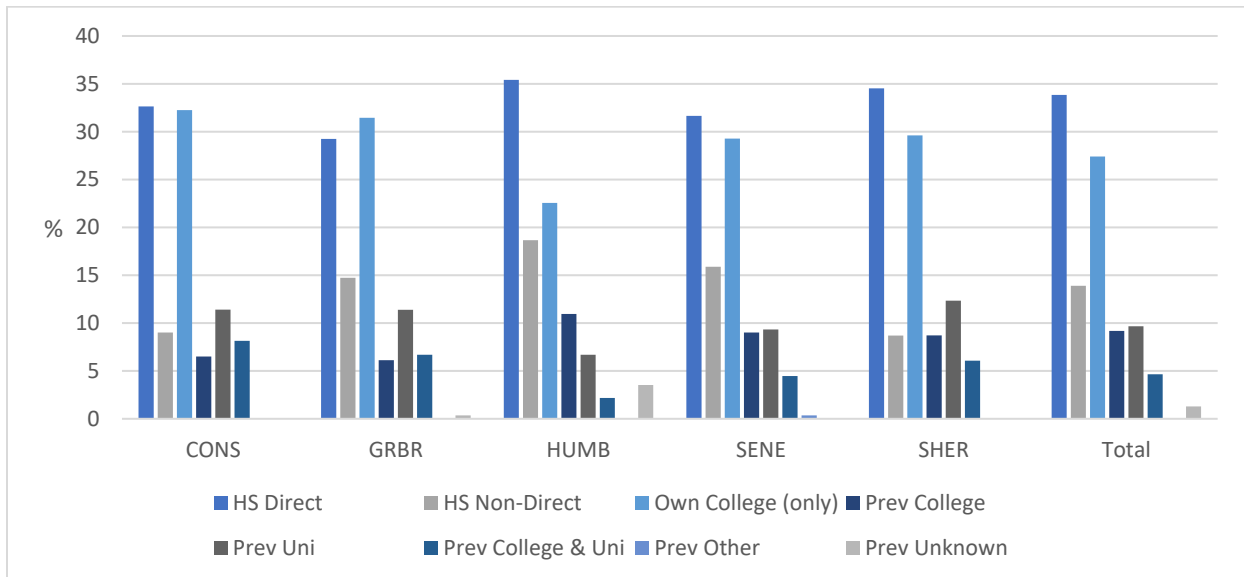


Table 4 and Table 5 show the top sending institutions, both overall and by receiving college (see also Appendix 2). The large Toronto universities, York, University of Toronto, and Toronto Metropolitan University were the top institutions overall, both as a function of their large size and their proximity to the colleges. These three institutions each comprised over 2% of degree entrants and over 4% of transfers. The large GTA colleges of George Brown, Sheridan, Humber, and Seneca were the top sending

colleges, again demonstrating the importance of size and proximity. The only non-GTA college in the study, Conestoga, is situated in Kitchener-Waterloo, and hence its major sending institutions are in the immediate area and include Wilfred Laurier, Waterloo, and Guelph universities. Further nuance within the GTA could be due to the proximity of the campus. For example, Humber offers more degrees at its Lakeshore campus than at its main campus in North Etobicoke (northwest Toronto); this may explain the high transfer rates from Sheridan (Oakville) to Humber. Additionally, the degree programs and pathways available, particularly if there is no comparable degree in their own college, likely play a role in institutional mobility.

Table 4. Top ten sending institutions, college degree entrants

Institution name	Count	% Degree admissions	% Transfers
York University	514	2.4%	4.5%
University of Toronto	497	2.4%	4.3%
Toronto Metropolitan University	456	2.2%	4.0%
George Brown College	381	1.8%	3.3%
Sheridan College	328	1.6%	2.8%
Humber College	313	1.5%	2.7%
Wilfrid Laurier University	245	1.2%	2.1%
Seneca College	235	1.1%	2.0%
University of Waterloo	233	1.1%	2.0%
University of Guelph	232	1.1%	2.0%

Note: If a student attended more than one institution, both are included.

Table 5. Top ten sending institutions by receiving college, college degree entrants

	Conestoga	George Brown	Humber	Seneca	Sheridan	Total
1	Wilfrid Laurier University	Toronto Metropolitan University	Sheridan College	York University	University of Toronto	York University
2	University of Waterloo	York University	York University	George Brown College	Humber College	University of Toronto
3	University of Guelph	University of Toronto	George Brown College	Humber College	York University	Toronto Metropolitan University
4	Sheridan College	Humber College	University of Toronto	Toronto Metropolitan University	Toronto Metropolitan University	George Brown College
5	Fanshawe College	Seneca College	Toronto Metropolitan University	Centennial College	George Brown College	Sheridan College
6	Athabasca University	McMaster University	Seneca College	University of Toronto	Seneca College	Humber College
7	Mohawk College	Sheridan College	University of Guelph	Sheridan College	Mohawk College	Wilfrid Laurier University
8	Brock University	Wilfrid Laurier University	Centennial College	Western University	McMaster University	Seneca College
9	Queen's University	Brock University	McMaster University	University of Waterloo	Wilfrid Laurier University	University of Waterloo
10	Georgian College	University of Guelph	Wilfrid Laurier University	University of Ontario Institute of Technology	University of Waterloo	University of Guelph

Note: If a student attended more than one institution, each are included. Athabasca University, as an online university which attracts many Ontario Students was also included.

Table 6 shows the demographic profile by pathway. Overall, degree entrants were slightly more likely to be female (54%), with differences by pathway type. Non-transfers and university transfers were evenly male and female, whereas students from other transfer pathways were more likely to be female. The average age at entry was 22 years old, with transfer students averaging 24 years of age. There was a large range in the full population, with 55% of students 20 years or younger, and 27% 23 years or older. Students who previously attended a college other than their current college, or attended both college and university, were older, with an average age of 25 years and 26 years, respectively.

Overall, 13% of the college degree population entrants were international, generally much lower than seen in the non-degree population.¹⁵ International students were more likely to be non-transfers, or to have transferred internally to a degree within their college. Students who transferred externally from a college or university, or both, were more likely to have not been born in Canada. These patterns may be indicative of internationally trained immigrants entering college degree programs, or students who entered college or university as international students previously but were able to acquire permanent residency at some point before entering the degree.

Students entering directly from HS or from university were more likely to be higher income than non-direct entry from HS or previous college (based on a student's neighbourhood income). However, students entering non-directly from HS were the lowest income.¹⁶

Non-direct students were most likely from Metro Toronto, and students from Southwestern Ontario were somewhat less likely to transfer from an external college.

¹⁵ KPI Student Satisfaction Survey; analysis of five college participants, custom analysis by authors.

¹⁶ Note that transfer students, as older students, are also often lower income since their permanent address is no longer their parent/guardian's family home. However, investigating by age and pathway (data not shown) indicated that the income and pathway effect was maintained.

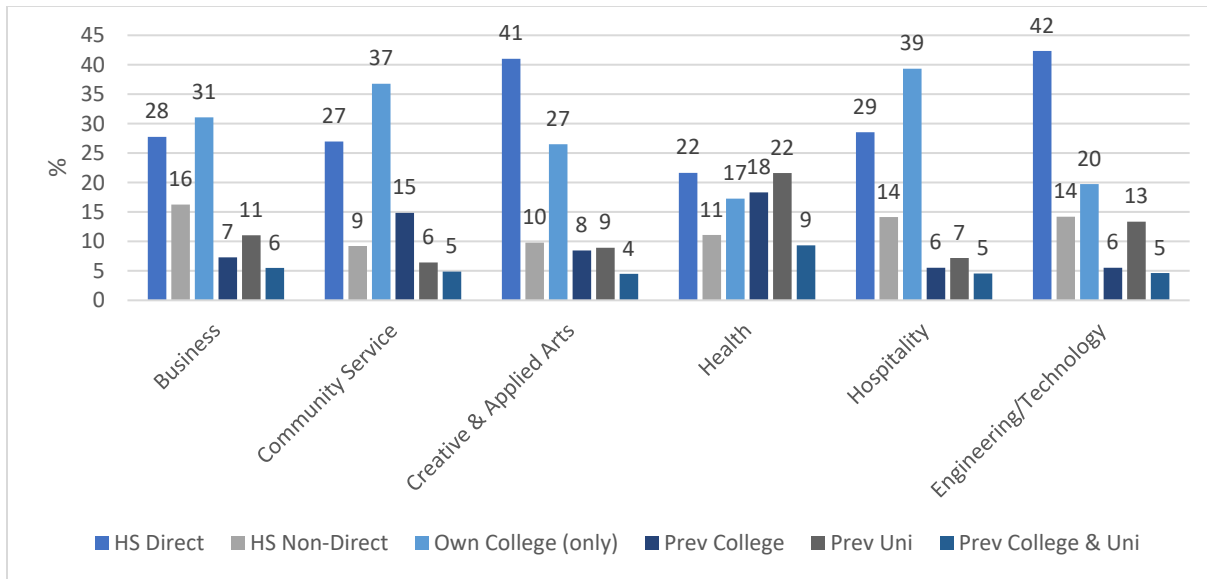
Table 6: Demographic profile by pathway

		HS Direct	HS Non-Direct	Own College (only)	Previous College	Previous University	Previous College & University	Total
		6,925	2,597	5,807	2,067	2,349	1,136	21046
Gender	F	50.8%	47.3%	54.4%	65.4%	51.7%	60.3%	53.5%
	M	49.1%	52.1%	45.2%	34.5%	48.3%	39.6%	46.3%
	Other*	0.1%	0.5%	0.5%	0.1%	0.0%	0.1%	0.2%
Degree Start Age	<19	72.7%	0.0%	8.2%	1.9%	4.6%	0.9%	27.0%
	19-20	27.3%	32.6%	32.2%	19.6%	32.1%	11.9%	28.3%
	21-22	0.0%	31.9%	24.6%	26.2%	25.8%	22.5%	17.5%
	23-24	0.0%	15.1%	12.7%	16.9%	18.2%	21.8%	10.3%
	25+	0.0%	20.4%	22.4%	35.5%	19.3%	43.0%	16.9%
	Mean age	18.6	23.6	23.4	25.4	23.3	26.3	22.2
Status in Canada	International	13.8%	26.0%	16.2%	3.9%	3.3%	3.9%	13.4%
	Domestic - Born in Canada	66.1%	44.3%	56.9%	62.9%	65.0%	63.3%	60.1%
	Domestic - Not Born in Canada	20.1%	29.5%	26.7%	32.7%	31.7%	32.8%	26.3%
Neighbourhood Income Group	Low Income	21.1%	31.9%	27.7%	27.6%	20.9%	24.5%	23.6%
	Mid Income	33.4%	33.6%	33.0%	36.0%	32.2%	31.9%	33.4%
	High Income	45.5%	34.5%	39.2%	36.4%	46.9%	43.7%	43.1%
Ontario Region	Eastern	3.2%	1.7%	1.5%	2.0%	2.1%	1.1%	2.2%
	Central	55.8%	50.4%	56.9%	58.9%	56.7%	55.9%	55.9%
	Metro Toronto	23.9%	37.7%	26.0%	29.6%	28.6%	27.4%	27.4%
	Southwest	16.2%	9.9%	15.1%	8.3%	11.9%	14.9%	13.7%
	Northern	1.0%	0.4%	0.5%	1.3%	0.7%	0.7%	0.8%

Notes: A further 13 students transferred from an “other” type of training program and 152 students came from a postsecondary institution that was unknown or missing. Thirty-seven non-international students were missing a country of birth. Neighbourhood income and Ontario region were only determined for those with an Ontario permanent postal code, with international students removed from the neighbourhood income analysis. “Other*” gender includes missing or other coding in the field which varied by college.

Figure 3 shows the pathway distribution by area of study. All program areas showed a high share of transfer students. Creative and applied arts and engineering/technology areas had the highest coming directly from high school, but still just over 40% of the total for each. Community service and hospitality areas each had the highest proportion of students who transferred internally (37 and 39%, respectively), with the health area having the highest proportion from university (22% from university only, and a further 9% who had attended both a college and university).

Figure 3. Pathway distribution by area of study



High school background

As described in the introduction, the transfer pathway is a primary way for students to enter a degree for those without the high school requirements, particularly those who decide on the degree pathway later in their schooling. This is demonstrated in the high school records, which show that students who ultimately transferred from either their own or another college to the college degree were less likely to have taken university or mixed courses and were also less likely to have been eligible for direct degree entry than students in the other pathways (Figure 4).

Table 7 shows a detailed breakdown of high school grades by pathway. Students taking the college-to-college degree pathway, as well as those who entered the degree non-directly from high school, also obtained lower grades in high school, and were somewhat more likely to have failed courses, compared to those who went directly from HS or transferred from university. Aspirations for a degree after high school are expressed not just in course selection, but also in terms of grades obtained. If students know the admission requirement of their destination, they likely will put in the effort required to achieve it. However, as aspirations change, the transfer pathway offers a way to change direction without losing the credits obtained.

As shown previously (Table 6), higher income degree entrants were more likely to come directly from high school or university. To determine whether this was associated with high school grades and course selection, a further analysis of HS background by income level was done (data not shown). It showed that degree students from low-income neighbourhoods were less likely to take the six grade 12 U or M courses required to enter a college degree from high school, with 65% of low-income students taking the required courses, compared to 69% of middle-income and 74% of higher-income students. The grades of those who fulfilled the requirements were similar, indicating that course selection, rather than grades, played the primary role in degree program eligibility (only 3% of those with the required 6 U/M courses did not have the required 65% for admission).

Figure 4. High School course selection and eligibility for college degrees, by pathway

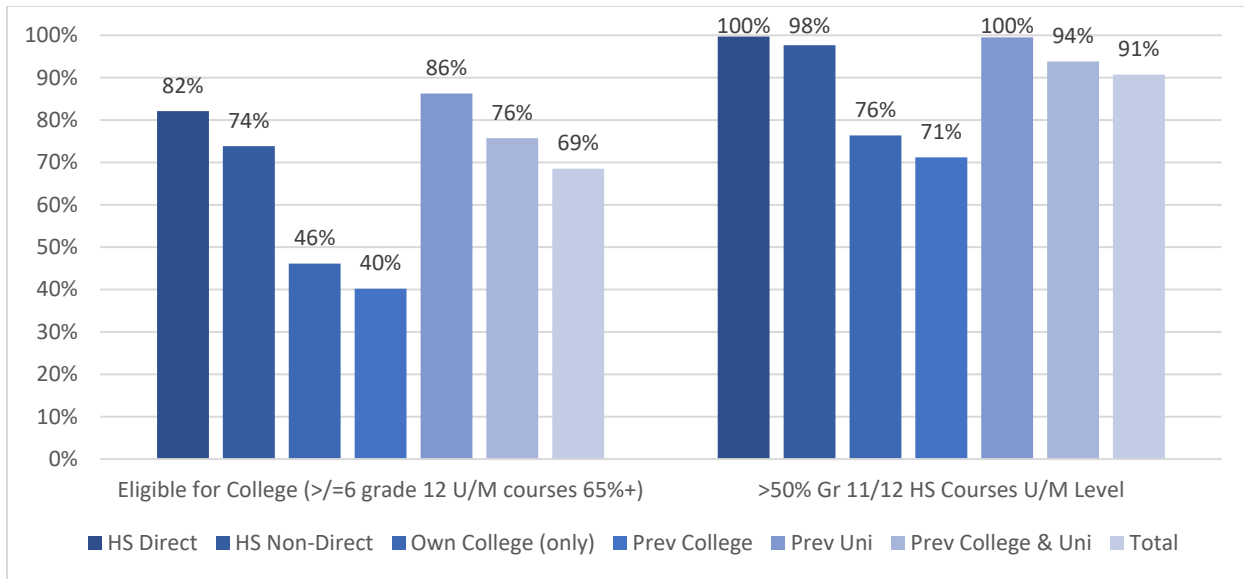


Table 7. High school grades by pathway

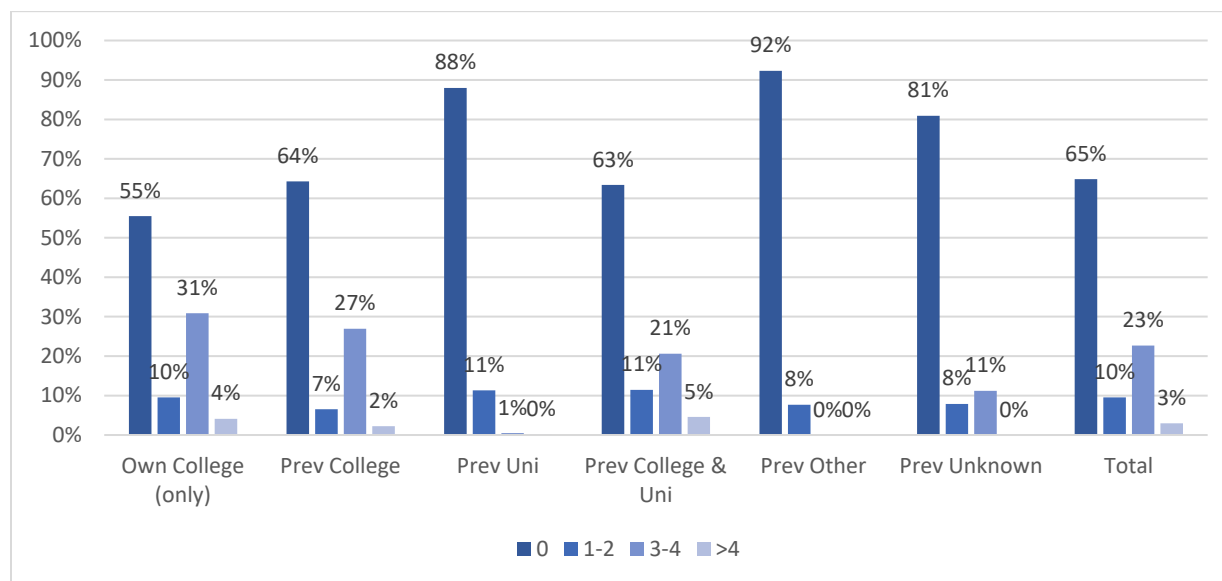
		HS Direct	HS Non-Direct	Own College (only)	Previous College	Previous Univ.	Previous College & Univ	Total
Sample with Ontario HS Grades	% with grades	84.3%	56.2%	66.8%	65.8%	78.4%	71.0%	72.4%
	n	5,841	1,460	3,877	1,361	1,842	807	15247
HS GPA Mean (all gr 11/ 12 courses)	<60%	1.6%	8.4%	5.3%	7.2%	1.2%	3.0%	3.7%
	60-69%	18.0%	25.0%	29.0%	31.1%	11.2%	17.1%	21.8%
	70-79%	45.6%	46.6%	45.3%	44.5%	45.7%	47.1%	45.6%
	>=80%	34.8%	20.0%	20.4%	17.2%	42.0%	32.8%	28.9%
	Mean	76.8%	72.9%	73.1%	72.1%	78.2%	76.2%	75.2%
Stem GPA	<60%	10.2%	16.5%	16.0%	18.4%	8.5%	10.8%	12.8%
	60-69%	26.7%	31.0%	31.2%	33.3%	20.4%	28.1%	28.2%
	70-79%	37.1%	33.5%	35.1%	33.0%	40.9%	35.3%	36.2%
	>=80%	26.0%	19.1%	17.7%	15.4%	30.2%	25.9%	22.8%
Non-Stem GPA	<60%	1.2%	7.6%	4.8%	6.0%	1.0%	2.9%	3.2%
	60-69%	12.0%	19.7%	23.7%	25.8%	7.1%	11.9%	16.4%
	70-79%	42.3%	45.1%	44.1%	45.3%	37.0%	41.9%	42.6%
	>=80%	44.6%	27.6%	27.3%	23.0%	54.8%	43.3%	37.8%
Number of Failed Grade 11/12 Courses	0	84.6%	68.8%	79.2%	74.9%	87.7%	85.8%	81.2%
	1-2	12.4%	17.4%	13.4%	16.3%	9.4%	10.3%	13.1%
	>=3	3.0%	13.8%	7.4%	8.7%	2.9%	4.0%	5.7%

The population with Ontario High school grades included non-international students with an Ontario permanent postal code, with a minimum of six grade 11/12 courses from the Ontario curriculum.

Profile by block credit

Overall, 35% of transfer students obtained block transfer, with most in the 3-4 block term range (Figure 5). Students transferring from their own college were the most likely to obtain block transfer credit with 45% doing so. Block transfer was rare for the university group, with only 12% getting block terms.¹⁷ Of all transfers, the average number of block terms was 1.2 semesters, and of those who received block credit, the average was 3.3 block terms (data not shown).

Figure 5. Amount of block credit semesters received by transfer pathway, degree entrants



Overall, including transfers and non-transfers, almost 20% of degree entrants obtained at least one semester of block transfer (advanced standing). Of these, over 60% had three to four terms of block credit (Figure 6). Degrees in the community service area had the most entrants with block transfer, with creative and applied arts having the least. Pathways into creative and applied arts, as well as health, were more often admission pathways from preparatory programs, rather than transfer or block pathways. Table 8 shows the share of students with block transfer by the top degree programs. Early childhood-related programs have a high proportion of pathway students, accounting for three of the top five programs. Nursing, other community service degrees, and business programs all rank highly in their share of block transfers. The listed programs comprise 34% of degree entrants, but 67% of block students.

¹⁷ University block pathways were predominately the university degree to BScN at Humber and the kinesiology university degree to athletic therapy at Sheridan.

Figure 6. Amount of block credit semesters by degree program area of entry, all degree entrants

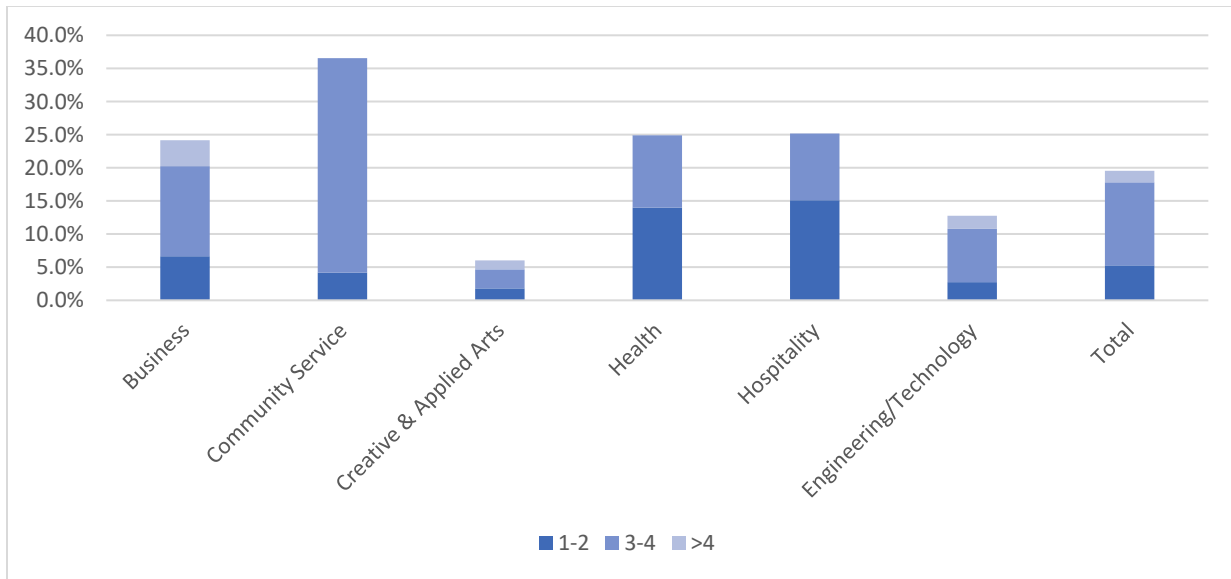


Table 8. College degrees by percentage of block transfers, top programs

MTCU Title	MTCU code	No block credit	With block credit	Total Degree entrants	% with Block credit
Bachelor of Early Childhood Leadership	81211	209	314	523	60%
Bachelor of Applied Arts (Child Development)	80701	387	354	741	48%
Bachelor of Applied Business (International Accounting and Finance)	80104	271	195	466	42%
Bachelor of Interdisciplinary Studies	84701	35	25	60	42%
Bachelor of Early Learning Program Development	81217	77	54	131	41%
Bachelor of Applied Business (Integrated Accounting and Information Technology Management)	80103	242	168	410	41%
BSc Nursing	81400	730	494	1,224	40%
Bachelor of Applied Arts (Criminal Justice)	80705	490	330	820	40%
Bachelor of Applied Business (Hospitality Operations Management)	83200	118	57	175	33%
Bachelor of Community Development	86500	37	17	54	31%
Bachelor of Environmental Public Health	89805	98	45	143	31%
Bachelor of Commerce (Accounting)	80100	649	287	936	31%
Bachelor of Applied Business (Fashion Management)	81823	176	72	248	29%
Bachelor of Technology (Construction Management)	88201	378	154	532	29%
Bachelor of Applied Business (Human Resources Strategy and Technology)	80223	472	185	657	28%

Figure 7 shows the average amount of block terms degree students were provided at admission, across all pathways of entry. Females, older students, domestic students not born in Canada, and low-income students were all more likely to have more block credit.

Figure 7. Average amount of block credit terms by sociodemographic characteristics, including all degree entrants

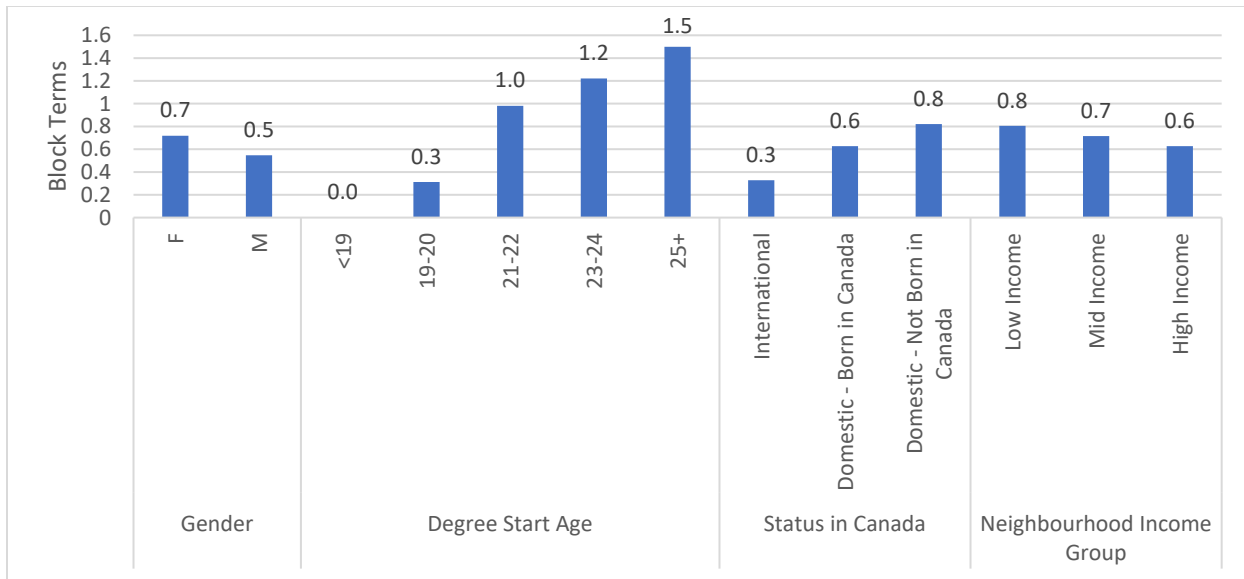
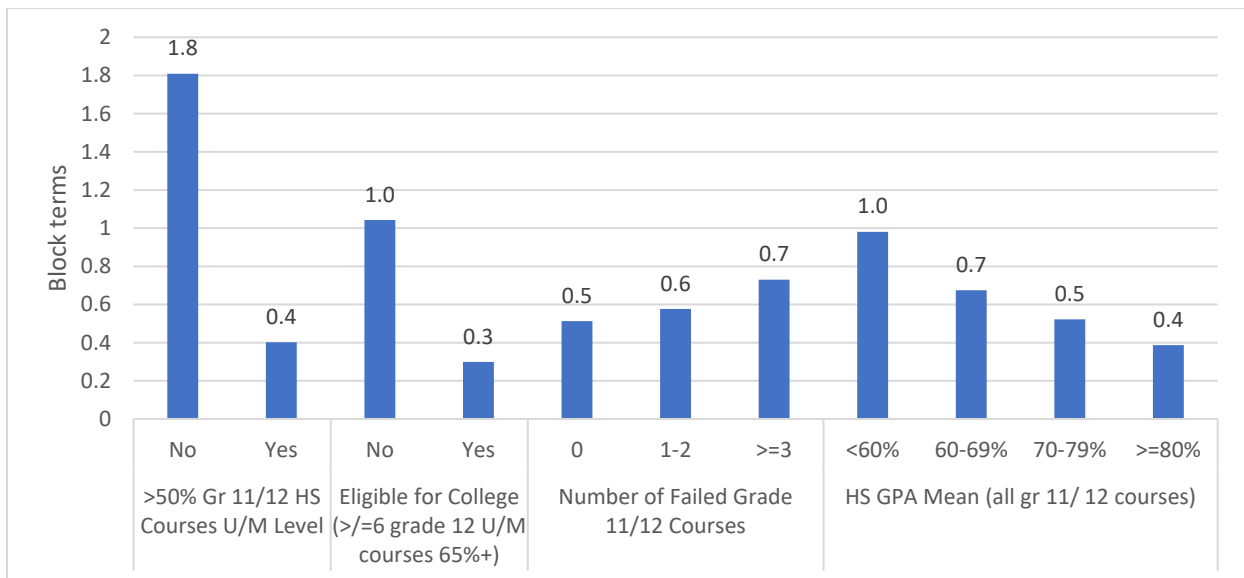


Figure 8 shows the average amount of block credit by high school background. It clearly shows that students who entered college via a block pathway did not aspire to a degree in college, as they did not take the required university or mixed preparatory courses. In addition, their performance in high school was weaker than those who entered the degree without or with less block credit.

Figure 8. Average amount of block credit terms by High school characteristics, including all degree entrants



Profile of internal transfers

Overall, 31% of degree entrants had previously attended their own colleges; of these 18% attended an additional PSE institution as well, before entering their college degree.

Focussing on the population with a previous record at their own colleges, it is clear students who entered a degree after transferring from a diploma or certificate generally stayed in the same program

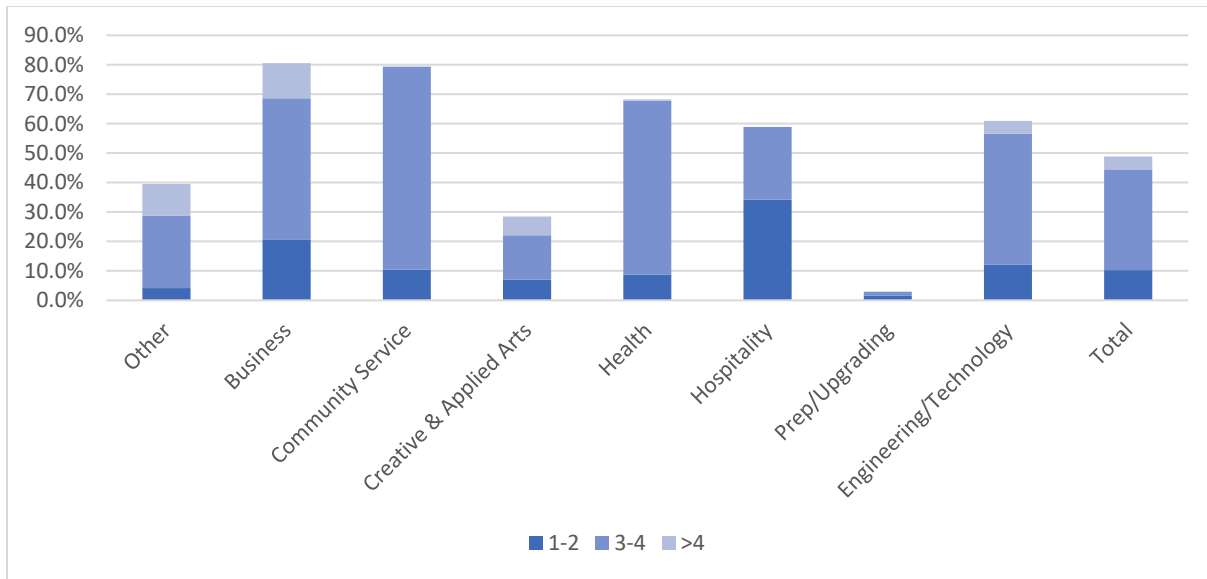
area (Table 9). For example, 93% of students whose pre-degree program was business went on to enter a business degree. Those in the preparatory/upgrading area, which is comprised of specialized programs such as art and media fundamentals or pre-health, were often entering related degrees in creative and applied arts (50%), with significant shares entering business and health. There are also several one-year general arts and science programs in the preparatory/upgrading category, whose students entered a range of program areas. Overall, 25% of students who transferred within their own college to a degree originated in a preparatory credential, particularly in creative and applied arts (46%) and health (52%) degree areas (data not shown). However, the prevalence of preparatory programs as feeders to college degrees varied across colleges, from a low of 4% to a high of 32%.

Table 9. Distribution of degree program area by pre-degree program area

Pre-Degree Program Area	Degree Program Area						Total
	Business	Community Service	Creative & Applied Arts	Health	Hospitality	Engineering/Technology	
Business	92.5%	1.3%	2.3%	0.6%	0.6%	2.7%	100%
Community Service	2.4%	93.5%	1.7%	1.8%	0.1%	0.6%	100%
Creative & Applied Arts	4.7%	2.1%	89.8%	0.8%	0.1%	2.5%	100%
Health	9.6%	6.3%	1.7%	80.3%	0.0%	2.1%	100%
Hospitality	15.8%	5.7%	7.6%	1.9%	67.7%	1.3%	100%
Engineering/Technology	10.8%	1.1%	6.6%	7.6%	0.2%	73.6%	100%
Prep/Upgrading	13.2%	7.7%	50.2%	20.3%	2.4%	6.3%	100%
Other	34.1%	25.8%	7.2%	8.5%	0.3%	24.0%	100%
Total	28.3%	22.5%	26.9%	9.8%	2.4%	10.1%	100%

Figure 9 shows that almost half of pre-degree students who previously attended their own colleges obtained block transfer, with the highest shares in business, community service, and health, at 70-80%. Since preparatory/upgrading programs are access and preparation programs, their role is to prepare students for degree entry, and therefore block credit is rarely applied.

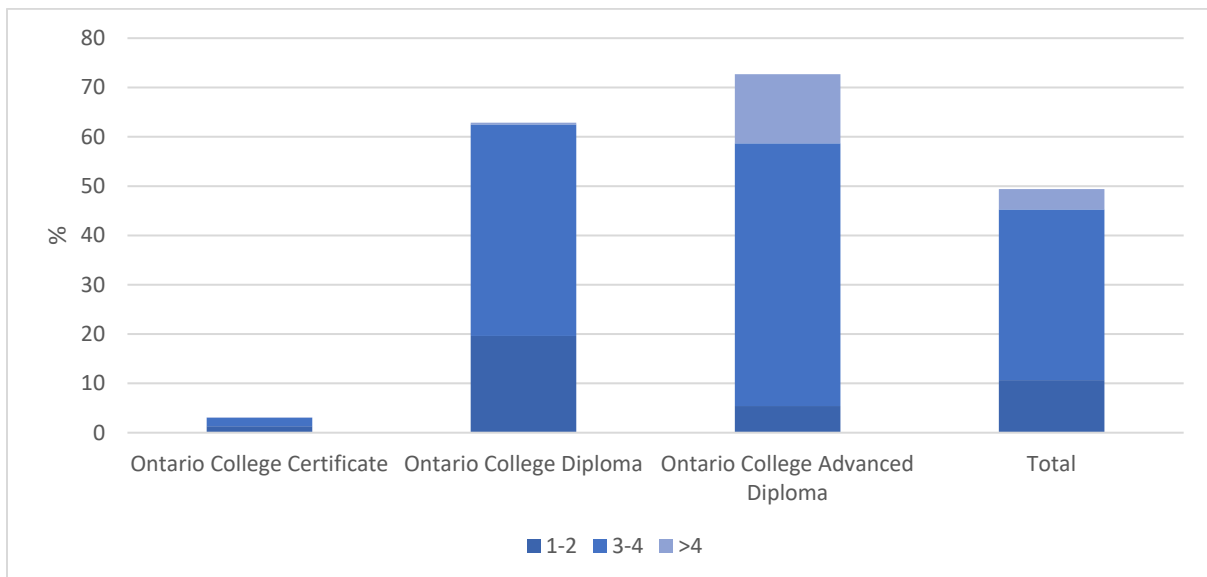
Figure 9. Amount of block by pre-degree program for students who attended their own colleges



Note: Program area shown is the last program a student was enrolled in before entering the degree; it is not necessarily the program for which they received block credit.

In terms of pre-degree credential of enrolment, 2-year diplomas were the most common at 42%, followed by advanced (3-year) diplomas at 26% and 25% for Ontario college certificates. Figure 10 shows the amount of block credit provided by the last credential enrolled in before the degree. Three-year advanced diploma students got the most, with the majority obtaining 3-4 block terms. When further broken out by pre-degree graduation status, almost 70% of graduates of two- year and over 80% of graduates of three-year diplomas obtained block credit (Figure 11).

Figure 10. Amount of block terms by pre-degree credential for students who attended their own colleges



Note: Credential shown is the last credential a student entered before entering the degree, it is not necessarily the program for which they received block credit.

Figure 11. Amount of block terms by pre-degree credential and graduation status for students who attended their own colleges

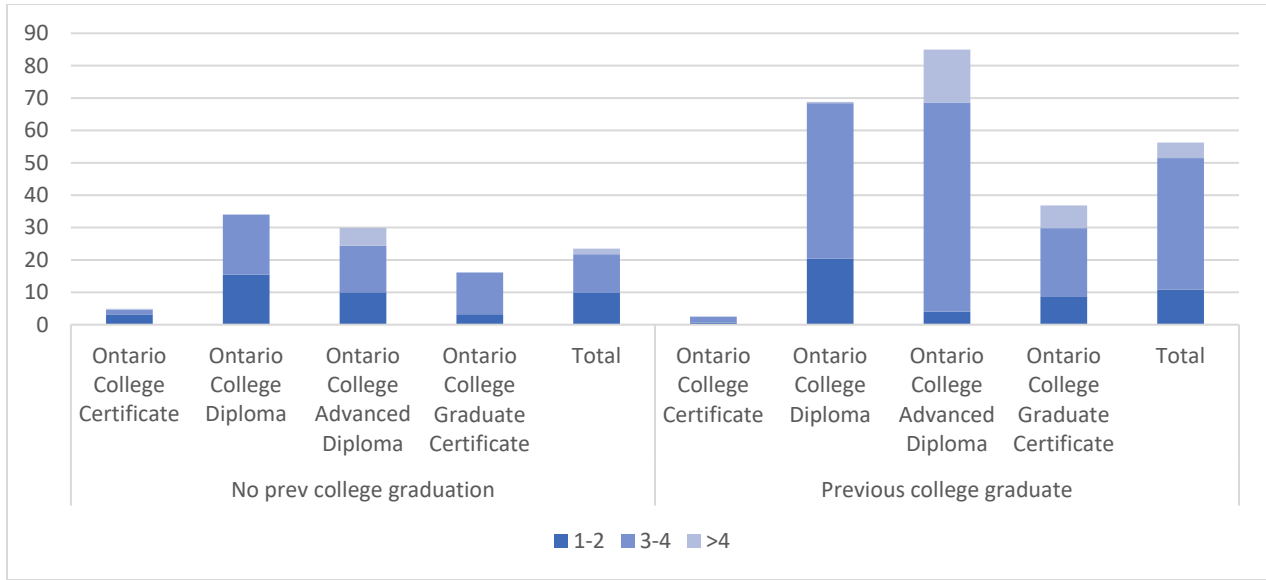


Table 10 shows that students who entered degrees after attending their own colleges averaged approximately two years of attendance (20 credits), with over three-quarters having graduated with a strong GPA of 3.2. Those with more pre-degree credits, previous graduation, and higher pre-degree GPAs were each associated with obtaining more block credit.

Table 10. Amount of block credit provided by pre-degree characteristics

		0	1-2	3-4	>4	Total
Pre-Degree Total Credits*	Mean	14	21	28	33	20
	n	2,344	400	1,530	295	4,569
Previously graduated from a program at same college	%	65%	79%	91%	85%	76%
	n	3,333	668	2,215	295	6,511
Pre-Degree GPA	4pt Scale	3.0	3.3	3.4	3.4	3.2
	% A/B (Letter Grade)	68.2%	84.1%	86.9%	82.6%	77%
	n	3,123	590	2,082	276	6,071

*One of the colleges did not provide the number of pre-degree credits. Also, the table includes those who may have attended another institution.

Descriptive outcomes by pathway

Table 11 illustrates the complex pathways students took within their degrees, for each time-point studied. At year 1, the enrolment status of all four years of the study could be analysed, since all students had the potential to be enrolled at the one-year post-admission term. Enrolment status at years 2, 3, and 4 progressively drop entrants whose entry terms did not fit the cohort window. A student's enrolment status from 1st to 2nd year, 1st to 3rd year, 1st to 4th year, and 1st to 5th year, was determined from the following:

- Retained in 1st degree: Still enrolled in the degree program of entry.

- Retained – switched to diploma or degree: Switched into a different degree or non-degree but still were enrolled.
- No longer enrolled at the college at that time point.
- Switched from the degree to another program and no longer enrolled in college (may or may not have graduated from switched program).
- Graduated from the degree of entry in the previous semester.

As shown previously, students entered college degrees from various pathways. Table 11 shows that students were also transferring from their first degrees to other programs, with a somewhat higher share moving into a second degree than into a diploma. It is also evident that students were able to complete a four-year degree before the start of year 3 or year 4 due to advanced credit, as will be shown in more detail below.

Table 11. Detailed enrolment status in degree, by year of study

	Enrolment Status at year 2 (yr1-2)		Enrolment Status at year 3 (yr1-3)		Enrolment Status at year 4 (yr1-4)		Enrolment Status at year 5 (yr1-5)	
Not retained – switched, no longer enrolled*	90	0.4%	258	1.7%	296	3.0%	242	5.1%
Not retained - withdrew from 1st degree	4,409	20.9%	4,003	26.1%	3,030	30.4%	1,503	31.7%
Retained in 1st degree	15,712	74.7%	9,335	60.8%	4,770	47.9%	536	11.3%
Retained - switched to diploma	312	1.5%	262	1.7%	151	1.5%	84	1.8%
Retained - switched to diff. degree	404	1.9%	407	2.7%	283	2.8%	87	1.8%
Unknown switch	40	0.2%	38	0.2%	27	0.3%	2	0.0%
Graduated 1st degree program within 1 yr	79	0.4%	58	0.4%	38	0.4%	20	0.4%
Graduated, 2 yr mark			996	6.5%	651	6.5%	318	6.7%
Graduated, 3 yr mark					712	7.2%	316	6.7%
Graduated, 4 yr mark							1,636	34.5%
Started first program >=2018 Spring			-5,689					
Started first program >=2017 Spring					-11,088			
Started first program >=2016 Spring							-16,302	
Cohort n	21046	100%	15357	100%	9958	100%	4744	100%

*These switchers may or may not have graduated from the program they switched into; this was not tracked.

Table 12 shows that students in the program areas of business, engineering/technology, and hospitality had lower retention and four-year graduation rates than other areas. In terms of grades in the degree, students in business and engineering programs had a lower share of students obtaining grades of B or higher. Outcomes also differed by college, with three colleges performing similarly in terms of retention and grades, and two colleges lagging. Program and student mix may explain some of these differences, which are outlined in the regression models later in the paper. There is little difference by year of entry, but students entering in the winter semester obtained lower retention rates and grades.

Table 12. Outcomes by college, program and cohort characteristics

		Retained or Graduated Yr.1	Retained or Graduated Yr.2	Retained or Graduated Yr.3	Graduate in 4 yrs	Grade B or Higher
Program area	Business	67.9	59.1	52.2	36.3	54.6
	Community Service	77.6	71.4	67.0	58.7	68.8
	Creative & Applied Arts	81.4	74.4	70.9	54.8	71.9
	Health	77.0	73.6	68.6	55.1	70.2
	Hospitality	69.8	61.1	52.5	38.4	65.6
	Engineering/Technology	72.4	63.1	55.0	29.2	59.7
College	A	79.2	73.2	66.7	41.3	70.6
	B	80.4	69.4	65.9	46.9	76.8
	C	70.9	65	61.6	49.4	61.5
	D	70.4	60.9	51.2	36	57.3
	E	79.8	72	65.2	48.7	67.5
Academic Year of entry	2015-16	76.1	66.8	61.8	48.7	63.5
	2016-17	73.6	67.2	62.2	43.3	63.9
	2017-18	77.3	68.9	--	--	65.8
	2018-19	73.1	--	--	--	64.8
Admit term	Fall	76.6	69.2	63	46.1	65.2
	Winter	65.2	58.3	55.1	56.8	56.9
	Spring/Summer	77.6	70.1	64.6	43.4	80.6
	Total	75	67.6	62	46.2	64.6

Note: 4-year graduation rate uses a different cohort base than the above enrolment status at 4 years after entry.

Table 13 shows the proportion of students who were retained or had graduated from their degree programs at each time point. Those who switched and/or graduated from another program were counted as not being graduated or retained in this analysis. Female students outperformed males by a fairly large margin for each outcome, with the greatest spread for the retention/grad rate at year 3 (10 percentage points), and the share with a B or higher (over 11 percentage points). Differences by age groups were not as large, with students under 18 having somewhat higher retention/graduation rates, and students 25 years of age and older having the highest share obtaining a B grade or higher. Students born in Canada had the highest retention, followed by non-international students not born in Canada, with international students having the lowest retention rates.¹⁸ For grades, students born in Canada had the highest share with a B average or better, with those not born in Canada, either international or not, having a similar share. Retention rates differed by neighbourhood income, with students from higher income neighbourhoods (non-international, originating from Ontario) having higher rates than those from lower income neighbourhoods. For grades, the differences by income were narrower, with 62% of students from low-income neighbourhoods obtaining a B or better, compared to almost 66% of middle- or high-income students. Students from the southwest part of Ontario had the highest retention rates; however, students from Eastern or Northern Ontario had a higher share obtaining a B or better.

¹⁸ Note that international students make up a high proportion of business students and are less likely to be block and transfer students, all factors independently associated with low retention rates and grades.

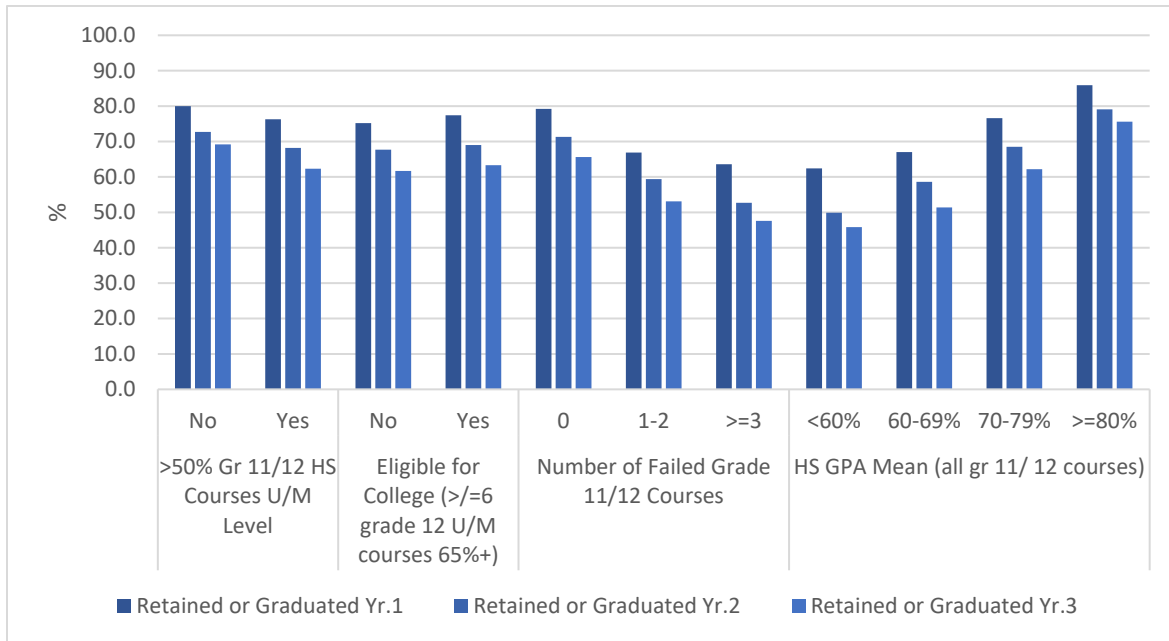
Table 13. Degree outcomes by student characteristics

		Retained or Graduated Yr.1	Retained or Graduated Yr.2	Retained or Graduated Yr.3	Graduate in 4 yrs	Grade B or Higher
Gender	F	77.2	71.4	66.8	53.9	69.8
	M	72.7	63.5	56.9	38	58.6
Degree Start Age	<19	76.9	69.1	62.8	44.9	63.9
	19-20	74.5	67.4	61.2	44.3	60.6
	21-22	75.0	67.8	62.6	49	62.8
	23-24	76.2	67.4	61.4	50.7	67.8
	25+	72.3	65.7	61.5	46.4	72.0
	Total	75.0	67.7	62.0	46.2	64.6
Status in Canada	International	67.7	61.0	53.6	40.7	59.8
	Domestic - Born in Canada	77.4	69.6	64.3	48.8	67.0
	Domestic - Not Born in Canada	73.3	66.4	60.3	42	61.2
Neighbourhood Income Group	Low Income	74.3	67.4	62.8	46.9	62.8
	Mid Income	76.5	68.8	63.3	47.4	66.5
	High Income	79.0	71.8	66.6	48.9	66.2
Ontario Region	Eastern	79.7	70.6	65.6	52.7	74.7
	Central	77.4	70.6	64.8	48.8	64.7
	Metro Toronto	74.0	65.8	62.2	47.1	62.6
	Southwest	82.0	74.6	69.8	46.7	73.4
	Northern	78.0	70.5	63.5	50	79.0

Outcomes by high school background

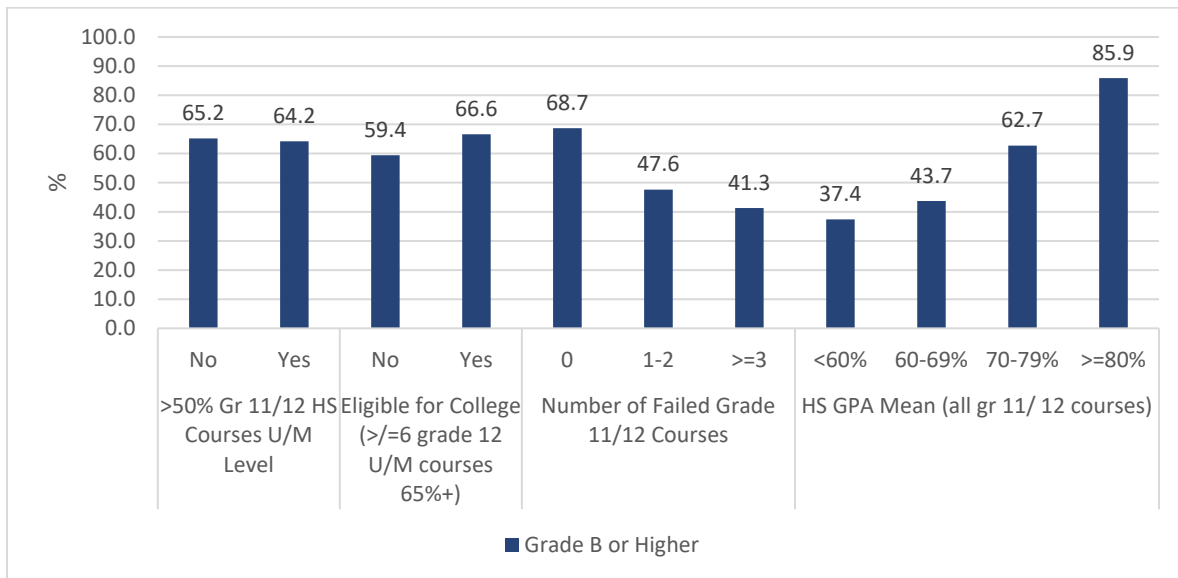
Figure 12 shows retention rates by high school characteristics. In terms of the share of U/M courses and the eligibility for college degree entry, the retention rates do not differ. However, high school academic performance in terms of fewer failed courses and a higher overall GPA (including all course types) was associated with higher retention or graduation. For example, those who took more than half of their courses at a U or M level had a first-year retention rate of 76.3% versus 80% of those who did not. However, students with a HS average (all grade 11/12 courses) above 80% had a year one retention rate of 86% versus 77% for those with an average of 70-79%. The role of the block and transfer pathway in compensating for high school course selection is evident in these findings. However, performing well in high school, regardless of course selection, continues to be associated with further academic performance.

Figure 12. Retention outcomes by high school background



A similar effect of high school background is visible in the percentage of students who obtained a B grade or better in their degrees, with HS grades and performance being of more importance than course selection (Figure 13). However, unlike retention outcomes, students who were “eligible” for college degrees based on HS grades also obtained a B average or better in their degrees (67% eligible vs 59% ineligible).

Figure 13. Grades in degree by HS background (% A/B)



Outcomes by pathway (full population)

Table 14 breaks out the enrolment status by pathway to college. Students who entered the degree from the indirect path from high school were most likely to withdraw from the college and were somewhat more likely to switch out of the degree but stay in the college. Students who entered directly from high school were also somewhat more likely to switch programs than those coming from other transfer pathways, but they had similar “not retained” rates in the degree program as students from other transfer pathways. However, based primarily on the lack of advanced standing from block credit, the non-transfers, and transfers from university had a lower proportion of graduations at years two and three.

Table 14. Enrolment status in degree by pathway and year of study

		HS Direct	HS Non-Direct	Own College (only)	Prev College	Prev Uni	Prev College & Uni	Total
Enrolment Status at yr 1	Not Retained	19.5%	33.5%	20.0%	23.1%	16.5%	20.2%	21.4%
	Retained	76.5%	61.8%	75.3%	74.2%	81.2%	76.0%	74.7%
	Retained - Switched Program	4.0%	4.7%	3.6%	2.5%	2.3%	3.1%	3.6%
	Graduated	0.0%	0.1%	1.1%	0.2%	0.0%	0.8%	0.4%
Enrolment Status at yr 2	Not Retained	25.9%	40.9%	26.6%	29.9%	22.4%	25.2%	27.7%
	Retained	68.8%	53.0%	54.0%	60.5%	64.6%	56.8%	60.8%
	Retained - Switched Program	5.3%	5.2%	4.6%	2.3%	3.6%	4.5%	4.6%
	Graduated	0.0%	0.9%	14.9%	7.3%	9.4%	13.5%	6.9%
Enrolment Status at yr 3	Not Retained	31.4%	48.1%	31.9%	34.6%	28.3%	31.3%	33.4%
	Retained	63.0%	45.4%	33.0%	40.5%	53.8%	37.9%	47.9%
	Retained - Switched Program	5.5%	4.4%	4.5%	2.6%	3.6%	5.7%	4.6%
	Graduated	0.2%	2.1%	30.6%	22.4%	14.3%	25.2%	14.1%

Note: Outcomes of students from unknown or other previous education types are included in total, but not broken out.

Figure 14 shows the differences in academic outcomes by pathway of entry into the degree, with the retention outcome, simplified to show whether a student is either still enrolled in the degree program of entry or graduated, or not. It also shows the 4-year graduation rate and the share of students who obtained a B average or better. Students who came non-direct from HS, defined as being at least 20 years of age and without a record of previous PSE, stand out as having the weakest academic outcomes across all measures. Across the retention outcomes, students with previous college (own and/ or external college) or university, performed similarly to those who entered directly from high school, with previous university students having higher retention rates. A different pattern is seen for the share who graduated within four years. Those who previously attended their own colleges had the highest graduation rate, at 53%, likely associated with the significant share of students with block credit in this group. For grades, students with a previous university (or university and college) pathway outperformed students coming from all other pathways, with averages of B or better.

Figure 14. Outcomes by pathway of degree entry

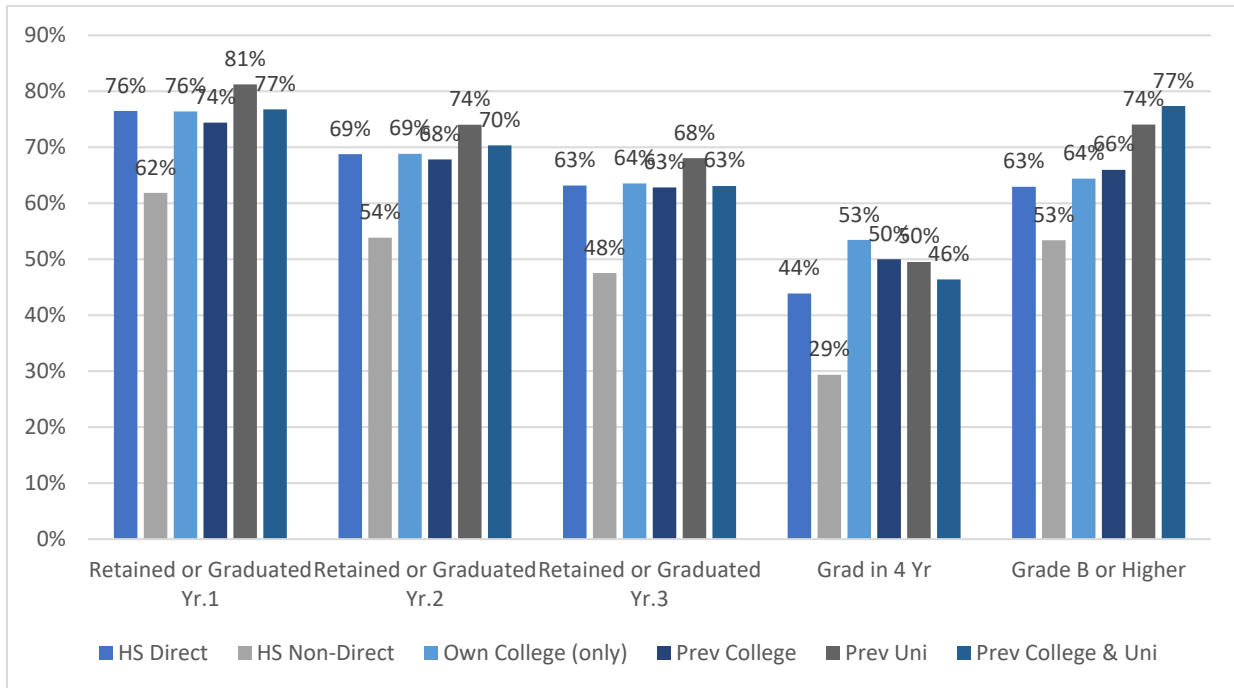


Figure 15 clearly shows that students entering their college degree with block credit, regardless of the amount, outperformed those without block credit, both in terms of retention/graduation and grades. However, the amount of block credit was associated with the share of students who graduated within four years, indicating that more advanced standing shortens the time to attain the degree, as expected.

Figure 15. Outcomes by amount of block transfer

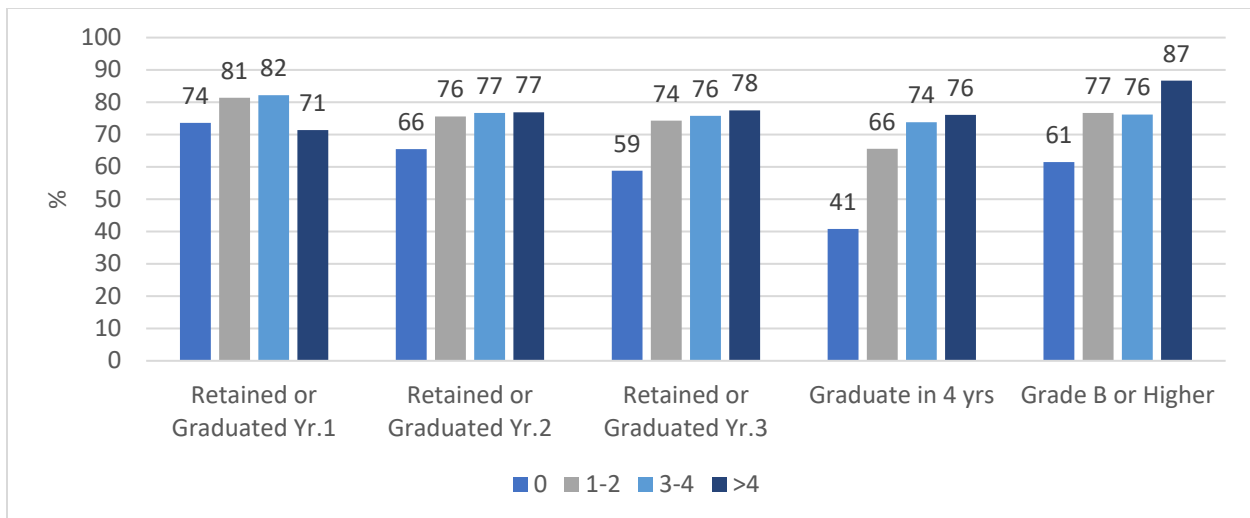


Table 15 demonstrates how the amount of block provided reduces the time to complete a degree. Overall, students who graduated within the time frame of the study (fall 2015 to winter 2020) took 7.7 terms to graduate, with those without block taking nine terms, and those with block averaging 5.8 terms. Over one-third of block transfers graduated within two years, and 65% within three years. By five

years, although the proportion of block transfers who graduated started to plateau, the graduation rate of those without block continued to increase. However, there was still a major gap of 51% versus 75% for block versus non-block students, reflecting the higher share of non-block students who withdrew throughout the degree (Figure 15).

Table 15. Graduation rate and number of terms to graduate by amount of block credit.

	Graduate within 2 years	Graduate within 3 years	Graduate within 4 years	Graduate within 5 years	Average number of terms in degree taken to graduate	
No Block	0.3%	1.7%	40.8%	51.4%	9.0	3,496
1-2 terms	22.4%	54.5%	65.6%	66.1%	6.6	513
3-4 terms	34.3%	67.5%	73.8%	78.7%	5.7	1,570
>4 terms	64.2%	74.5%	76.1%	74.5%	4.5	248
No block terms	0.3%	1.7%	40.8%	51.4%	9.0	3,496
Any block	33.8%	64.6%	71.6%	74.6%	5.8	2,331
Total	6.7%	13.4%	46.2%	54.9%	7.7	5,827

Note: the graduation rate uses calendar years, rather than terms. A student may take three semesters per year.

Students who had previously graduated from a postsecondary credential, either college or university, outperformed both transfers without credentials and non-transfers (Figure 16). Interestingly, those with previous PSE who did not graduate performed similarly to those with no previous postsecondary experience.

Figure 16. Outcomes by previous postsecondary graduation status

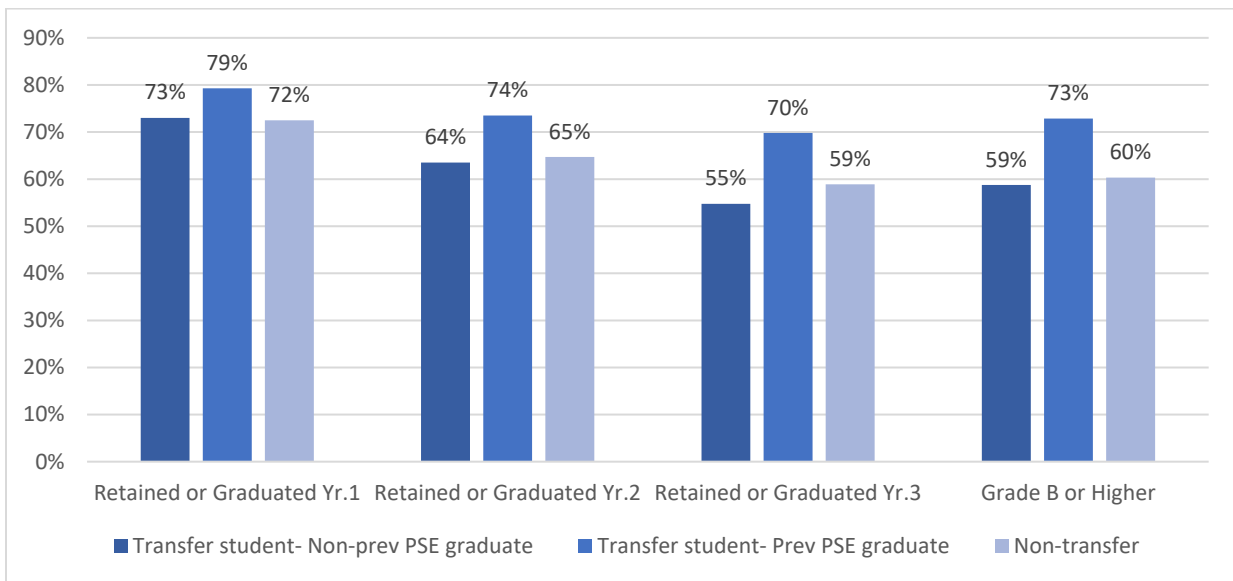


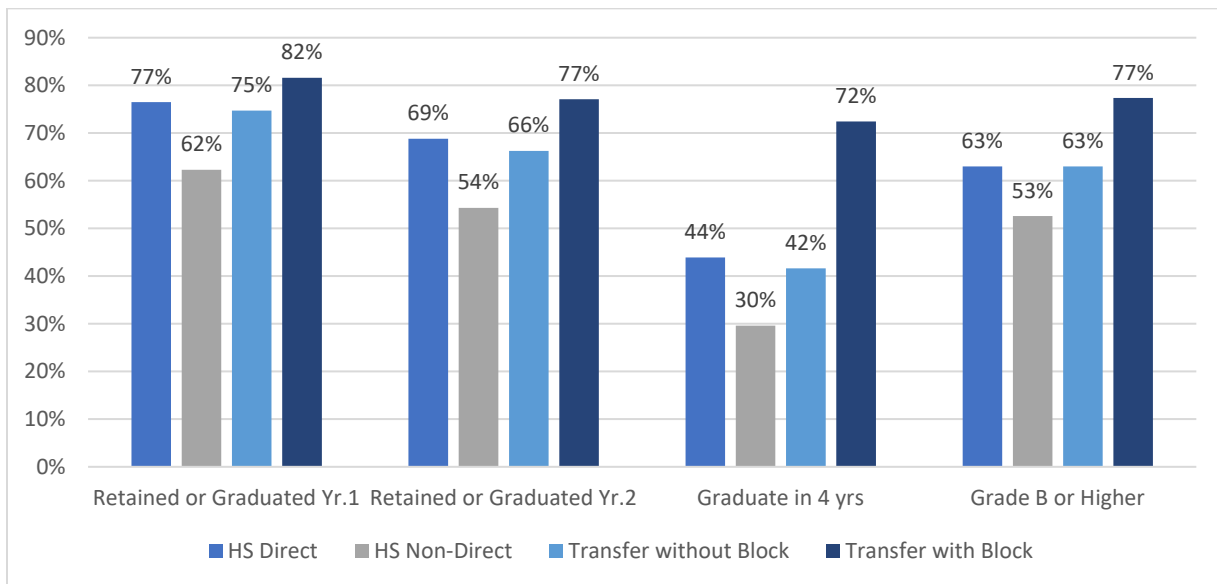
Table 16 breaks out academic outcomes by both pathway and block. It demonstrates that many of the differences in outcomes are associated with whether block credit was provided or not. For retention and graduation rates, students directly from HS performed as well or better than the other pathways when block credit was not provided. There continued to be a gap between the HS non-direct pathway and the others. For grades, students who had previously attended university, whether block was provided or

not, continued to outperform students from other pathways. Figure 17 shows simplified pathways, comparing high school direct and non-direct with transfer, with and without block credit. It shows that direct from HS students had similar outcomes to transfer students without block credit, and transfer students with block outperform all others.

Table 16. Degree outcomes by pathway and block credit

	Retained or Graduated Yr.1		Retained or Graduated Yr.2		Retained or Graduated Yr.3		Graduate in 4 yrs		Grade B or Higher	
	Non-Block	Block	Non-Block	Block	Non-Block	Block	Non-Block	Block	Non-Block	Block
HS Direct	76.5%		68.8%		63.2%		43.9%		63.0%	
HS Non-Direct	62.3%		54.3%		48.0%		29.6%		52.6%	
Own College (only)	71.0%	83.1%	61.5%	78.2%	53.8%	76.6%	38.6%	73.8%	55.5%	75.5%
Prev College	74.8%	73.7%	67.0%	69.3%	60.0%	67.7%	42.4%	65.1%	62.0%	73.1%
Prev University	80.0%	90.1%	72.3%	86.2%	64.7%	90.7%	46.2%	86.0%	71.6%	91.9%
Prev College & Uni	75.1%	79.6%	67.0%	76.6%	55.8%	76.8%	37.2%	66.2%	72.0%	86.7%
Total	73.6%	81.0%	65.5%	76.4%	58.8%	75.5%	40.8%	71.6%	61.4%	77.5%

Figure 17. Degree outcomes by high school and block transfer pathways



Outcomes by pre-degree characteristics

In addition to exploring the effect of the academic background in high school on academic performance in college degrees, this study was able to determine the association with pre-degree academic performance for those who transferred from their own colleges. Table 17 shows the outcomes for internal transfers by program area and credential type. Across all outcomes, it is apparent that students transferring from community service programs had the strongest outcomes in both retention, graduation rates, and grades. Health programs are notable in that, although the retention and

graduation rates were below average, the grades were among the highest. This may be indicative of attrition for non-academic reasons. Students coming from preparatory programs had the opposite result; they had higher retention but below average grades. This could be indicative of highly motivated students, who may not have had as extensive an academic background as other students but who nevertheless persisted. Lower graduation rates at the 4-year mark for preparatory transfers was likely a function of not obtaining block credit. Likewise, when looking at pre-degree credential type, retention was similar across credentials, while those who obtained 1-year certificates (often preparatory programs) were less likely to have completed their degree within four years. Students from more advanced credentials, however, were more likely to obtain a B average or better.

It is also interesting to compare the outcomes of students who did a preparatory program before their degree, and those who came from high school. Compared to the HS direct entry group, described previously (Figure 14), the preparatory program group had higher retention rates, 4-year grad rates, and similar proportions with a grade of B or better (Table 14).

Table 17. Outcomes by pre-degree credential and program area

		Retained or Graduated Yr.1	Retained or Graduated Yr.2	Retained or Graduated Yr.3	Graduate in 4 yrs	Grade B or Higher
Pre-degree Program Type	Business	77.4	70.6	65.7	60.9	67.6
	Community Service	81.6	77.3	74.2	73.6	74.9
	Creative & Applied Arts	78.8	72.9	70.5	57.5	68.4
	Health	67.4	65	61.1	50	76.4
	Hospitality	73.4	64.7	59.4	45.5	72
	Prep/ Upgrading	79.7	71.6	66.2	49.6	62.6
	Engineering/ Technology	81	70	64	50.7	71.1
Pre-degree Credential Type	Ontario College Certificate	81.2	73.8	69.5	52.5	65.2
	Ontario College Diploma	77.6	71.5	66.7	61	68.1
	Ontario College Advanced Diploma	79.2	71.9	67.7	60.6	72.8
Total		78.3	71.4	66.6	56.8	68.6

As would be expected, grades in pre-degree programs were strongly associated with retention and grades in the degree (Figure 18, Figure 19). For example, 86% of students who obtained an A average in their pre-degree program were retained at one year, compared with 79% of those with a B average. In terms of grades in the degree, a similar effect was seen. For example, 89% of those with an A average went on to obtain a B or better in their degree, compared with 71% who obtained a B and 43% of those who obtained a C average pre-degree. Graduating from the pre-degree program also had a major effect on degree outcomes, with 73% of those who graduated before entering their degree obtaining a B or better, versus only 54% for those who did not.

Figure 18. Retention outcomes by pre-degree grades, internal transfers

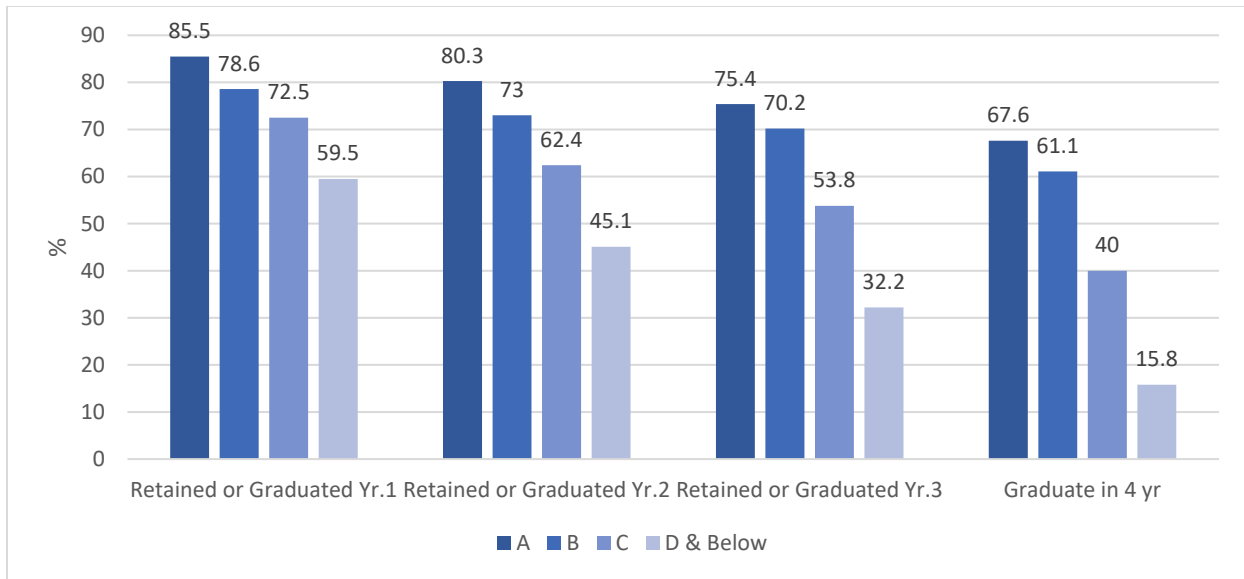
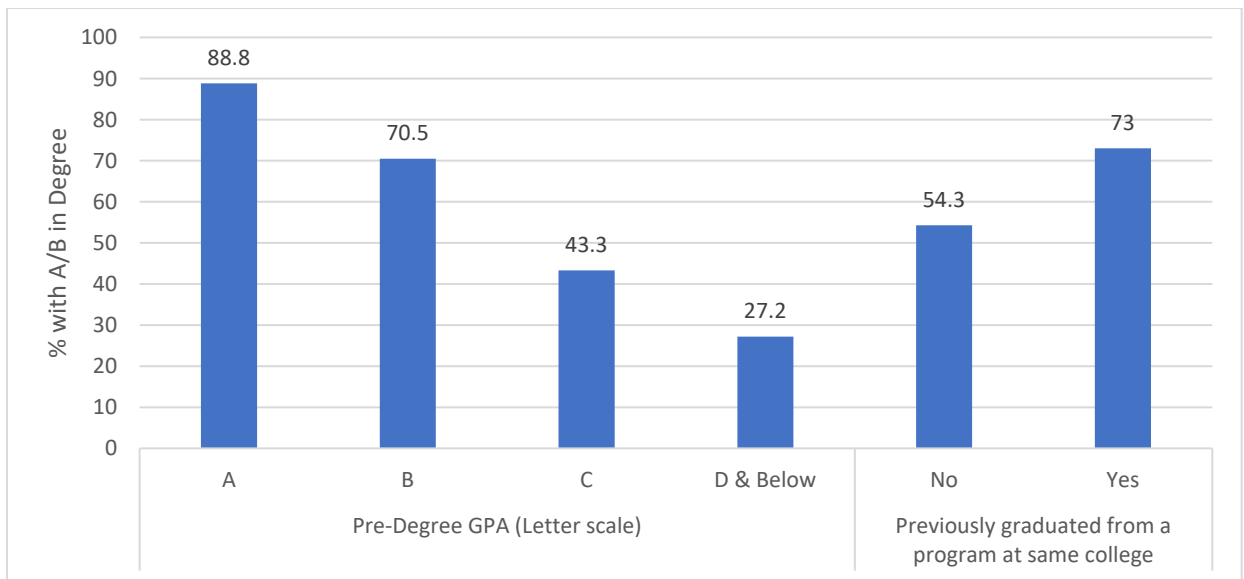


Figure 19. Grades in degree by pre-degree grades and pre-degree graduation status



Graduate Satisfaction Survey results

The degree students in the study, those who entered a first degree after the summer of 2015 and graduated in the 2017-18, were linked into the full KPI Graduate Satisfaction Survey and outcomes were compared. The response rates were strong, with two-thirds of graduates responding and with a similar level for both populations (Table 18). Those graduating within three years were more likely to be female, older than 25 years of age, and less likely to be international students. These results for graduates were similar to the transfer profile seen earlier. Students graduating within three years were more likely to report a disability, a result that held across age, international status, and gender categories. There were,

however, minimal differences in registration for disability services between those who graduated within three years and others.

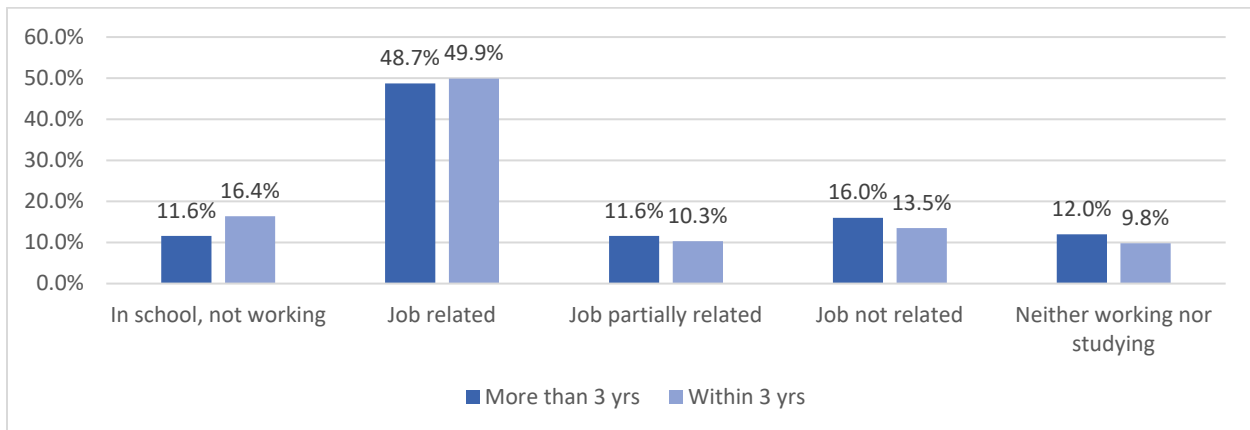
Table 18. Graduate outcomes by student characteristics, six months after graduation, 2017-18 graduates

		Graduation within 3 Years		Total
		More than 3 Yrs	Within 3 Yrs	
Response rates	Respondents	1,539	425	1,964
	Total Graduates	2,285	614	2,899
	Response rate	67.4%	69.2%	67.7%
Gender	% Female	57.8%	66.3%	59.6%
Age	< 22	0.4%	0.0%	0.3%
	22 - 25	70.3%	48.2%	65.6%
	> 25	29.4%	51.8%	34.1%
Status	% International	9.5%	5.9%	8.8%
Attendance at time of graduation	% Full time student	86.4%	84.9%	86.1%
% who consider themselves to have a physical, intellectual, mental health, or learning disability	% yes	10.5%	13.9%	11.2%
	Respondents (y/n)	1275	331	1606
% Registered with the Office for Students with disabilities (y/n)	% yes	10.6%	11.4%	10.8%
	Respondents (y/n)	1,290	334	1,624

* All variables are administrative apart from disability, which are from the survey. For the disability questions, only those who answered yes or no were included in the results.

Figure 20 shows the activity of surveyed graduates, six months after graduation. Those graduating within three years were more likely to be back in school, whereas those who graduated after three years were more likely to be in a job not related to their studies or to be neither back in school nor working.

Figure 20. Status of graduates, six months after graduation, 2017-18 graduates



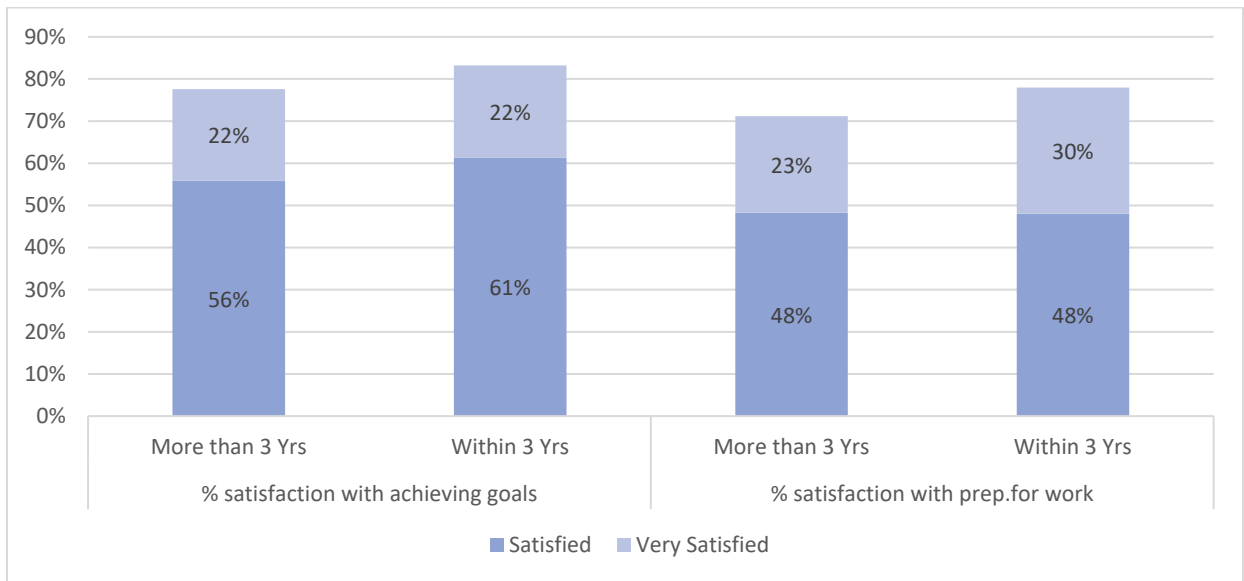
Graduates who completed their programs within three years earned slightly more with respect to both the annual salary of full-time workers and the hourly salary of full and part-time workers (Table 19). Graduates who completed their degree within three years were more satisfied with the role of the

college in helping them achieve their goals (83% vs 78%) and with their preparation for work (78% vs 71%) (Figure 21).

Table 19. Earnings for college graduates, six months after graduation, 2017-18 graduates

	Time to grad	Mean	SD	n
Average Annual Salary (full time)	More than 3 yrs	\$43,535.25	\$14,754.87	796
	Within 3 yrs	\$44,828.17	\$13,220.16	208
	Total	\$43,716.03	\$14,570.46	1,006
Salary per Hour (full and part time)	More than 3 yrs	\$21.15	\$7.29	944
	Within 3 yrs	\$22.34	\$7.27	246
	Total	\$21.40	\$7.30	1190

Figure 21. Graduate satisfaction, 6 months after graduation, 2017-18 graduates



Regression results

As described in the methodology section, three populations were analysed for each outcome of interest: full population, all transfers (internal and external), and internal transfers only (previously attended their own colleges).

Dependent variables included retention or graduation after one, two, and three years, graduation within four years, and grades of B and above. Since these variables were designed as dichotomous variables, taking values 0 or 1, logistic modelling was employed for the econometric analysis. Overall, four models were estimated, each for both the full and Ontario populations. Models one and two are based on the full population, the only difference being how the pathway variable is defined (transfers vs non-transfers or all detailed pathways). Model three is based on the transfer population (internal and external

combined). Model four is estimated on the internal transfer population.¹⁹ The “Ontario” population includes those with Ontario high school records and those with a valid permanent Ontario postal code; it excludes international students. Regression tables are in Appendix 3.

Full population

Pathway effects

In the analysis with a simplified pathway variable, transfer students are more likely than non-transfer students to be retained in their degree program (Model 1, not shown).²⁰ These students are also more likely to graduate within four years and get a B average or better. Controlling for high school records and income largely confirms these results.

In the model with a detailed pathway variable, the reference group was the direct pathway from high school (Appendix 3.1 1, Appendix 3.1 2). Students who came indirectly from high school are less likely to be retained, graduate within four years, and get a B average or better, compared to high school direct-entry students. These effects also hold within the Ontario-only population, when controlling for high school grades.

Internal transfer students are more likely to graduate within four years but are less likely to obtain a B average or better, compared to high school direct students. When controlling for high school grades, within the Ontario-only population, the only significant outcome is that they are less likely to be retained at year three.

There are minimal significant differences between students who transferred from other colleges and students who enrolled directly from high school, even when controlling for high school grades. The exception is retention at the three-year mark, which is lower than for direct entrants, both overall and within the Ontario population.

Previous university students are more likely to have higher retention rates (after one and two years) and grades, compared to direct-entry students. When including high school grades for the Ontario students, these results hold only for the grades outcome.

Compared to students with a direct pathway from high school, students who have both previous college and university experience are less likely to be retained after three years but more likely to obtain a B average or better. This effect only holds for retention at year three, within the Ontario population.

In summary, students from university outperform direct entry high school students on many of the outcomes studied. Students transferring from another college or students who previously attended their own colleges are not significantly different, whereas non-direct HS students underperform relative to direct entry high school students.

¹⁹ Two models are not reported and can be shared upon request. One includes the simplified pathway variable of transfer vs non-transfer (model 1 described above). For the internal transfers, an additional model including the pre-degree credits (which were not available for one college) was also estimated.

²⁰ The term “retention” will be used throughout to indicate those either still enrolled or graduated from degree program of entry.

Socio-demographic variables

Males are less likely than females to be retained and are also less likely to graduate within four years and to achieve a B average or better. These results also hold when controlling for high school variables, except for the one-year retention, for which there is no significant gender effect.

In general, the older age groups, particularly students 21 and older, have stronger retention rates and grades, relative to those less than 19 years of age. The effect of age on grades is especially strong in the full population and even stronger within the Ontario population.

Compared to students born in Canada, international and domestic students not born in Canada are less likely to be retained after one year, but with no differences in the other years. This result disappears when controlling for high school and income effects in the domestic population not born in Canada. When looking at graduation rates and grades, domestic students not born in Canada are less likely to graduate within four years and get a B average or better (this result also applies to the Ontario population). However, there is no significant difference between international students and students who were born in Canada when looking at graduation rates and grades. This differs from the descriptive results, in which international students and students born in Canada differed across all measures. This is due in part to international students being more likely to take business programs and less likely to be block and transfer students, all factors independently associated with low retention rates and grades.

Students from high income neighbourhoods are 1.2 times more likely to be retained for years one to three, compared to students from low-income neighbourhoods, with no significant effect on grades or graduation rates.

Degree program area and college of attendance

Students enrolled in community service, creative and applied arts, and health degrees outperformed students in business degrees (the reference) across all outcomes. Across all the models, students in these areas are between 1.5 and two times more likely to be retained after one, two, and three years after entry. Students from these three program areas are also 1.5 to 2.4 times more likely (dependent on the regression model) to graduate within four years and get a B average or better. These results also extend to the Ontario population. Enrolling in a degree program in the engineering/technology area increases the likelihood of being retained after one and two years as well as that of achieving a B average or better. However, this result does not hold after controlling for high school and income effects (Ontario population).²¹ For the four-year graduation rates, engineering/ technology students have reverse results, with lower rates than business in both the full and Ontario populations. There is no significant effect of enrolling in a degree program in the hospitality area relative to the business area.

College of attendance is also a significant factor, even after controlling for a wide variety of factors, both overall and within the Ontario population, indicating that differences are not due to program mix, high school admission grades, transfer pathway, or sociodemographic factors. Differences between institutions are fairly consistent for retention and grades, with one institution (college B) outperforming the reference college, and the other three underperforming on several of the outcomes. However, four-year graduation rates do not always show the same pattern. College B continues to outperform others for retention and grades, whereas the reference college obtains similar four-year graduation rates to the other three colleges, which may be attributable to other unmeasured variables.²²

²¹ Analysis by program area shows engineering/tech students have stronger HS backgrounds than business students, which likely explains the differences.

²² For example, some degrees may take 4.5 years rather than 4 years to complete.

High school variables

As seen in the descriptive results, high school grades are highly associated with strong degree outcomes. Students with higher high school grades, i.e., greater than 70%, are generally more likely to stay enrolled at the one-, two-, and three-year mark, compared to students with a GPA of less than 60%. These students are also significantly more likely to graduate within four years and to get a B average or better. A similar pattern is seen for the number of failed courses in high school, with those who did not fail any courses outperforming those who failed one to two for year-one retention rate, grades, and 4-year graduation rates.

In contrast, students who took mainly university or mixed preparatory courses in high school, compared to those who took mostly college preparatory courses, are less likely to be enrolled after one and three years, and to graduate within four years of enrolment. There is no difference in the share getting a B average or better. This can be explained by a predominance of students who have taken the college transfer route, as seen in the descriptive data (Figure 8). Students who have taken the college transfer route often also obtain block transfers because they do not have the prerequisites from high school. This pathway was found to be a remarkably successful one. Similarly, high school students who were eligible for college based on high school background alone (i.e., >65% GPA, 6+ U/M courses) are not significantly different on any of the outcomes analyzed, compared to students who are not eligible for college.

Transfer population

Pathway effect

Model 3 (Appendix 3.1 3, Appendix 3.1 4) restricts the analysis to transfer students only, and thus removes those without a previous postsecondary record. Using internal transfers as the reference, results show that students who previously attended another college do not differ in their retention rates, but they are more likely to get better grades, when high school grades are not in the model. Students transferring from university are more likely, across all outcomes, to outperform internal transfers. This result extends to the analysis based on the Ontario population only. Students with a combined previous college and university background are 1.2 times more likely to be retained after two years, in the full population only. They are also more likely to get a B average or better, in both the full and the Ontario- only population.

There is a strongly significant effect of being granted block terms on retention rates, graduation rates, and grades in the full population and within the Ontario-only population. In general, these students (compared to those who did not receive any block credit) are about twice more likely to be retained after one and two years, with similar coefficients at each block credit level. Students with block credit are significantly more likely to graduate within four years and to receive a B average or better in their degree, with higher amounts of block credit associated with higher coefficients.

In addition, graduating before transferring, rather than transferring without completing a credential, results in students being about 1.6 times more likely to be retained in following years and about twice more likely to graduate within four years of degree entry and achieve a B average or better.

Socio-demographic variables

In contrast with the full population, within the transfer population, the gender effect is inconsistent across models. Whereas female students have stronger graduation rate and grades, they do not differ

from male students at any of the retention time points. As well, after controlling for high school variables and income, the significant effects disappear.

Relative to transfer students who entered their degree before age 21, older students are less likely to be retained or to graduate within four years. However, older students are more likely to obtain a B average or better, particularly when high school grades are included in the model.

Compared to those born in Canada, domestic students not born in Canada are not significantly different in their retention but are less likely to get a B average or better or graduate within four years. International students, compared to those born in Canada, are more likely to be retained after two years but less likely to receive a B average or better.

Relative to low-income students, regressions show that students coming from high-income neighbourhoods are more likely to be retained after both one and two years. Students from mid-income neighbourhoods, but not high-income neighbourhoods, are more likely to obtain a B average or better. However, neighbourhood income does not play a significant role in graduation rates within the transfer population.

Degree program area and college of attendance

Compared to business students, those enrolled in programs in the areas of community service, creative and applied arts, and health have a strongly significant higher likelihood of being retained, to graduate within four years, and to obtain a B average or better (this result extends to the Ontario population as well). Students enrolled in the engineering/technology area are more likely to be retained at year-2 and to achieve a B average or better, but only in the full population (year-1 retention is significant for both full and Ontario only populations). However, there is no statistically significant difference for graduation rates. The hospitality area does not have a significantly different impact on any of our outcome variables.

As in the full population, there remains some difference between colleges in the transfer population, but with less consistency. College B continues to outperform the reference college; however, two of the three colleges that previously had weaker outcomes generally differ in only some models, with only college C continuing to underperform relative to the reference. This indicates that within the transfer population, the outcomes across the college are somewhat more homogenous.

High school variables

Within the transfer student population, high school grades continue to have a significant influence on outcomes. Compared to students with grades less than 60%, students with a high school GPA greater than 60%, are more likely to be retained within two years of starting a degree program. Students with an A average in high school are also 2.5 times more likely to graduate within four years. The association between high school grades and college grades is particularly strong, with students with a high school average of 70%-79% and >80%, 2.7 and 7.5 times more likely to get a B average or better, respectively. There is no significant effect of failing HS courses on either retention rates, graduation rate, or grades.

Students who took mainly university and mixed preparatory courses in high school are 1.2 times more likely to achieve a B or better, compared to those who did not. However, there is no evidence of differences related to retention rates and graduation rates. Similarly, high school students who were

eligible for college based only on high school grades are not more or less likely to be retained, but they are 1.2 times more likely to get better grades, compared to non-eligible students.

Internal transfer population

Pathway effect

Students who previously graduated from their own colleges before transferring are more likely to be retained after one year. Controlling for high school background and income shows that these students are more likely to be retained one and two years after first enrollment and to get a B average or better (Appendix 3.1 5, Appendix 3.1 6).

In the full population, students who received up to four block terms are more likely to be retained after one and two years. Those students who are granted more than four blocks are found to be about 2.8 times more likely to be retained after two years. Students who were granted any number of block terms are also more likely to graduate within four years and do so with a B average or better. In the Ontario population, results show that students with three to four block terms are 1.5 times more likely to be retained after one year. Those who are granted more than three blocks are about twice more likely to be retained after two years. For this population, any number of blocks will have the effect of increasing the likelihood of graduating on time between three to six times. Only those Ontario students who are granted more than three blocks are more likely to graduate with a B average or better.

Pre-degree variables

Apart from health and non-APS programs, there is no particularly significant effect associated with the area of pre-degree studies, compared to the business reference group. In particular, in the full population, we find that students in the health area are less likely to be retained one and two years after degree enrollment but 1.8 times more likely to achieve a B average or better, compared to business students. For Ontario students, a decreased likelihood of being retained after two years is found. Students who enrolled in non-Ontario credential pre-degree programs are also less likely to be retained after one year and to graduate within four years, an effect seen only in the full population.

Compared to students who earned a three-year diploma, those who earned a one-year certificate or a two-year diploma are less likely to get a B average or better in their degree. This result applies to both the full and Ontario-only populations. For Ontario students, it is also found that those who earned a one-year certificate are less likely to be retained after one year, while those with a two-year diploma are more likely to be retained after two years.

There is strong evidence that students with a pre-degree GPA lower than an A are less likely to be retained, graduate on time, and get a B average or better. In other words, students who do well in their pre-degree programs are more likely to achieve good degree outcomes.

Socio-demographic variables

In contrast to the models described previously, a significant effect of gender on retention or four-year graduation rates for the population who transferred from their own colleges was not found. However, in the full population males are less likely to achieve a B average or better, an effect that disappears in the Ontario population which includes high school background.

Students who enrolled at between 23 and 24 years old are less likely to be retained after two years and graduate after four years, compared to those who enrolled at 20 years old and younger. Those who enrolled at 25 years old and older are also less likely to be retained and to graduate on time.

Domestic students who were not born in Canada are more likely to be retained after two years. International students have a higher likelihood to be retained after two years and to graduate after four years, compared to students who were born in Canada.

While there is no significant neighbourhood income effect on retention and graduation rates, results show that students from mid-income neighbourhood are more likely to get a B average or better, compared to those residing in low-income ones.²³

High school variables

There is no significant effect of having taken mainly university and college preparatory courses on retention, graduation rate, or grades. Also, while high school grades seem not to matter for retention, results show that achieving a high school average of at least 70% increases the likelihood of achieving a B average or better in the degree.²⁴ Similarly, those who would have been eligible for the college degree based on high school background did not differ significantly on retention rates, graduation rate, or grades.

Degree program area and college of attendance

Students enrolled in degree programs in the community service area are more likely to get a B average or better, compared to business students. Ontario students in this area are also more likely to be retained after one year and are twice more likely to graduate on time. Students in the creative and applied arts area are more likely to be retained and about twice more likely than business students to graduate on time and receive a high degree average. Those enrolled in degrees in the health area are also more likely to be retained and to graduate on time. Results do not show a significant effect on retention of attending programs in the hospitality and engineering/technology areas. However, students enrolled in engineering/technology programs are more likely than business students to obtain a B or better.

Different patterns by college of attendance occur when focussing on the internal transfer population. College B, which previously outperformed the reference college, only outperforms in the achievement of a B average or better and one-year retention, in the full population. The differences in the other three colleges are inconsistent across outcomes.

Overall, factors that were previously associated with success in the full student population or transfer population are no longer or inconsistently significant (gender, income, high school background), or have switched to becoming a positive effect on outcomes (students not Canadian-born). The main drivers of success in the internal transfer population are obtaining block credit and high pre-degree grades. As well, strong high school grades, but not course selection, have a significant effect, specifically on grades in the degree.

²³ The same trend for students from high-income neighbourhoods was found with a $p < 0.1$.

²⁴ This result relates to two GPA brackets, 70%-79% and 80% and more.

Discussion

Pathways to college degrees

This study, using mainly administrative data, tracked over 21,000 Ontario college degree entrants through the years 2015-16 and 2019-20. The five colleges included comprise 85% of college degree graduates in Ontario in 2019-20. The results show that both the academic and sociodemographic backgrounds of college degree students were diverse. Only one-third of students came directly from high school, with an additional 12% coming indirectly, and 55% of degree entrants had some form of postsecondary attendance before entering their college degree. Over a third of students had previously attended their own colleges, 17% attended a university, and over 11% attended a different college before entering their college degree, with many students attending more than one institution. Overall, a fifth of all degree entrants obtained advanced standing (block credit), with 35% of transfers obtaining block credit, internal college transfers getting the most credit, and university transfers getting the least. All colleges in the study had a similarly diverse student pathway profile.

Academic Outcomes

The key question of this study was whether students who enter college degrees at an advanced semester (block credit pathway), irrespective of pathway, fare as well as students who take all four years of the degree. The study found that the 20% of degree entrants who took block pathways actually outperformed those who had not, in terms of all measured outcomes, including retention rate, graduation rate and grades. For example, 77% of block students obtained a B average or better, compared with 61% of those without block credit. Similarly, 72% of block students graduated within four years, compared with 41% of those without block. To determine whether the effect of block transfers was due to the block itself or the previous postsecondary experience, regression models were conducted within the transfer student population. Regression results showed that within each of the full transfer population and the internal transfer (own college) population, transfers who obtained block credit also had stronger outcomes than those without block credit, when controlling for a variety of variables.

Overall, 75% of degree students continued into their second year of their degree program, 68% of entrants either graduated or continued to the third year of their degree of entry, and 65% obtained a B average or better. Within four years of entry, 46% graduated from the degree they started. Some differences in outcomes were found due to sociodemographic factors, pathways, degree program area, academic background, and college of attendance.

In terms of the effect of student pathway, students without any previous postsecondary education and who were over 19 years of age (HS non-direct), lagged behind those from other pathways, both in the descriptive analysis and in the regression models. A much higher share of this group did not have the required HS grades and courses to enter the degree than those under 19 years of age who entered directly. Further investigation into the sub-pathways of this population is necessary.

Despite having weaker HS backgrounds, in general previous college students (from both internal and external) performed similarly to those entering directly from high school in terms of retention and grades and were more likely to graduate within four years. University students performed somewhat better than direct entry, even with limited pathways to degrees. This leads to the question of whether pathways for university students should be enhanced upon program and curricular review, particularly for prevalent programs and universities of origin.

This study also investigated internal transfers, i.e., students who entered a non-degree initially and then transferred within the college to a degree, including those with and without advanced standing in the degree. This analysis was more comprehensive since it was possible to obtain students' pre-degree history, particularly pre-degree grades. With the internal college transfers, it was found that sociodemographic characteristics and high school grades mattered little on academic outcomes. Degree program area, pre-degree grades, and college of attendance had the main impacts on outcomes, while high school grades and previous graduation at their college were only significant with GPA as the outcome in the regression models. This effect was seen in a previous study with college-to-university transfers, in which student characteristics did not have an impact on post-transfer outcomes for Seneca business students who transferred to university (McCloy, et al, 2019). Success post-transfer appears to be more reliant on academic performance than other characteristics. Similarly, a previous study from an Ontario college found that male transfer students did not differ from their female counterparts in terms of retention, however they did differ in the non-transfer population (Gorman, et al, 2012). This may indicate that the pre-degree academic pathway filled in any potential academic gaps, ensuring success after transfer.

It is also interesting to note the relative success of students entering the degree from the college preparatory programs. These programs offer an alternate pathway to a degree for those who either don't have the specialized background (e.g., art fundamentals), or do not have the high school grades, or were previously unsure of their program of interest (general arts and science). However, they rarely provide advanced standing or transfer credit. Descriptive data show that this group had higher retention and graduation rates, and similar grades compared to the rest of the population. In addition, when compared to other internal transfers, those from preparatory programs had similar retention, but with lower graduation rates and grades. In the regression models, the preparatory programs did not differ from other pre-degree program areas. It appears that these preparatory programs provide a viable access pathway to college degrees, and a closer look at which specific programs are the most successful is warranted.

Student characteristics by pathway

Students who transferred from university or entered their college degree directly from high school were more likely to have come from higher-income neighbourhoods, compared to those who came from their own or another college, or those taking the non-direct pathway from high school. As well, students not born in Canada were less likely to have enrolled directly from high school than the other pathways. The results from high school records show that students who transferred from college, either their own or an external college, were the least likely to have taken university preparatory courses in high school and to have obtained the grades and courses required for admission to a college degree. Clearly, college transfers relied on a transfer pathway for degree access.

Focusing on the profile of those who obtained advanced standing (block credit), the study found that females, older students, domestic students not born in Canada, and low-income students are the most likely to enter their degree through a block credit pathway. Although there was no administrative data on students with disability, the results from the 2017-18-matched KPI Graduate Satisfaction Survey suggested that students graduating within three years (advanced standing) were more likely to report a disability than the rest of the sample who took longer than three years, indicating that students with disabilities are also more likely to take the block transfer pathway. While in high school, degree entrants

who took mostly college preparation rather than university preparation courses, failed more courses, and had a lower averages, averaged the most block credit when entering their college degree. It is apparent that these students likely did not have the aspirations for a degree during high school and were able during college to achieve the academic requirements to enter the degree at an advanced standing.

It is well understood that in Ontario and other jurisdictions, university students are more likely to be higher income and have parents with degrees, and less likely to have a disability or to be Indigenous than college students (Zhao, 2012; Ford, et al, 2019; Statistics Canada, 2022). There is some evidence that this holds true within college credentials, with college degree students being more likely to report having a parent with PSE, and slightly less likely to have a disability or to be Indigenous, than non-degree college students²⁵ (Wheelahon, 2017). In order to increase diversity of those attaining college degrees Skolnik and others (2018) suggested that pathways from diploma to degree are needed, particularly the 2 + 2 model (2-year diploma/2 years in degree) (Skolnik et al, 2018). The results of the current study seem to affirm this. The block pathways that colleges have developed are effective in increasing the diversity of degree students in Ontario and provide an opportunity for students to bridge and enhance their academic skills, to not only enter a college degree but also to utilize their diploma to enter at an advanced level. The pathway option, therefore, offers a second chance for students who did not consider a degree, whether at a college or university, while in high school. The pathway route provides them with a fresh start to prove themselves academically while earning advanced credit towards their degree.

Pre-degree characteristics of internal transfers

This report included a special focus on students who had previously attended their own colleges before entering the degree. This was possible due to the availability of historical pre-degree student records housed within each college.²⁶ These internal transfers encompassed 31% of all degree entrants, 18% of whom also attended additional institutions. Overall, the data shows that students are moving within the same subject area, ranging from 68% moving within hospitality to 94% moving within community service. The role of preparatory programs as feeders to college degrees is also evident, with a quarter of all students who transferred internally originating in a preparatory program in either general arts and science or in specialized areas such as creative and applied arts or health. Overall, students transferring internally had a strong academic history within the college, with 76% having a credential and 77% who obtained a B average or better pre-degree. This strong academic performance in college is evident in the number of students who qualified for block credit, with almost 50% qualifying overall.

Graduate Outcomes

As discussed in the introduction, labour market outcomes of transfer students are infrequently studied, and outcomes specific to transfers into college degrees have not been studied in Ontario. The preliminary descriptive findings with one year of graduate data from the provincial KPI Graduate Satisfaction Survey indicate that satisfaction, earnings, and job relatedness may be somewhat higher for

²⁵ Note, however, that the Ontario Colleges who grant degrees are concentrated in the GTA and therefore also have a smaller Indigenous population overall.

²⁶ With the exception of individual transfer course credit grades, colleges did not centrally house pre-degree GPAs and pre-degree program from previous institutions. In previous research student education numbers were shared with the transfer institution, so that information was transferred.

those who took the transfer route. It may be that students who enter a diploma first and then decide to continue in a similar field have a higher attachment to and interest in that field. Further study using more years of data from the survey is warranted.

Key findings and recommendations

1. Pathways into college degrees are very diverse:
 - Only one-third are “traditional”, i.e. under 20 years old with no previous PSE; 55% have previous PSE with 69% having a postsecondary credential, and 20% obtained block credit.
 - Students with block credit are more likely to be from lower income households and to not be born in Canada, indicating it also may be a pathway for diverse students.
2. Students from a block transfer pathway strongly outperform others:
 - Provides the opportunity to obtain a degree for those without HS grades or courses, provided they are successful in their pre-degree program.
 - Some preliminary evidence that labour market outcomes and satisfaction, six months after graduation, is stronger for graduates with advanced standing.

Recommendations:

- Continue to encourage academically strong diploma students to transfer into degree programs.
- Continue to enhance and expand other college-to-degree pathways.
- Review opportunities where more Ontario college certificate level preparatory programs could be created or enhanced to provide access to degrees. These pathways proved to be fairly successful in the current study.
- University transfers perform quite well and comprise a large share of degree entrants. However, block transfers for university students are rare. Consider expanding and designing university-to-college degree pathways, particularly for high affinity programs.
- Investigate and consider providing more support or bridging for students who entered non-directly from high school, since their outcomes lagged compared to other pathways.

References

- Anisef, P., Robson, K. & McDonald, E. (2020). Student Transfer Processes and Labour Market Outcomes: A Life Course Analysis of the Class of '73. Toronto: ONCAT.
- Davies, S. & Pizarro Milian, R. (2020). Transfer student outcomes at the University of Toronto: GPA, access to STEM, and graduation. Toronto: Ontario Council on Articulation and Transfer.
- Dooley, M.D., Payne, A.A., Robb, L. (2016) Understanding the Gaps in Postsecondary Education Participation Based on Income and Place of Birth: The role of high school course selection and performance. Toronto: Higher Education Quality Council of Ontario
- Drewes, T., Maki, K., Lew, K., Wilson, M., & Stringham, K. (2012). An analysis of CAAT transfer students' academic performance at Trent University. Toronto: College-University Consortium Council.
- Finnie, R. Dubois, M., & Miyairi, M. (2021). Post-Graduation Earnings Outcomes of Ontario Transfer Students. Evidence from PSE-Tax Linked Data. Toronto: ONCAT.
- Ford, R., Shek-wai-Hui, T., Nguyen, C. (2019). Postsecondary Participation and Household Income Appendix. Toronto: Higher Education Quality Council of Ontario.
- Gorman, G., Phelps, C. & Carley, R. (2012). Exploring the Success and Challenges of Diploma to Degree Transfer Students. Toronto: ONCAT.
- Martinello, F., & Stewart, J. (2015). Transfers from college to one Ontario university: A four-year outcome study. *Canadian Journal of Higher Education*, 45(1), 18–36
- McCloy, U., Williams, K. Childs, S.E. & Manoir, K. (2019). Transfer patterns of Seneca's business students: Student profile and academic success at Toronto universities. Toronto: ONCAT.
- McCloy, U., & Liu, S. (2010). What are the Influencers of Graduate Satisfaction and Labour Market Outcomes of Ontario College Graduates? An Analysis of Ontario's College Graduate Satisfaction Survey Results. Toronto: Higher Education Quality Council of Ontario.
- Missaghian, R., & Hon, H. (2022) ONCAT DataPilot Report: Trent University. Toronto: ONCAT.
- Postsecondary Education Quality Assessment Board (2021). Manual for Public Organizations (including Ontario Colleges). Toronto: PEQAB.
- Robson, K., Maier, R., Anisef, P., Brown, R.S. (2019). High School Success and Access to Postsecondary Education. Toronto: Higher Education Quality Council of Ontario.
- Skolnik, M., Wheelahan, L., Moodie, G., Liu, Q., Adam, E., & Simpson, D. (2018) Exploring the potential contribution of college bachelor degree programs in Ontario to reducing social inequality, *Policy Reviews in Higher Education*, 2:2, 176-197
- Smith, R., Decock, H., Lin, D., Sidhu, R., & McCloy, U. (2016). Transfer pathways in higher education: York University and Seneca College as a case study. Toronto: Higher Education Quality Council of Ontario.
- Statistics Canada. (2022) Table 98-10-0397-01 College, CEGEP or other non-university certificate or diploma by selected sociocultural characteristics: Canada, provinces and territories, census metropolitan areas and census agglomerations with parts.
<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=9810039701>
- Steffler, M., McCloy, U., & Decock, H. (2018) Understanding university transfer pathways of first-generation students and students from low income neighbourhoods: Evidence from a large Toronto

college. Toronto: ONCAT

Wheelahan, L., Moodie, G., Skolnik, M., Liu, Q., Adam, E., & Simpson, D. (2017). CAAT baccalaureates: What has been their impact on students and colleges? Toronto: Centre for the Study of Canadian and International Higher Education, OISE-University of Toronto

Zhao, H. (2012). Postsecondary Education Participation of Under-Represented Groups in Ontario: Evidence from the SLID Data. Toronto: Higher Education Quality Council of Ontario.

Appendices

Appendix 1. List of Program titles by Program area

Program area	MCU Program Title
Business	Bachelor Of Applied Business (e-business Supply Chain Management) Bachelor Of Applied Business (financial Services Management) Bachelor Of Applied Business (financial Services) Bachelor Of Applied Business (human Resources Strategy and Technology) Bachelor Of Applied Business (international Commerce and Global Development) Bachelor of Applied Business (Integrated Accounting and Information Technology Management) Bachelor of Applied Business (International Accounting and Finance) Bachelor of Applied Business (International Business Management) Bachelor of Commerce (Accounting) Bachelor of Commerce (Business Management) Bachelor of Commerce (Finance) Bachelor of Commerce (Marketing)
Community Service	Bachelor Of Applied Arts (paralegal Studies) Bachelor of Applied Arts (Behavioural Psychology) Bachelor of Applied Arts (Child Development) Bachelor of Applied Arts (Criminal Justice) Bachelor of Applied Human Services (Community and Criminal Justice) Bachelor of Behavioural Science Bachelor of Community Development Bachelor of Community Mental Health Bachelor of Early Childhood Leadership Bachelor of Early Learning Program Development Bachelor of Interpretation (ASL-English)
Creative and Applied Arts	Bachelor of Applied Arts (Public Relations) Bachelor Of Applied Arts (animation) Bachelor Of Applied Arts (creative Advertising) Bachelor Of Applied Arts (illustration) Bachelor Of Applied Arts (interior Design) Bachelor Of Applied Business (fashion Management) Bachelor Of Applied Music (contemporary Music) Bachelor of Applied Arts (Film and Media Production) Bachelor of Applied Arts (Game Design) Bachelor of Applied Arts (Interaction Design) Bachelor of Applied Arts (Music Theatre Performance) Bachelor of Applied Arts (Photography) Bachelor of Craft and Design Bachelor of Creative Writing and Publishing Bachelor of Design Bachelor of Digital Communications Bachelor of Film and Television Bachelor of Interdisciplinary Studies Bachelor of Journalism
Health	Bachelor Of Applied Health Sciences (athletic Therapy) Bachelor Of Applied Health Sciences (health Informatics Management) Bachelor of Applied Arts (Therapeutic Recreation) Bachelor of Applied Health Sciences (Exercise Sciences and Health Promotion) Bachelor of Commerce (Healthcare Management) Bachelor of Environmental Public Health Bachelor of Health Sciences (Workplace Health and Wellness) Collaborative Nursing
Hospitality	Bachelor Of Applied Business (hospitality Operations Management) Bachelor Of Applied Business (tourism Management) Bachelor of Commerce (Culinary Management)
Engineering/Technology	Bachelor Of Applied Business (electronic Business) Bachelor Of Applied Technology (architecture - Project and Facility Management) Bachelor Of Applied Technology (flight Program) Bachelor Of Applied Technology (informatics And Security) Bachelor Of Applied Technology (integrated Advanced Manufacturing Technologies) Bachelor Of Applied Technology (integrated Telecommunication and Computer Technologies) Bachelor Of Applied Technology (software Development) Bachelor of Applied Computer Science (Mobile Computing) Bachelor of Applied Information Sciences (Information Systems Security) Bachelor of Engineering - Building Systems Engineering Bachelor of Industrial Design Bachelor of Technology (Construction Management) Honours Bachelor of Commerce (Business Technology Management)

Appendix 2. Sending and receiving institutions for college degree entrants.

Feeder Institution	Receiving College					
	CONS	GRBR	HUMB	SENE	SHER	Total
York University	14	55	201	109	135	514
University of Toronto	15	45	155	88	194	497
Toronto Metropolitan U.	16	79	147	99	115	456
George Brown College	10	--	178	109	84	381
Sheridan College	41	17	236	34	--	328
Humber College	18	28	--	104	163	313
Wilfrid Laurier University	84	16	62	15	68	245
Seneca College	11	24	117	--	83	235
University of Waterloo	83	12	48	24	66	233
University of Guelph	49	14	91	14	64	232
Centennial College	<10	<10	78	99	23	215
McMaster University	10	22	72	14	72	190
Mohawk College	29	<10	50	13	73	168
Brock University	26	15	51	14	59	165
Western University	17	<10	44	26	44	139
Fanshawe College	39	<10	38	13	28	123
University of Ottawa	16	12	28	10	47	113
Georgian College	22	<10	41	20	23	109
Carleton University	14	10	38	<10	26	96
Ontario Tech University	<10	10	18	24	29	90
Queen's University	23	<10	16	<10	28	82
Niagara College	16	<10	21	11	26	77
Conestoga College	--	<10	26	12	26	68
Algonquin College	<10	0	21	11	24	63
Athabasca University	30	<10	<10	<10	20	59
University of Windsor	<10	<10	19	<10	23	58
OCAD University	<10	<10	<10	<10	34	54
Durham College	<10	<10	17	14	15	52
Fleming College	<10	<10	13	13	19	49
Trent University	<10	<10	22	<10	<10	45
St. Clair College	11	<10	<10	<10	10	39
St. Lawrence College	<10	<10	<10	13	<10	34
Laurentian University	<10	<10	<10	<10	11	29
Lakehead University	<10	<10	<10	<10	<10	27
Cambrian College	<10	0	<10	<10	<10	23
Canadore College	0	0	<10	10	<10	19
Loyalist College	<10	<10	<10	<10	<10	17
Nipissing University	<10	<10	<10	<10	<10	13
Confederation College	<10	<10	<10	0	<10	10
Sault College	0	0	0	0	<10	<10
Lambton College	<10	0	<10	<10	0	<10
The Michener Institute	0	0	<10	0	<10	<10
La Cité collégiale	0	0	<10	0	<10	<10
Algoma University	0	0	<10	0	<10	<10
Northern College	<10	0	0	0	<10	<10
Collège Boréal	0	0	<10	0	0	<10
Total	666	437	1,917	975	1,695	5,690

Notes: Own college excluded, students may have attended multiple institutions, with each one included. <10=1-9 obs

Appendix 3. Regression models

Appendix 3.1 1 Full Population Retention Rates

	VARIABLES	Year 1 Retention/ Grad		Year 2 Retention/ Grad		Year 3 Retention/ Grad	
		Full Pop'n	Ontario Pop'n	Full Pop'n	Ontario Pop'n	Full Pop'n	Ontario Pop'n
Gender (Ref=Female)	Male	0.845*** (0.0303)	0.934 (0.0436)	0.774*** (0.0298)	0.856*** (0.0421)	0.748*** (0.0345)	0.829*** (0.0490)
	Degree Start Age (Ref=< 19 Yrs)	19-20	0.957 (0.0519)	1.080 (0.0711)	0.980 (0.0567)	1.086 (0.0743)	1.068 (0.0737)
	21-22	1.117 (0.0793)	1.333*** (0.118)	1.102 (0.0831)	1.367*** (0.125)	1.326*** (0.118)	1.741*** (0.189)
	23-24	1.181** (0.0936)	1.471*** (0.148)	1.058 (0.0887)	1.286** (0.134)	1.286** (0.129)	1.693*** (0.212)
	25+	0.976 (0.0707)	1.309*** (0.130)	0.983 (0.0760)	1.247** (0.129)	1.272*** (0.118)	1.524*** (0.192)
Status in Canada (Ref= Born in Canada)	Domestic - Not Born in Canada	0.923** (0.0364)	1.001 (0.0480)	0.990 (0.0419)	1.004 (0.0511)	0.977 (0.0498)	1.024 (0.0632)
	International	0.848*** (0.0427)		0.978 (0.0556)		0.912 (0.0641)	
Degree Program Area (Ref=Business)	Community Service	1.505*** (0.0821)	1.629*** (0.112)	1.526*** (0.0894)	1.568*** (0.115)	1.516*** (0.108)	1.563*** (0.140)
	Creative & Applied Arts	1.804*** (0.0896)	1.766*** (0.114)	1.768*** (0.0928)	1.668*** (0.112)	2.043*** (0.127)	1.836*** (0.145)
	Health	1.590*** (0.0973)	1.501*** (0.117)	1.864*** (0.125)	1.630*** (0.136)	1.798*** (0.145)	1.577*** (0.160)
	Hospitality	0.923 (0.111)	0.987 (0.186)	0.952 (0.123)	0.937 (0.178)	0.863 (0.147)	0.674 (0.168)
	Engineering/Technology	1.130** (0.0595)	1.011 (0.0671)	1.176*** (0.0669)	1.008 (0.0707)	1.135 (0.0778)	0.931 (0.0787)
	College (Ref= A)	B	1.226** (0.112)	1.433*** (0.191)	0.877 (0.0810)	0.946 (0.124)	1.136 (0.125)
	C	0.590*** (0.0372)	0.783** (0.0837)	0.607*** (0.0412)	0.706*** (0.0769)	0.684*** (0.0550)	0.980 (0.126)
	D	0.734*** (0.0502)	0.818 (0.0915)	0.651*** (0.0479)	0.671*** (0.0771)	0.587*** (0.0515)	0.685*** (0.0936)
	E	0.904 (0.0597)	0.805** (0.0856)	0.834*** (0.0585)	0.761** (0.0823)	0.771*** (0.0633)	0.761** (0.0966)
Admission Year (Ref=2015-16)	2016-17	0.873*** (0.0410)	0.623*** (0.0379)	1.011 (0.0440)	0.847*** (0.0460)	0.892*** (0.0377)	0.735*** (0.0386)
	2017-18	1.077 (0.0515)	0.810** (0.0506)	0.953 (0.0410)	0.805*** (0.0435)		
	2018-19	0.859*** (0.0402)	0.632*** (0.0387)				
Admission Term (Ref=Fall)	Summer	0.934 (0.0928)	1.024 (0.136)	0.387*** (0.0334)	0.396*** (0.0437)	0.293*** (0.0322)	0.310*** (0.0427)
	Winter	0.740*** (0.0347)	0.734*** (0.0494)	0.767*** (0.0403)	0.808*** (0.0599)	0.914 (0.0595)	0.958 (0.0891)
Neighbourhood Income Group (Ref=Low income)	Mid Income		1.071 (0.0615)		1.022 (0.0625)		1.016 (0.0752)
	High Income		1.200*** (0.0705)		1.166** (0.0724)		1.224*** (0.0921)
Ontario Region (Ref=Eastern)	Central		1.157 (0.165)		1.263 (0.188)		1.293 (0.223)
	Metro Toronto		1.081 (0.159)		1.136 (0.174)		1.142 (0.204)
	Southwest		1.333 (0.215)		1.256 (0.209)		1.463** (0.283)
	Northern		0.964 (0.250)		1.006 (0.274)		0.911 (0.297)
	Yes		0.809**		0.850		0.783**

		Year 1 Retention/ Grad		Year 2 Retention/ Grad		Year 3 Retention/ Grad	
>50% Gr 11/12 HS Courses U/M (Ref=No)			(0.0693)		(0.0761)		(0.0870)
HS GPA Mean (all gr 11/ 12 courses) (Ref=<60%)	60-69%		1.091		1.303**		1.210
			(0.131)		(0.175)		(0.208)
	70-79%		1.645***		1.875***		1.729***
			(0.211)		(0.268)		(0.315)
	>=80%		2.742***		2.949***		2.821***
			(0.376)		(0.444)		(0.539)
# Failed Grade 11/12 Courses (Ref=0)	1-2		0.794***		0.912		0.846
			(0.0525)		(0.0654)		(0.0740)
	>=3		0.865		0.890		0.843
			(0.0928)		(0.103)		(0.119)
Eligible for College (6U/M, >65%) (Ref=No)	Yes		0.939		0.898		0.997
			(0.0501)		(0.0513)		(0.0698)
Pathway to Degree (Ref=HS direct entry)	HS Non-Direct	0.559***	0.622***	0.593***	0.637***	0.506***	0.557***
		(0.0378)	(0.0550)	(0.0441)	(0.0607)	(0.0455)	(0.0641)
	Own College	0.981	0.892	0.996	0.879	0.889	0.767***
		(0.0575)	(0.0663)	(0.0621)	(0.0673)	(0.0660)	(0.0704)
	Prev College	0.874	0.861	0.899	0.825	0.747***	0.684***
		(0.0663)	(0.0840)	(0.0731)	(0.0848)	(0.0738)	(0.0867)
	Prev Univ	1.331***	1.106	1.313***	1.108	1.063	0.870
	(0.0990)	(0.0995)	(0.102)	(0.102)	(0.0972)	(0.0948)	
	Prev College & Univ	0.939	0.834	1.000	0.854	0.791**	0.647***
		(0.0865)	(0.0978)	(0.0967)	(0.102)	(0.0925)	(0.0943)
	Constant	3.956***	2.674***	2.620***	1.454	2.004***	1.023
		(0.304)	(0.643)	(0.209)	(0.369)	(0.184)	(0.314)
	Observations	20,996	14,336	15,546	10,624	10,158	6,945
	Pseudo R-squared	0.0384	0.0541	0.0395	0.0514	0.0491	0.0675

*** p<0.01, ** p<0.05. Transfer pathways= "other" and "unknown" not shown; Status in Canada= unknown country of birth not shown

Appendix 3.1 2 Full population graduation rates and grades

	VARIABLES	Graduated in 4 Years		GPA B or Better	
		Full Pop'n	Ontario Pop'n	Full Pop'n	Ontario Pop'n
Gender (Ref=Female)	Male	0.672***	0.796***	0.664***	0.858***
		(0.0319)	(0.0477)	(0.0218)	(0.0370)
Degree Start Age (Ref=< 19 Yrs)	19-20	0.964	1.099	0.885**	1.057
		(0.0673)	(0.0908)	(0.0430)	(0.0639)
	21-22	1.278***	1.595***	1.060	1.533***
		(0.117)	(0.178)	(0.0678)	(0.125)
	23-24	1.400***	1.827***	1.300***	2.092***
	(0.147)	(0.241)	(0.0940)	(0.198)	
	25+	1.107	1.246	1.682***	2.648***
		(0.107)	(0.167)	(0.114)	(0.254)
Status in Canada (Ref= Born in Canada)	Domestic - Not Born in Canada	0.845***	0.845**	0.799***	0.861***
		(0.0454)	(0.0554)	(0.0290)	(0.0387)
	International	0.962		1.007	
		(0.0737)		(0.0481)	
Degree Program Area (Ref=Business)	Community Service	2.086***	2.424***	1.596***	1.978***
		(0.156)	(0.227)	(0.0805)	(0.128)
	Creative & Applied Arts	2.074***	1.858***	2.148***	1.678***
		(0.132)	(0.149)	(0.0975)	(0.0993)
	Health	2.027***	1.817***	1.747***	1.454***
		(0.166)	(0.185)	(0.0988)	(0.106)
	Hospitality	0.730	0.647	1.035	1.073
		(0.139)	(0.177)	(0.122)	(0.205)
	Engineering/Technology	0.820**	0.649***	1.250***	0.953
		(0.0641)	(0.0630)	(0.0617)	(0.0613)
College (Ref= A)	B	1.636***	2.580***	1.468***	2.736***
		(0.186)	(0.412)	(0.125)	(0.343)

		Graduated in 4 Years		GPA B or Better	
	C	1.147 (0.0925)	1.671*** (0.213)	0.546*** (0.0316)	0.772*** (0.0752)
	D	0.956 (0.0892)	1.188 (0.169)	0.602*** (0.0378)	0.889 (0.0915)
	E	1.112 (0.0924)	1.147 (0.144)	0.675*** (0.0405)	0.695*** (0.0672)
Admission Year (Ref=2015-16)	2016-17	0.780*** (0.0361)	0.642*** (0.0362)	1.008 (0.0435)	0.880** (0.0489)
	2017-18			1.087 (0.0468)	0.926 (0.0516)
	2018-19			1.084 (0.0466)	0.913 (0.0510)
Admission Term (Ref=Fall)	Summer	1.370** (0.199)	1.414 (0.268)	2.027*** (0.212)	2.301*** (0.325)
	Winter	1.000 (0.0936)	1.028 (0.140)	0.826*** (0.0374)	0.798*** (0.0537)
Neighbourhood Income Group (Ref=Low income)	Mid Income		0.976 (0.0761)		1.115** (0.0610)
	High Income		1.072 (0.0839)		1.103 (0.0609)
Ontario Region (Ref=Eastern)	Central		1.078 (0.186)		0.901 (0.125)
	Metro Toronto		0.901 (0.162)		0.839 (0.120)
	Southwest		1.054 (0.202)		1.083 (0.168)
	Northern		0.914 (0.299)		1.409 (0.375)
	>50% Gr 11/12 HS Courses U/M (Ref=No)	Yes		0.663*** (0.0782)	
HS GPA Mean (all gr 11/ 12 courses) (Ref=<60%)	60-69%		1.580** (0.322)		1.381*** (0.165)
	70-79%		2.685*** (0.574)		3.046*** (0.386)
	>=80%		5.162*** (1.140)		10.75*** (1.459)
Number of Failed Grade 11/12 Courses (Ref=0)	1-2		0.791** (0.0742)		0.741*** (0.0465)
	>=3		0.952 (0.150)		0.787** (0.0818)
Eligible for College (6U/M, >65%) (Ref=No)	Yes		0.971 (0.0715)		1.103 (0.0553)
Pathway to Degree (Ref=HS direct entry)	HS Non-Direct	0.490*** (0.0478)	0.463*** (0.0579)	0.660*** (0.0418)	0.577*** (0.0489)
	Own College (only)	1.283*** (0.0969)	1.191 (0.112)	0.901** (0.0474)	1.076 (0.0738)
	Prev College	0.937 (0.0959)	0.815 (0.107)	0.888 (0.0617)	0.930 (0.0839)
	Prev Univ	1.107 (0.103)	0.872 (0.0964)	1.600*** (0.107)	1.196** (0.0989)
	Prev College & Univ	0.921 (0.113)	0.845 (0.129)	1.460*** (0.131)	1.112 (0.126)
	Constant	0.684*** (0.0639)	0.311*** (0.101)	2.206*** (0.154)	0.463*** (0.107)
	Observations	9,207	6,454	20,833	14,211
Pseudo R-squared	0.0651	0.108	0.0553	0.140	

*** p<0.01, ** p<0.05; Transfer pathways= "other" and "unknown" not shown; Status in Canada= unknown country of birth not shown

Appendix 3.1 3 Transfer population retention rates

	VARIABLES	Year One Retention		Year Two Retention	
		Full Pop'n	Ontario Pop'n	Full Pop'n	Ontario Pop'n
Gender (Ref=Female)	Male	0.991 (0.0497)	1.069 (0.0701)	0.918 (0.0487)	0.999 (0.0683)
Degree Start Age (Ref=20& U)	21-22	1.058 (0.0678)	1.081 (0.0837)	0.941 (0.0627)	1.022 (0.0816)
	23-24	0.961 (0.0729)	0.986 (0.0928)	0.798*** (0.0630)	0.816** (0.0791)
	25+	0.741*** (0.0489)	0.851 (0.0790)	0.687*** (0.0485)	0.830 (0.0817)
Status in Canada (Ref= Born in Canada)	Domestic - Not Born in Canada	0.916 (0.0490)	0.996 (0.0676)	1.062 (0.0604)	1.095 (0.0781)
	International	1.125 (0.0919)		1.223** (0.107)	
Degree Program Area (Ref=Business)	Community Service	1.360*** (0.101)	1.380*** (0.132)	1.420*** (0.112)	1.428*** (0.144)
	Creative & Applied Arts	1.836*** (0.131)	1.945*** (0.179)	1.732*** (0.129)	1.837*** (0.175)
	Health	1.562*** (0.125)	1.707*** (0.180)	1.747*** (0.152)	1.757*** (0.196)
	Hospitality	0.775 (0.128)	0.903 (0.235)	0.850 (0.145)	0.985 (0.245)
	Engineering/Technology	1.286*** (0.103)	1.223** (0.123)	1.245*** (0.103)	1.134 (0.116)
College (Ref= A)	B	1.385** (0.183)	1.594** (0.313)	0.969 (0.122)	1.074 (0.202)
	C	0.565*** (0.0490)	0.695** (0.106)	0.616*** (0.0564)	0.710** (0.112)
	D	0.908 (0.0865)	0.945 (0.154)	0.818** (0.0821)	0.872 (0.146)
	E	1.011 (0.0915)	0.950 (0.144)	0.967 (0.0905)	1.005 (0.156)
Admission Year (Ref=2015-16)	2016-17	0.893 (0.0579)	0.663*** (0.0566)	0.991 (0.0598)	0.828** (0.0637)
	2017-18	1.145** (0.0752)	0.922 (0.0806)	0.867** (0.0510)	0.758*** (0.0574)
	2018-19	0.992 (0.0656)	0.763*** (0.0672)		
Admission Term (Ref=Fall)	Summer	0.672*** (0.0772)	0.665*** (0.0987)	0.231*** (0.0233)	0.235*** (0.0301)
	Winter	0.637*** (0.0396)	0.686*** (0.0594)	0.705*** (0.0484)	0.801** (0.0757)
Neighbourhood Income Group (Ref=Low income)	Mid Income		1.049 (0.0849)		1.057 (0.0894)
	High Income		1.201** (0.0991)		1.224** (0.104)
Ontario Region (Ref=Eastern)	Central		0.805 (0.198)		1.032 (0.249)
	Metro Toronto		0.791 (0.200)		1.034 (0.256)
	Southwest		0.857 (0.231)		1.170 (0.311)
	Northern		0.998 (0.428)		1.602 (0.721)
>50% Gr 11/12 HS Courses U/M (Ref=No)	Yes		0.879 (0.0829)		0.986 (0.0972)
HS GPA Mean (all gr 11/ 12 courses) (Ref=<60%)	60-69%		1.010 (0.164)		1.459** (0.252)
	70-79%		1.412** (0.246)		1.836*** (0.339)

		Year One Retention		Year Two Retention	
	>=80%		1.888*** (0.353)		2.446*** (0.481)
Number of Failed Grade 11/12 Courses (Ref=0)	1-2		0.879 (0.0846)		1.116 (0.117)
	>=3		1.088 (0.163)		1.032 (0.162)
	Yes		0.986 (0.0737)		0.904 (0.0713)
Eligible for College (6U/M, >65%) (Ref=No)	Prev College	1.067 (0.0688)	1.167 (0.0984)	1.086 (0.0748)	1.170 (0.105)
	Prev Univ	2.007*** (0.140)	1.923*** (0.172)	2.053*** (0.150)	2.065*** (0.193)
	Prev College & Univ	1.145 (0.0943)	1.144 (0.123)	1.225** (0.105)	1.201 (0.132)
# Block terms (Ref=0)	1-2	2.019*** (0.185)	1.832*** (0.230)	1.995*** (0.190)	1.794*** (0.232)
	3-4	2.100*** (0.149)	2.174*** (0.212)	2.126*** (0.159)	2.205*** (0.223)
	>4	1.331** (0.188)	1.474 (0.307)	2.865*** (0.459)	2.434*** (0.548)
Previous PSE Grad	Yes	1.566*** (0.0868)	1.613*** (0.116)	1.679*** (0.0991)	1.715*** (0.129)
	Constant	1.918*** (0.202)	1.888 (0.669)	1.328*** (0.144)	0.621 (0.222)
	Observations	11,493	7,510	8,667	5,632
	Pseudo R-squared	0.0500	0.0604	0.0585	0.0673

*** p<0.01, ** p<0.05; Transfer pathways= "other" and "unknown" not shown; Status in Canada= unknown country of birth not shown

Appendix 3.1 4 Transfer population graduation rates and grades

	VARIABLES	Graduated in 4 Years		GPA B or Better	
		Full Pop'n	Ontario Pop'n	Full Pop'n	Ontario Pop'n
Gender (Ref=Female)	Male	0.804*** (0.0539)	0.933 (0.0802)	0.756*** (0.0350)	0.952 (0.0577)
	Female				
Degree Start Age (Ref=20& U)	21-22	0.972 (0.0808)	1.117 (0.111)	0.945 (0.0538)	1.195** (0.0835)
	23-24	0.811** (0.0836)	0.907 (0.117)	1.010 (0.0701)	1.421*** (0.125)
	25+	0.593*** (0.0556)	0.632*** (0.0841)	1.259*** (0.0794)	1.809*** (0.164)
Status in Canada (Ref= Born in Canada)	Domestic - Not Born in Canada	0.844** (0.0633)	0.880 (0.0829)	0.786*** (0.0393)	0.799*** (0.0503)
	International	1.211 (0.139)		0.834** (0.0616)	
Degree Program Area (Ref=Business)	Community Service	1.871*** (0.201)	2.125*** (0.293)	1.491*** (0.103)	1.700*** (0.153)
	Creative & Applied Arts	2.628*** (0.248)	2.555*** (0.308)	2.232*** (0.147)	1.816*** (0.155)
	Health	2.380*** (0.269)	2.515*** (0.363)	1.898*** (0.144)	1.606*** (0.159)
	Hospitality	0.729 (0.187)	0.610 (0.229)	1.145 (0.191)	1.315 (0.361)
	Engineering/ Technology	1.000 (0.116)	0.832 (0.120)	1.313*** (0.0985)	1.009 (0.0967)
College (Ref= A)	B	1.228 (0.197)	1.754** (0.416)	1.908*** (0.238)	3.136*** (0.583)
	C	1.118 (0.127)	1.499** (0.292)	0.546*** (0.0441)	0.877 (0.124)
	D	1.244 (0.166)	1.443 (0.315)	0.764*** (0.0680)	1.233 (0.187)
	E	1.126 (0.129)	1.143 (0.216)	0.866 (0.0719)	1.068 (0.150)
	F				

		Graduated in 4 Years		GPA B or Better	
Admission Year (Ref=2015-16)	2016-17	0.834*** (0.0561)	0.683*** (0.0569)	0.994 (0.0606)	0.912 (0.0720)
	2017-18			1.092 (0.0678)	1.057 (0.0857)
	2018-19			1.091 (0.0689)	1.009 (0.0837)
Admission Term (Ref=Fall)	Summer	0.671** (0.114)	0.668 (0.145)	1.178 (0.140)	1.471** (0.228)
	Winter	0.777** (0.0991)	0.886 (0.161)	0.748*** (0.0453)	0.779*** (0.0659)
Neighbourhood Income Group (Ref=Low income)	Mid Income		0.956 (0.107)		1.180** (0.0909)
	High Income		1.098 (0.122)		1.130 (0.0870)
Ontario Region (Ref=Eastern)	Central		0.927 (0.258)		0.887 (0.194)
	Metro Toronto		0.881 (0.255)		0.932 (0.210)
	Southwest		0.989 (0.305)		1.197 (0.290)
	Northern		1.148 (0.624)		2.024 (0.853)
>50% Gr 11/12 HS Courses U/M (Ref=No)	Yes		0.801 (0.106)		1.193** (0.101)
HS GPA Mean (all gr 11/12 courses) (Ref=<60%)	60-69%		1.110 (0.285)		1.431** (0.216)
	70-79%		1.545 (0.418)		2.726*** (0.441)
	>=80%		2.489*** (0.706)		7.464*** (1.315)
Number of Failed Grade 11/12 Courses (Ref=0)	1-2		0.887 (0.124)		0.893 (0.0808)
	>=3		0.779 (0.167)		0.909 (0.127)
Eligible for College (6U/M, >65%) (Ref=No)	Yes		1.121 (0.115)		1.159** (0.0813)
Pathway to Degree (Ref=Own College)	Prev College	0.946 (0.0884)	0.970 (0.117)	1.159** (0.0700)	1.072 (0.0834)
	Prev Univ	1.980*** (0.181)	1.668*** (0.195)	2.880*** (0.188)	2.023*** (0.171)
	Prev College & Univ	0.991 (0.113)	0.973 (0.144)	1.919*** (0.160)	1.288** (0.137)
# Block terms (Ref=0)	1-2	3.863*** (0.473)	3.831*** (0.665)	2.114*** (0.179)	1.947*** (0.225)
	3-4	6.009*** (0.619)	6.089*** (0.850)	2.152*** (0.140)	2.131*** (0.186)
	>4	11.71*** (2.835)	9.276*** (3.126)	5.567*** (1.013)	6.545*** (1.905)
Previous PSE Grad	Yes	1.882*** (0.142)	1.845*** (0.173)	1.886*** (0.0980)	1.908*** (0.129)
	Constant	0.293*** (0.0407)	0.205*** (0.0934)	0.848 (0.0835)	0.170*** (0.0552)
	Observations	4,915	3,217	11,390	7,432
	Pseudo R-squared	0.125	0.143	0.0886	0.139

*** p<0.01, ** p<0.05; Transfer pathways= "other" and "unknown" not shown; Status in Canada= unknown country of birth not shown

Appendix 3.1.5 Internal transfer population retention rates

	VARIABLES	Year One Retention		Year Two Retention	
		Full Pop'n	Ontario Pop'n	Full Pop'n	Ontario Pop'n
Gender (Ref=Female)	Male	1.077 (0.0765)	1.204 (0.114)	1.015 (0.0767)	1.105 (0.110)
Degree Start Age (Ref=20& U)	21-22	1.058 (0.0988)	1.061 (0.122)	0.961 (0.0932)	0.983 (0.116)
	23-24	0.947 (0.106)	0.890 (0.125)	0.786** (0.0906)	0.717** (0.103)
	25+	0.629*** (0.0614)	0.717** (0.1000)	0.547*** (0.0565)	0.609*** (0.0887)
Status in Canada (Ref= Born in Canada)	Domestic - Not Born in Canada	0.983 (0.0766)	1.042 (0.102)	1.184** (0.0971)	1.278** (0.132)
	International	1.076 (0.119)		1.269** (0.151)	
Degree Program Area (Ref=Business)	Community Service	1.344 (0.229)	1.668** (0.372)	1.355 (0.248)	1.441 (0.346)
	Creative & Applied Arts	1.687*** (0.231)	1.771*** (0.338)	1.566*** (0.232)	1.875*** (0.378)
	Health	1.585*** (0.259)	1.755*** (0.379)	1.715*** (0.304)	1.913*** (0.439)
	Hospitality	0.814 (0.219)	1.484 (0.776)	0.772 (0.239)	0.543 (0.311)
	Engineering/ Technology	1.288 (0.201)	1.336 (0.286)	1.332 (0.227)	1.310 (0.296)
College (Ref= A)	B	1.630** (0.361)	1.821 (0.632)	0.681 (0.137)	0.625 (0.198)
	C	0.402*** (0.0567)	0.532** (0.139)	0.373*** (0.0569)	0.351*** (0.0957)
	D	1.057 (0.164)	1.194 (0.331)	0.702** (0.117)	0.607 (0.173)
	E	0.723** (0.104)	0.763 (0.197)	0.610*** (0.0930)	0.578** (0.154)
Admission Year (Ref=2015-16)	2016-17	0.978 (0.0913)	0.707*** (0.0880)	1.018 (0.0894)	0.828 (0.0946)
	2017-18	1.182 (0.111)	0.922 (0.117)	0.663*** (0.0557)	0.532*** (0.0588)
	2018-19	1.169 (0.113)	0.911 (0.120)	-	-
Admission Term (Ref=Fall)	Summer	0.705** (0.0968)	0.685** (0.119)	0.221*** (0.0268)	0.216*** (0.0331)
	Winter	0.640*** (0.0588)	0.696*** (0.0908)	0.715*** (0.0734)	0.789 (0.114)
Neighbourhood Income Group (Ref=Low income)	Mid Income		1.019 (0.121)		1.022 (0.125)
	High Income		1.207 (0.145)		1.273 (0.157)
Ontario Region (Ref=Eastern)	Central		0.638 (0.239)		0.656 (0.244)
	Metro Toronto		0.697 (0.268)		0.733 (0.280)
	Southwest		0.761 (0.316)		0.673 (0.278)
	Northern		1.214 (1.024)		1.560 (1.364)
>50% Gr 11/12 HS Courses U/M (Ref=No)	Yes		0.943 (0.111)		0.951 (0.117)
HS GPA Mean (all gr 11/ 12 courses) (Ref=<60%)	60-69%		0.843 (0.187)		1.064 (0.248)
	70-79%		1.223 (0.290)		1.187 (0.293)

		Year One Retention		Year Two Retention		
	>=80%		1.416 (0.374)		1.433 (0.391)	
Number of Failed Grade 11/12 Courses (Ref=0)	1-2		1.001 (0.148)		1.402** (0.224)	
	>=3		1.101 (0.231)		0.854 (0.185)	
	Yes		0.968 (0.101)		0.990 (0.106)	
# Block terms (Ref=none)	1-2	1.536*** (0.201)	1.178 (0.206)	1.671*** (0.235)	1.302 (0.244)	
	3-4	1.892*** (0.196)	1.537*** (0.211)	2.340*** (0.262)	2.067*** (0.307)	
	>4	0.961 (0.172)	0.802 (0.200)	2.848*** (0.578)	2.187*** (0.604)	
Previous Grad own college	Yes	1.242** (0.117)	1.490*** (0.184)	1.146 (0.117)	1.341** (0.180)	
Previously attended additional PSE	Yes	0.886 (0.0868)	0.815 (0.105)	0.858 (0.0856)	0.798 (0.103)	
Pre-degree Program Area (Ref=Business)	Other (non APS)	0.587*** (0.113)	0.452*** (0.130)	0.922 (0.194)	0.788 (0.247)	
	Community Service	0.949 (0.182)	0.729 (0.181)	0.997 (0.203)	0.909 (0.241)	
	Creative & Applied Arts	0.854 (0.141)	0.844 (0.190)	0.979 (0.175)	0.784 (0.187)	
	Health	0.588** (0.131)	0.578 (0.169)	0.600** (0.146)	0.512** (0.161)	
	Hospitality	0.813 (0.231)	0.631 (0.267)	1.009 (0.323)	1.464 (0.752)	
	Prep/ Upgrading	1.178 (0.208)	1.514 (0.405)	1.061 (0.202)	0.914 (0.259)	
	Engineering/ Technology	0.974 (0.175)	0.902 (0.209)	0.967 (0.184)	1.004 (0.244)	
	Pre-degree Credential Type (Ref= 3 yr diploma)	1 yr Certificate	0.928 (0.150)	0.637** (0.136)	1.248 (0.215)	1.231 (0.282)
		2 yr Diploma	0.985 (0.110)	1.103 (0.161)	1.232 (0.144)	1.377** (0.207)
		Graduate Certificate	0.596 (0.177)	0.864 (0.506)	0.973 (0.301)	1.077 (0.621)
Pre-degree GPA (Ref=A)	B	0.587*** (0.0511)	0.642*** (0.0778)	0.678*** (0.0588)	0.686*** (0.0798)	
	C	0.435*** (0.0466)	0.472*** (0.0689)	0.479*** (0.0531)	0.466*** (0.0684)	
	D & Below	0.309*** (0.0475)	0.349*** (0.0714)	0.288*** (0.0477)	0.305*** (0.0664)	
	Constant	6.054*** (1.370)	7.998*** (4.632)	4.631*** (1.074)	6.205*** (3.621)	
	Observations	6,064	3,914	4,560	2,932	
	Pseudo R-squared	0.0759	0.0819	0.0915	0.107	

*** p<0.01, ** p<0.05; Status in Canada= unknown country of birth not shown

Appendix 3.1 6 Internal transfers population graduation rates and grades

		Graduated in 4 Years		GPA B or Better	
	VARIABLES	Full Pop'n	Ontario Pop'n	Full Pop'n	Ontario Pop'n
Gender (Ref=Female)	Male	0.951 (0.0922)	1.079 (0.136)	0.857** (0.0590)	1.045 (0.0938)
	Degree Start Age (Ref=20& U)	21-22	0.951 (0.120)	1.023 (0.154)	0.995 (0.0865)
23-24		0.685** (0.107)	0.668** (0.131)	0.876 (0.0932)	1.037 (0.139)
25+		0.416***	0.370***	0.991	1.273

		Graduated in 4 Years		GPA B or Better	
		(0.0594)	(0.0758)	(0.0972)	(0.178)
Status in Canada (Ref= Born in Canada)	Domestic - Not Born in Canada	1.032 (0.114)	1.120 (0.155)	0.905 (0.0693)	0.932 (0.0877)
	International	1.380** (0.216)		0.887 (0.0938)	
Degree Program Area (Ref=Business)	Community Service	1.643 (0.450)	2.143** (0.780)	1.523** (0.262)	1.695** (0.378)
	Creative & Applied Arts	2.119*** (0.441)	2.197*** (0.634)	2.242*** (0.309)	2.163*** (0.414)
	Health	1.640** (0.401)	1.950** (0.634)	1.308 (0.209)	1.344 (0.283)
	Hospitality	0.551 (0.301)	0.722 (0.569)	1.601 (0.442)	2.164 (1.175)
	Engineering/ Technology	1.131 (0.286)	1.227 (0.425)	1.690*** (0.267)	1.723** (0.379)
College (Ref=A)	B	0.977 (0.268)	1.141 (0.499)	2.293*** (0.500)	2.112** (0.686)
	C	0.335*** (0.0621)	0.248*** (0.0825)	0.372*** (0.0493)	0.365*** (0.0881)
	D	1.125 (0.246)	0.740 (0.275)	0.959 (0.141)	0.869 (0.223)
	E	0.441*** (0.0803)	0.315*** (0.100)	0.675*** (0.0909)	0.528*** (0.124)
Admission Year (Ref=2015-16)	2016-17	0.991 (0.0981)	0.849 (0.106)	1.007 (0.0931)	0.859 (0.101)
	2017-18			1.102 (0.101)	1.049 (0.124)
	2018-19			1.226** (0.115)	1.232 (0.150)
Admission Term (Ref=Fall)	Summer	0.926 (0.188)	0.803 (0.209)	1.128 (0.167)	1.339 (0.250)
	Winter	1.137 (0.224)	1.324 (0.366)	0.773*** (0.0730)	1.020 (0.135)
Neighbourhood Income Group (Ref=Low income)	Mid Income		0.875 (0.144)		1.261** (0.145)
	High Income		1.061 (0.171)		1.233 (0.140)
Ontario Region (Ref=Eastern)	Central		1.067 (0.410)		1.109 (0.355)
	Metro Toronto		0.923 (0.379)		1.059 (0.354)
	Southwest		0.721 (0.315)		0.859 (0.310)
	Northern				1.043 (0.687)
>50% Gr 11/12 HS Courses U/M (Ref=No)	Yes		0.831 (0.138)		1.056 (0.116)
HS GPA Mean (all gr 11/ 12 courses) (Ref=<60%)	60-69%		0.906 (0.323)		1.143 (0.238)
	70-79%		0.893 (0.333)		1.707** (0.378)
	>=80%		1.433 (0.577)		3.343*** (0.843)
Number of Failed Grade 11/12 Courses (Ref=0)	1-2		0.808 (0.177)		0.889 (0.123)
	>=3		0.578 (0.183)		0.881 (0.177)
Eligible for College (6U/M, >65%) (Ref=No)	Yes		1.142 (0.158)		1.165 (0.116)
	1-2	3.055***	2.938***	1.557***	1.374

		Graduated in 4 Years		GPA B or Better	
# Block terms (Ref=none)		(0.592)	(0.785)	(0.198)	(0.227)
	3-4	4.486***	3.927***	1.741***	1.571***
		(0.720)	(0.867)	(0.176)	(0.204)
	>4	6.413***	5.185***	4.006***	5.585***
		(1.883)	(2.119)	(0.900)	(2.027)
Previous Grad own college	Yes	1.195	1.297	1.138	1.382***
		(0.161)	(0.223)	(0.105)	(0.165)
Previously attended additional PSE	Yes	1.071	0.963	0.610***	0.775**
		(0.143)	(0.164)	(0.0618)	(0.0978)
Pre-degree Program Area (Ref=Business)	Other (non APS)	0.512**	0.459	0.903	0.667
		(0.154)	(0.221)	(0.179)	(0.197)
	Community Service	1.339	1.319	1.303	1.326
		(0.402)	(0.509)	(0.249)	(0.323)
	Creative & Applied Arts	1.148	1.138	0.892	0.935
		(0.280)	(0.373)	(0.150)	(0.211)
	Health	0.871	1.037	1.827**	1.407
		(0.322)	(0.499)	(0.432)	(0.415)
	Hospitality	0.979	0.695	0.951	0.702
		(0.487)	(0.448)	(0.281)	(0.303)
	Prep/ Upgrading	1.200	1.470	0.993	1.450
		(0.325)	(0.559)	(0.177)	(0.382)
	Engineering/ Technology	0.750	0.741	1.074	0.966
	(0.216)	(0.279)	(0.193)	(0.225)	
Pre-degree Credential Type (Ref= 3 yr diploma)	1 yr Certificate	1.056	0.842	0.678**	0.454***
		(0.244)	(0.244)	(0.109)	(0.0960)
	2 yr Diploma	0.933	1.003	0.726***	0.731**
		(0.149)	(0.207)	(0.0800)	(0.103)
	Graduate Certificate	0.884	1.188	1.110	0.809
		(0.455)	(1.191)	(0.374)	(0.515)
Pre-degree GPA (Ref=A)	B	0.602***	0.729**	0.241***	0.273***
		(0.0663)	(0.106)	(0.0225)	(0.0343)
	C	0.294***	0.358***	0.0764***	0.103***
		(0.0433)	(0.0692)	(0.00850)	(0.0152)
	D & Below	0.135***	0.169***	0.0485***	0.0578***
		(0.0368)	(0.0590)	(0.00814)	(0.0127)
	Constant	1.582	2.214	13.21***	3.681**
		(0.474)	(1.596)	(3.030)	(1.960)
	Observations	2,485	1,603	5,997	3,865
	Pseudo R-squared	0.157	0.168	0.198	0.221

*** p<0.01, ** p<0.05; Status in Canada= unknown country of birth not shown