Which College Students Transfer to University? The Role of Parental Education and Neighbourhood Income

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Abstract

It is well understood that access to university varies considerably by parental education and neighbourhood income, whereas college tends to be accessed more equitably. One option to reduce this imbalance is the college to university transfer pathway. This study compares college students' university aspirations at entry, graduation rates, and transfer outcomes across socioeconomic status (SES) groups. SES groups were created by combining categories of parental education (university educated vs first generation) and neighbourhood income. The analysis combines administrative and survey data at a large Toronto college from 2007 to 2014, to track 36,054 college entrants from high school until six months after college graduation. Of these college entrants, 44% aspire to go to university and 14% of those who graduate transfer to university within six months. Aspirations at entry and transfer after graduation vary considerably by SES group, as do academic preparation, language ability, and program of entry. Two outcomes are evaluated using a series of probit models. Parental education is found to be positively related to aspirations for transfer. Transfer to university, on the other hand, appears to be most common specifically among low income, non-first generation students. Generally, income and parental education play a significant but quantitatively small role in each of the relationships estimated. The next step will be to compare transfer and non-transfer students in a university population.

Keywords: Income, Parental Education, College, Transfer, University Aspirations

Executive Summary

Low income students, and students who are the first in their family to complete post-secondary education (first generation), are underrepresented in university. This inequality has implications for economic and social mobility as well as for a wider sense of distributional fairness. Because college[1] tends to be accessed more equitably, it has been suggested that college to university transfer pathways can help to provide university access to underrepresented groups. Using data from a large Toronto college, we compare college students' university aspirations at entry, graduation rates, and transfer outcomes across socioeconomic status (SES) groups to better understand how the college to university transfer pathway is being used, and by whom.

Methodology

Using administrative and survey data from 2007 to 2014, the study tracks 36,054 Seneca College[2] entrants from high school until six months after college graduation. Students are classified by neighbourhood income and parental education status, with 34% of entering students classified as low income, and 61.4% of students classified as first generation (neither parent has a university degree). A total of 7,638 students who graduated during the same seven-year period responded to the Graduate Satisfaction Survey (76% response rate). Of these graduates, 1,106 indicated that they had transferred to university six months after graduating from college.

Research questions include the following:

1. How do background characteristics in the college sample differ by income and parental education and what is the role of these factors in influencing a student's aspirations for transfer to university?
2. What is the role of parental education and neighbourhood income in influencing transfer to university?
3. For those who do transfer to university, do transfer information sources differ across first generation and income groups?

Key Findings

Student characteristics by socioeconomic status

Student demographics, program of study selection, and academic preparation all differ by parental education and income. Only half of college entrants who were low income with university-educated parents reported English as their first language; similarly this group also had lower rates of Canadian citizenship and increased likelihood of being placed below college-level English. Regardless of income, students with university-educated parents are more likely to enter more advanced credentials, and were more likely to enter technology programs and less likely to enter community service. Additionally, students with university-educated parents were more likely to have taken university preparation courses in high school, and to have previously attended university before entering college, regardless of income.

[1] The term "college" used throughout this report refers to Ontario's publically funded college system, consisting of 24 Colleges of Applied Arts and Technology (CAATs).

[2] Seneca College is one of Ontario's 24 CAATs offering a range of credentials: certificates, diplomas, degrees and graduate certificates. The majority of Seneca's program offerings are 2- and 3- year diplomas.

Plans for university

Overall, 49% of college entrants with university-educated parents planned to attend university after college compared to 43% of students without university-educated parents. However, students from higher income neighbourhoods proved no more likely than their peers to aspire to transfer.
Students who were low income but with university-educated parents were the most likely to have plans for university. These results held true when controlling for academic and program factors.

Transfer to university

Transfer to university was 3% points higher for college graduates who had a parent with a degree than those who did not, an affect that held when controlling for socio-demographic factors and grades. In contrast to parents' education, this study showed that rates of transfer did not differ by income, with 31% of transfer students versus 32% of non-transfer students came from the lowest neighbourhood terciles. When combined categories of income and education were compared, graduates who were both low income, but had at least one parent with a degree, were 4% points more likely to transfer than the reference group who were both low income and did not have a parent with a degree.

The graduates with the highest grades who aspired to go to university are the most likely students to transfer. Among those who aspired to go to university, having a GPA above 3.5 was associated with a 21% point increase in likelihood of transfer compared to those with a GPA below 3.0. Other factors such as program of study are also important in explaining transfer propensity.

Conclusions/Policy Implications

Overall, this study shows college students with university-educated parents are slightly more likely to aspire and to ultimately transfer to university. This is similar to previous research on university attendance for the high school population, however the gap seen in the current study comparing college transfers and non-transfers is much smaller. In contrast to studies on the high school population in which income has a large effect on who attends university, income had little or no effect on whether college graduates transfer. In fact, students who are both low income and have university educated parents are the most likely to aspire and to transfer to university compared to all other combinations of education and income. Income however, plays an indirect effect, in that higher income students are more likely to obtain higher grades and to graduate, which are major factors in transfer.

As the study focussed on transfer within the college population, it is important to contrast the composition of the college transfer population and the university population. Other comparable data sources indicate that more than half of students at universities in Toronto have a parent with a degree compared with just 31% of Seneca's transfer students (NSSE, institutional data, 2011). Similarly, on a provincial level, only 22% of university students come from the lowest income tercile of the Ontario population, compared with 31% of Seneca's university transfer students (Dooley, Payne & Robb, 2016).

Although the initial decision to attend college or university is influenced by parental education and income, students who attend college initially and then transfer to university differ only slightly from their college peers who do not transfer to university by these socioeconomic characteristics. For college graduates who continue on to university, academic performance, program choice, and aspirations for university at college entry are the key determinants. Within the college population, college performance and aspirations for transfer are more important than sociodemographic factors on transfer rates, indicating this pathway may be more merit- and motivation-based. As well, the preliminary finding that transfer students who are lower income or do not have a university educated parent rely less on their parents and family and rely more on college advising services for information, underscores the role institutions can play. This suggests that facilitating and encouraging college to university transfer, as well

as supporting students academically to ensure they qualify, may be a vehicle to reduce the socioeconomic inequity in university attendance in Ontario.

Introduction

It is often asserted that the benefits of higher education should be accessible to young people regardless of socioeconomic status. Problematically, low income and first generation students (the first in their family to attend post-secondary) are less likely to attend university, but are well represented within the college system (Frenette, 2007; Dooley, Payne & Robb., 2011; Finnie, Charles & Missner, 2011). If students from underrepresented groups are unable to attain higher credentials, intergenerational social mobility may be severely limited. It has been suggested that having well-functioning transfer pathways to university may result in more low income and first generation students to access university than would otherwise be possible (Kerr, McCloy & Liu, 2010).[3]

The Ontario government has made enhancing access for groups of students who have traditionally been underrepresented in postsecondary education a priority. Ontario's provincially funded universities and colleges are required in their Strategic Mandate Agreements[4] to report their numbers of "underrepresented" groups, defined as Aboriginal, first generation students, and students with a disability, as well as to describe their associated access initiatives. The Ontario government itself has increased funding for low income students, lowering the actual, and perhaps more importantly, the perceived cost of postsecondary education.[5, 6] Ontario also provides funding for First Generation Bursaries, ranging from $1000 to $3500 per eligible student.[7] It is important to note, however, that although Ontario's financial support programs may ameliorate cost barriers facing prospective students, debt aversion, social factors, and imperfect information can still act as barriers for underrepresented groups (Frenette & Robson, 2011).

The present study uses measures of both neighbourhood income and parental education to better understand the transfer behaviour of students entering a large Toronto college during 2007 to 2014. This study examines the influence of neighbourhood income and parental education on aspirations for transfer to university, as well as on transfer status six months after graduation. The study aims to answer the following three research questions:

1. How do background characteristics differ by income and parental education and what is the role of these factors in influencing a student's aspirations for transfer?
2. What is the role of parental education and neighbourhood income in influencing transfer to university?

[3] Note: different definitions exist for defining first generation students.
[4] Each of the 45 publically funded colleges and universities has an agreement with MAESD, highlighting institutional priorities. See: https://www.ontario.ca/page/college-and-university-strategic-mandate-agreements#section-2
[5] For example, the 2016 Ontario budget included the Ontario Student Grant (OSG), a single up-front grant, providing free tuition for students from families earning $50,000 or less. See: https://www.fin.gov.on.ca/en/budget/ontariobudgets/2016/bk1.html.
[6] Until recently, a large portion of the tax transfer to students was only available in a non-refundable tax credit. This was more often used in the current period by high income students (Neill, 2013).
[7] https://www.osap.gov.on.ca/OSAPPortal/en/A-ZListofAid/WEBUCONT033219.html

3. For those who do transfer to university, do transfer information sources and satisfaction with transfer differ across first generation and income groups?

Literature Review

At present, college graduates in Ontario have university transfer options available to them that provide access and/or university transfer credit (either block credit or course-by-course) to qualified students. However, admission and the amount of credit received are at the discretion of the receiving university and can vary widely.[8] Enhancement of college to university pathways has been suggested as a way to increase system-wide access for underrepresented groups (Andres & Krahn, 1999; Kerr, McCloy & Liu, 2010). However, the existing literature largely examines the differences in access and the success of various underrepresented groups, either within college or university, but not in terms of transfer between institutions.

Previous research indicates that higher parental income and education dramatically increase a student's likelihood to attend university. Using data from Statistics Canada's Youth in Transition Survey (YITS), Butlin (1999) found that high school graduates with at least one parent who had a university education were substantially more likely to attend university than their first generation peers. In Ontario, students from low income neighbourhoods, even when controlling for academic backgrounds, were 14 percentage points less likely to apply to university than those from high income neighbourhoods (Dooley, Payne & Robb, 2009). However, a considerable body of research confirms that community college access is fairly equitable across income and parental education groups, unlike university access (Berger, Motte & Parkin, 2009; Norrie & Zhao, 2011; Drolet, 2005). Focussing specifically on Seneca College and its neighbouring universities, in 2011 32% of first year Seneca students who knew their parents level of education had at least one parent with a university degree. [9] In contrast, in the same year, 54% of first year Ryerson students, and 55% of York students reported having at least one parent with a degree.[10]

High educational aspirations, both in high school and in postsecondary, have been shown to positively influence eventual educational attainment. Looker and Thiessen (2004) found much higher aspirations for university among 15 year olds whose parents had postsecondary education, but such differences were reduced when holding other factors (e.g. academic performance, demographics and school experience) constant. In addition, other research has shown that although educational aspirations in high school were influenced by socioeconomic status, the realization of aspirations was not (Homel & Ryan, 2014).

Studies from Ontario and British Columbia indicate that within universities, underrepresented students are more prominent among the pool of transfer students and less so within the general university

[8]An inventory of Ontario's college-university agreements is available at ontransfer.ca. More recently in Ontario, the Ontario Council on Admissions and Transfer has been encouraging the creation of transfer pathways through funding provided by annual calls for proposals (see Trick, 2013 for more on transfer agreements).
[9]Seneca's statistic obtained from Seneca's entering student survey (the Background Data survey) using the full student population.
[10]York (York Office of Institutional Planning and Analysis custom calculation) and Ryerson's (http://www.ryerson.ca/content/dam/upo/reports/undergrad/nsse/NSSE2011HL.pdf) statistics obtained from the National Survey for Student Engagement (NSSE).

population (Kerr, McCloy & Liu, 2010; Henderson & McCloy, 2017). However, American research found that 18% of students who were both low income and first generation transferred from college to university, compared with 53% of those who were neither (Engle & Tinto, 2008). Research comparing post-high school pathways in Edmonton and Vancouver, found that the Vancouver population had a somewhat more equitable access to postsecondary pathways, which the authors attributed to BC's more articulated system (Andres & Krahn, 1999). Within Ontario, graduates from higher income neighbourhoods were slightly more likely to transfer (McCloy, Steffler & Decock, 2017a). However, studies within Seneca College that have focussed on specific programs or populations have shown that once academic performance in college is controlled for, the effect of income on transfer disappears (McCloy, Steffler & Decock, 2017b; McCloy, Williams, Baker & Decock, 2017; McCloy, Steffler, Decock & Bain-Greenwood, 2017). These studies also showed that having at least one university educated parent, however, slightly increases the propensity to transfer even when controlling for a variety of factors.

Income or parental education may also be an important feature in the provision of transfer support services if, among students who do transfer, they impact where students obtain transfer information and their satisfaction with the transfer process. Previous research on Ontario graduates has shown that satisfaction with the transition experience was not affected by neighbourhood income (McCloy *et al*., 2017a). In another study of Seneca students, students who received one- on- one advising at a transfer office were somewhat more likely to have a university educated parent, but did not differ on neighbourhood income (McCloy, Baker, Williams & Decock, 2017).

Methodology

Dataset development

A dataset was developed, based on three categories of students who entered the college during 2007 to 2014 including:

1. *Entrants:* Students who began their studies during the period 2007-2014.[11]
2. *Graduates:* Graduates who completed their college credential and who responded to the Graduate Satisfaction Survey (conducted six months after graduation), which includes questions about transfer to university. The analysis was limited to the first credential they completed at the college.
3. *University Transfers:* Students who indicated they transferred to university after college graduation.

The linked dataset was created from the following sources: high school transcript, college entrance survey, English placement exam, college transcript, and graduate outcomes survey (GSS).[12] The student's permanent six-character postal code is used to attach census characteristics at the lowest level available (dissemination area level). Excluded from the sample are older students (23 years of age and older upon on entry) and, those whose first program at the college was a graduate certificate. The

[11] For simplicity, the analysis focuses on the time leading up to a student's first credential approved by the Ontario MAESD although 6% of the sample is observed completing multiple credentials. A student's entering program is considered to be the first MAESD-approved program the student is enrolled in.

[12] Students can enter and exit the college using multiple student IDs, and can complete several credentials. To overcome these challenges, the study identified multiple records in the dataset, and where appropriate, combined records to form a complete student history.

sample was further narrowed to students with Ontario high school records, and to those with valid Ontario postal codes as their permanent address. The sample for the current study is comprised of 36,084 entrants, 10,102 graduates (7,638 of whom responded to the GSS), and 1,106 transfer students (respondents who transferred to university). Overall, 53% of college entrants between 2007 and 2014 fit the criteria for the study. Only 8% of student records during this time frame were dropped due to incomplete or invalid information.

Demographic characteristics: Starting age and graduation age are computed using the student's date of birth and the term they are observed beginning/graduating from a ministry-funded program. Gender and citizenship status are derived from the college's student information system (SIS).

Neighbourhood income: To obtain a measure of a student's household income, the student's six-character permanent postal code from the college's student information system was matched to 2006 Dissemination Areas (DA) using the Statistics Canada postal code conversion file (PCCF). A student's neighbourhood income group is then derived by splitting the DAs into terciles of low, medium and high income based on the average pre-tax household income for Ontario households.[13] In Ontario, the average 2006 census DA contains 236 economic families, making this a reasonably precise proxy for economic well-being. [14]

Parental education: Information on the highest level of education attained by each parent was gathered from the entering student survey. The variable used in this report (whether either parent has a university degree) was derived from the question: "The highest level of education completed by my father (mother)/guardian is" (two separate questions for each parent). Students who responded with "I don't know" to *both* parents' education levels were classified as such and are referred to as the "Did not know" group throughout this paper.[15] If *neither* parent was reported to hold a bachelor's degree or higher, a student was classified as being "First Generation" or "Parental Education – No Degree."[16] This narrow classification was chosen for two reasons: firstly, because of the study's interest in understanding the influence of parental education on student transfer to university; and secondly, because a single response question requires students to select a single response when several may be applicable. For example, a parent may have completed a college credential and some university, but a

[13] Neighbourhoods were given the weight of their overall population prior to creation of terciles. Household equivalency measures were also computed and were used only to test for robustness of results. Note: "high income" neighbourhoods were required to have an aggregated household income of over $93,494 (2006 dollars) and "low income" with less than $68,321. These cutoffs were constructed using all Ontario DAs, using population weights, and dividing the result into thirds.

[14] The use of neighbourhood income is validated in Appendix 1 which breaks down neighbourhood income by deciles and compares it to the incidence of OSAP receipt.

[15] This group is interesting because it appears to be similar in many respects to first generation students, especially in terms of their neighbourhood income profiles. Not knowing their parents' education levels may be a risk factor in itself, and removing some of the most disadvantaged students (including those from families that placed little emphasis on PSE or had a non-traditional upbringing) from the sample may have a distorting effect. Small cell sizes prevented reporting the "did not know" group at various stages of the analysis, but this group was at no time removed from the dataset.

[16] Typically, first generation status is broadened to include any postsecondary experience, and so we have used such a definition to test the robustness of our findings.

student can only select one (see Figure 2). The category "completed university" serves to avoid ambiguity about the meaning of "first generation".[17]

Combining SES measures: As income and education levels are inextricably linked, a series of combined categories were created to better understand how neighbourhood income and parental education are influencing student transfer behaviour. The Pell Institute used a similar approach in its analysis of low income and first generation students (Engle & Tinto, 2008). The advantage of this approach is that it separates students who have one risk factor (first generation *or* low income) from those who have both (first generation *and* low income).

High school records: For those who attended an Ontario high school, the college's SIS contains one record for every high school course a student took from grade 9 through to grade 12 (or OAC). The subset used for analysis includes only those students who had a minimum of six senior courses from grade 11 and 12. From this subset of students, variables relating to an overall senior high school average, total number of courses failed, and course stream were created. For university admission from high school, students are required to have six University (U), Mixed (M), or OAC courses, with the minimum required grade average dependent on the selectivity of the institution. Data from Common University Data Ontario (CUDO) indicate that 70% was the reported minimum secondary school average of full-time, first-year university students in 2013 (high schools in the Greater Toronto Area (GTA) tended to have higher averages compared to other high schools). Students were considered "eligible" for university if their high school average (based on their top 6 grade 12 U/M/OAC courses) was at least 70%.

English-language proficiency: Most entering students at Seneca, depending on their program, are required to complete an English-language placement test (comprising a 300-word essay) to assess writing proficiency. Students are also required to complete a computerized placement test (Accuplacer) that assesses reading comprehension (120-point scale). Based on the test results, students are placed in one of several levels of English-language proficiency and corresponding courses:[18]

1. ELL–1 & ELL–2 (non-credit): English for English Language Learners whose test scores are two or three levels of proficiency below college-level English;
2. ELL–3 (non-credit): English for native-English speakers and for ELL learners whose test scores are one level of proficiency below college-level English (at the more proficient end of the ELL scale); and
3. College-level English (credit) and above. College-level English is required for all certificate/diploma programs. Includes degree-level English and those exempted (high scorers).

Entering student survey fields: Students are asked to complete a background survey as part of the mandatory English placement test. In cases where two or more complete surveys exist, the earliest record was kept to reflect the student's true entering status. In addition to the above mentioned parental education variables, this survey provided the following information:

[17] A second meaningful definition of "first generation" was constructed to include any college, university or trades experience, regardless of the parent's completion status. The results stemming from this classification are included in the two regression sections of the paper. None of the tables or figures in this report uses this classification.
[18] See Seneca College website, http://www.senecacollege.ca/testcentre/assessment.html

- University aspirations upon college entry: "After graduation from my program, I plan to …."
- Previous university: "The last school I attended was…."
- First language: "The language I learned first was…."
- Whether either parent has a university degree: "The highest level of education completed by my father (mother)/guardian is" (two separate questions for each parent).

College performance: Full transcripts of all college students who had ever registered in a MAESD approved program were extracted and overall GPA was calculated from the average of all credit courses taken. Since the focus of this study is on transfer to university, calculation of the student's overall GPA included courses that the student may have taken prior to completing their first credential, as they remain a part of the student's transcript when applying. Any courses completed after a student had graduated from their first credential were deliberately excluded from this calculation. These data also allow for computation of persistence measures (such as graduation status) within various timeframes, as well as for program-level details.

Transfer status and experience: The GSS contains information on every college graduate from a MAESD approved program in Ontario. Additionally, the survey asks the students for their employment status, employment outcomes, as well as if they went on to further education. For the sample, the survey has a response rate of 76% and asks the same questions in each year of the selected study period. A comparison of graduates and survey respondents on key demographics of interest is in Appendix 2. The GSS, mandated and funded by Ontario's MAESD, is administered to graduates approximately six months after graduation through telephone surveys conducted by an external service provider.[19] The use of these data allowed for the creation of a number of further education fields pertaining to a student's status six months after graduation, including:

- Transfer status – did the student transfer to university?
- Transfer experience – was the student satisfied with their academic preparation and transition experience? These questions are limited to students who continued on to full time education.

Program of study: Two classifications, "entering program type" and "graduating program type," were created using program of study data from the SIS and GSS, respectively. As in a previous analysis by McCloy & Liu, (2010) these classifications are based on the occupational cluster codes associated with the student's first program at the college in the case of entering program, and with the first program graduated from in the case of a graduating program. Programs that had a preparatory function were classified as "specialized" or "non-specialized" programs based on the content of the programming (e.g. a health, business, or pre-technology program is considered specialized, whereas a typical arts and science or college-access program is considered non-specialized).

Limitations

Several important factors are not addressed in this study due to data limitations. Firstly, without a comparative university population, this study is unable to determine whether the transfer pathway is bringing a larger share of low SES students into university. Secondly, students who transfer prior to

[19] On a system-wide level, the survey has primarily been used to gauge the performance of colleges on three of the five Key Performance Indicators (KPIs): graduate satisfaction, employment rate, and employer satisfaction – each of which are tied to a modest amount of performance funding and are made public.

completing a college program are indistinguishable from those who discontinue from PSE altogether. Therefore, conclusions about the transfer intentions of the entering population and the transfer behaviour of the graduate population are limited in scope. Thirdly, previous work has uncovered significant differences in transfer behaviours across regions of birth (McCloy, Steffler, Decock & Bain-Greenwood, 2017). For this study, however, data limitations leave only a citizenship flag to identify recent immigrants; cultural differences among immigrants are going unobserved. Fourth, aspirations for transfer and actual transfer are both reported at particular points in time, at college entry for aspirations, and six months after graduation for transfer. A student's college experience may have had a role in changing a student's aspirations, and a student may have transferred at a later date than six months after graduation. Lastly, this study is based at a large urban college which may have differing opportunities for transfer, program mix, and student composition than others in the province and so caution should be used in extrapolating specific findings to the system as a whole.

Results

Analysis of entrants

Figure 1 contains the detailed breakdown of parent's education. The vast majority had a minimum of a high school diploma, however a large share of students did not know their father's (22%) or mother's education (19%). Of the parents who did attend postsecondary, fairly equal numbers attended college or a trades program as had attended university.

Figure 1. Highest parental education attained, college entrants, 2007-2014.

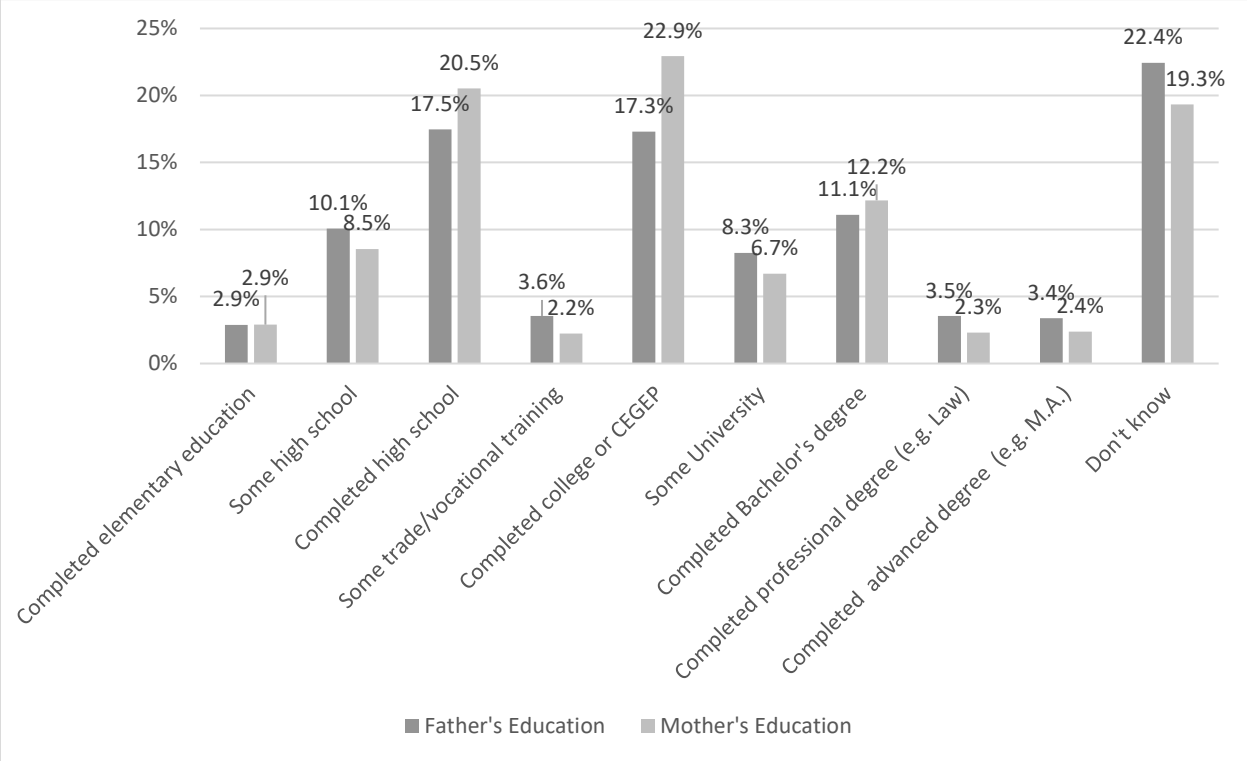


Table 1 contains the breakdown by the socioeconomic categories described previously. Almost one quarter of students had at least one parent with a degree, and 34% came from the lowest income tercile

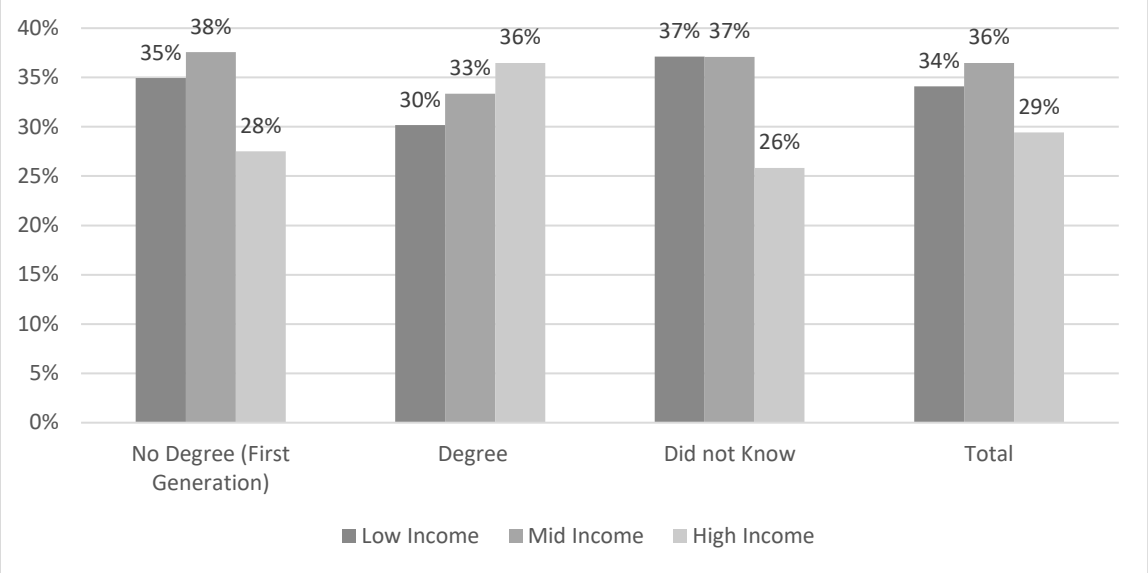
for the Ontario population. The Seneca student population closely mirrors the overall Ontario population, with a slight underrepresentation at the highest tercile for income.

Figure 2 shows how neighbourhood income differs by parental education. Both first generation students and those who don't know their parents' education are less likely to be from the highest income tercile.

Table 1. Distribution by income and parental education, college entrants, 2007-2014.

		Parental Education Status (parent with highest ed)			
		No Degree (First Generation)	Degree	Did not Know	Total
Neighbour-hood Income	Low Income	21.4%	7.3%	5.4%	34.1%
	Mid Income	23.0%	8.0%	5.4%	36.5%
	High Income	16.9%	8.8%	3.7%	29.4%
	Total	61.4%	24.1%	14.5%	100.0%

Figure 2. Neighbourhood income distribution by parents' education, college entrants, 2007-2014.



As summarized in Table 2, important differences in demographic characteristics are evident across SES groups. Non-Canadian citizens are disproportionately represented among those who live in low-income neighbourhoods and have a parent with a degree.[20] Students from higher income neighbourhoods are more often Canadian citizens and are more likely to be male, to be slightly younger, and are more likely to report English as their first language.

[20] Non-citizens include permanent residents, those with non-student visas, and refugees. Those with student visas were removed from the sample.

Table 2. Demographic characteristics of college entrants, 2007-2014.

Characteristic	No Degree (First generation)			Degree		
DA Income Group	Low	Middle	High	Low	Middle	High
Number of entrants	7,727	8,310	6,087	2,624	2,900	3,173
% Canadian Citizen	88.7%	94.1%	96.0%	80.2%	90.1%	93.8%
% < 20 years old at entry	79.5%	84.6%	86.7%	77.2%	79.2%	80.2%
% Male	45.4%	45.9%	50.7%	51.7%	55.0%	58.9%
% English as first language	64.9%	73.1%	79.2%	50.1%	65.7%	75.7%

Note: Appendix 3 offers a full descriptive table for all entering students including those who responded "Do not know" when asked about their parents' education. These students are present in all totals throughout the paper and in all of the regression models. The columns pertaining to these students are removed from the descriptive section for brevity.

Program selection can be influenced by socio-economic status and by a number of other factors (e.g. academic preparedness, aspirations). Program choice may be reflective of aspirations and will present students with different transfer opportunities upon completion. For example, certain preparatory programs are designed specifically for transfer and the students in these programs are very likely to aspire and transfer to university, whereas those in technology programs may have more of a career focus. Table 3 shows the differences in program selection across SES groups. Regardless of neighbourhood income, first generation students are more likely to enter community service programs and less likely to enter engineering technology programs, and they are also more likely to enter programs of a shorter duration. In two extreme cases, 8% of the high income, non-first generation students select into degree programs, compared to 3% of those who are first generation and low income.

Table 3. Program characteristics of college entrants, 2007-2014.

Parental Education	No Degree (First Generation)			Degree		
Neighbourhood Income	Low Income	Mid Income	High Income	Low Income	Mid Income	High Income
1-year certificate	11.3%	11.3%	11.7%	9.3%	9.2%	9.2%
2-year diploma	55.3%	56.7%	55.7%	46.8%	49.5%	50.7%
3-year advanced diploma	30.1%	28.2%	28.2%	37.0%	32.9%	32.1%
4-year degree	3.3%	3.8%	4.3%	6.9%	8.3%	8.0%
Business	31.6%	29.1%	28.0%	37.9%	33.2%	32.4%
Community Services	19.2%	22.3%	22.9%	12.2%	14.4%	17.1%
Creative and Applied Arts	10.7%	11.2%	11.2%	9.6%	11.9%	11.8%
Health	4.1%	4.9%	5.0%	4.0%	4.7%	4.3%
Hospitality	5.0%	4.0%	2.9%	3.7%	3.0%	2.4%
Engineering/Technology	15.2%	13.7%	14.3%	19.9%	18.8%	17.5%
Preparatory/Upgrading - Specialized	6.1%	6.0%	5.8%	5.2%	5.5%	5.0%
Preparatory/Upgrading - Unspecialized	8.2%	8.9%	10.0%	7.6%	8.6%	9.4%

Table 4 below summarizes the high school preparation of the entering college student sample. Taking university preparation courses in high school is much more common among those who have a parent with a degree, whereas higher income students are only slightly more likely than lower income students

to have done so. HS grade distribution is similar among all groups, however, lower income students were more likely to have failed courses in high school, irrespective of parental education.

English-language proficiency increases with both income and parental education. These differences in demonstrated language ability held true when restricting to only those who had reported English as their first language (not shown). First generation students were much less likely to have attended university, whereas students from lower income neighbourhoods were slightly less likely. For example, of high income, non-first generation students, 15% previously attended university compared to only 6% of students who were both from a low income neighbourhood and who were first generation.

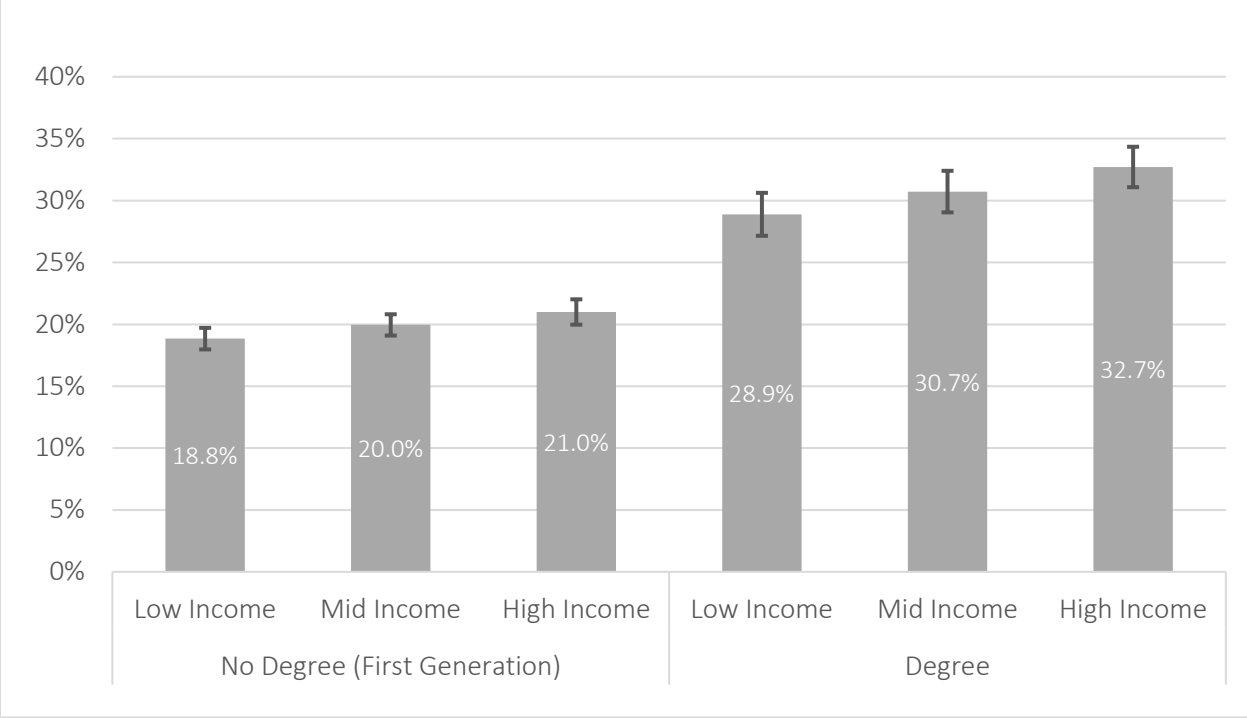
Table 4. Academic preparation of college entrants, 2007-2014.

Parental Education		No Degree (First Generation)			Degree		
Neighbourhood Income		Low Inc	Mid Inc	High Inc	Low Inc	Mid Inc	High Inc
Number of entrants		7,727	8,310	6,087	2,624	2,900	3,173
HS courses mostly univ prep		51.7%	53.7%	54.9%	69.7%	71.9%	72.2%
High school GPA	< 70%	56.3%	54.7%	53.5%	53.6%	52.9%	51.3%
	70% -80%	36.9%	38.2%	38.9%	38.6%	37.9%	40.8%
	> 80%	6.7%	7.1%	7.6%	7.8%	9.2%	7.9%
Failed no senior HS courses		47.0%	53.2%	59.4%	46.0%	52.6%	57.2%
Last school was university		5.9%	6.6%	7.4%	11.7%	13.7%	15.3%
College English Course Placement	ELL Level 1& 2	9.0%	5.9%	3.7%	8.8%	4.8%	2.4%
	ELL-3*	45.6%	43.1%	42.0%	41.0%	35.1%	32.4%
	College-Level English & Exempt	45.4%	51.0%	54.4%	50.2%	60.1%	65.2%

Note: *Both English-language learners and native English speakers who scored one level of proficiency below college-level English entered the same course and could not be distinguished; labelled here as ELL-3.

Students with university-educated parents are far more likely to be eligible for admission to university directly from high school. Figure 3 shows that 32.7% of high income, non-first generation students had the high school courses and grades required for university entrance, compared with only 18.8% of low income, first generation students. Differences by neighbourhood income were minimal within parental education groups, ranging from 19% to 21% for first generation students, and 29% to 33% for non-first generation students.

Figure 3. University eligibility of college entrants, 2007-2014.

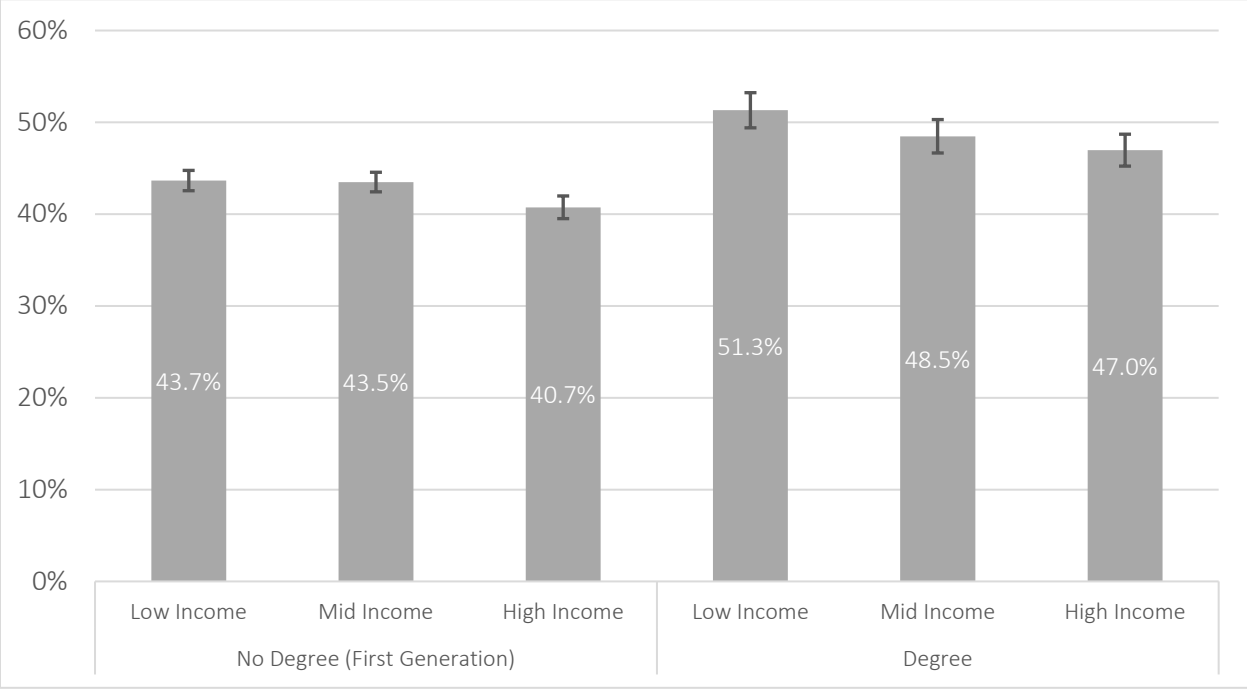


Note: Black bars indicate the bounds of the 95% confidence intervals. "University eligibility" was defined as obtaining a 70% average in 6 U/ M/ or OAC HS courses.

Who aspires to attend university?

Upon entry to the college, students were surveyed about their plans after graduation. Figure 4 shows that for each neighbourhood income level, non-first generation students are more likely to have plans for university after graduation. Low income, non-first generation students were the most likely to aspire to university (51.3%); whereas those who were high income and first generation were the least likely (40.7%). Those who did not know their parents' education had the lowest levels of university aspirations (see Appendix 3).

Figure 4. Aspirations for university, by parental education and neighbourhood income, college entrants, 2007-2014.



Note: Black bars indicate the bounds of the 95% confidence intervals.

Who aspires to transfer? Regression Findings

The descriptive results above indicate that first generation students are less likely to plan to attend university after graduation, while the results by neighbourhood income are more variable. Model 1 in Table 5 reports the results from combining education and income into a single variable. In models 2 and 3, income and parental education are presented separately along with a number of control variables at the individual level. In each case, probit models are used to estimate the relationships, and the outcome of interest is: "Did the student aspire to attend university upon entry to the college (No/Yes)?"

Model 1 shows that students from low income neighbourhoods with university-educated parents, are the most likely to aspire to transfer. When compared to students from low income neighbourhoods who are first generation, this group is 7% points more likely to aspire to transfer.

Models 2 and 3, which examines income and parental education separately, parental education plays a significant role in a student's aspirations for transfer to university, whereas neighbourhood income plays a minimal role. Once controlling for a variety of factors, the non-first generation students remain 6% points more likely to aspire to transfer than their first generation peers. In contrast, students from high income neighbourhoods are 2% points less likely to aspire to transfer compared to low income students.

In the descriptive section, there is only a slight difference between males and females in transfer aspirations. In the regression models, however, male college entrants are 8% points less likely to aspire to transfer to university than females when holding other factors constant. After conducting analysis for males and females separately, it was further determined that parental education is a much stronger determinant of university aspirations among females than it is for males (not shown).

Reporting from model 1, entering students over the age of 20 are 13% points less likely to aspire than their younger peers. Those demonstrating lower levels of English-language proficiency (specifically those in level 1 & 2 English courses) are 3% points more likely to aspire than those placed in college-level English (or above). Canadian citizens are 5% points less likely to aspire than non-citizens; those who spoke English as a first language are 8% points less likely; and those with previous university are 6% points less likely. Students who took university preparation courses and achieved lower grades are substantially more likely to aspire to go to university than their peers. Compared to two-year diploma entrants, students entering four-year degree programs and one-year certificate programs are 22% and 38% points less likely to aspire, respectively. Those in three-year advanced diploma programs are 11% points more likely to aspire to transfer. Not surprisingly, those in preparatory type programs are very likely to aspire to university, with hospitality and creative and applied arts entrants having the lowest propensity to aspire. Additionally, recent years show that entering students have become significantly less likely to aspire to university.

Table 5. Regression analysis: Estimated propensity to aspire to university, college entrants, 2007-2014.

Reference Group	Variables	Aspirations for University (1)	Aspirations for University (2)	Aspirations for University (3)
SES Group (Ref: First Generation, Low Income)	Mid Inc, First Gen	0.002		
		(0.009)		
	High Inc, First Gen	-0.024**		
		(0.010)		
	Low Inc, Degree	0.073***		
		(0.013)		
	Mid Inc, Degree	0.051***		
		(0.013)		
	High Inc, Degree	0.042***		
		(0.012)		
	Low Inc, Ukn Parental Ed	-0.023		
		(0.014)		
	Mid Inc, Ukn Parental Ed	-0.032**		
		(0.014)		
	High Inc, Ukn Parental Ed	-0.039**		
		(0.016)		
Parental Education Alone (Ref: First Gen)	1+ Parent with Degree		0.060***	
			(0.007)	
	Did not know Parental Ed		-0.025***	
			(0.009)	
Neighbourhood Income Alone (ref: Low Income)	Mid Income			-0.003
				(0.007)
	High Income			-0.018**
				(0.008)
Starting Program Type (Ref: Business)	Community service	0.065***	0.063***	0.063***
		(0.009)	(0.009)	(0.009)
	Creative and Applied Arts	-0.221***	-0.222***	-0.221***
		(0.009)	(0.009)	(0.009)
	Health	-0.010	-0.012	-0.009
		(0.016)	(0.016)	(0.016)
	Hospitality	-0.292***	-0.292***	-0.292***
		(0.012)	(0.012)	(0.012)
	Engineering/Technology	-0.046***	-0.046***	-0.044***
		(0.009)	(0.009)	(0.009)

	Preparatory/Upgrading - Specialized	0.204***	0.205***	0.206***
		(0.024)	(0.024)	(0.024)
	Preparatory/Upgrading - Non Specialized	0.424***	0.424***	0.425***
		(0.011)	(0.011)	(0.011)
Starting Credential Type (Ref: 2-yr Diploma)	Certificate – 1 yr	-0.380***	-0.380***	-0.382***
		(0.020)	(0.020)	(0.020)
	Advanced Diploma – 3-yr	0.105***	0.105***	0.105***
		(0.008)	(0.008)	(0.008)
	Degree – 4-yr	-0.219***	-0.220***	-0.213***
		(0.016)	(0.016)	(0.016)
Status in Canada (ref: no)	Canadian	-0.048***	-0.050***	-0.057***
		(0.012)	(0.012)	(0.012)
Gender (Ref: Female)	Male	-0.083***	-0.084***	-0.082***
		(0.007)	(0.007)	(0.007)
Age at Entry (Ref: Under 20 yrs)	20 yrs+	-0.125***	-0.123***	-0.121***
		(0.009)	(0.009)	(0.009)
English Placement (Ref: College English & exempt)	ELL –1&2	0.028***	0.029***	0.025***
		(0.007)	(0.007)	(0.007)
	ELL –3*	0.027	0.028	0.020
		(0.015)	(0.015)	(0.015)
Previous School Attended (Ref: High school and other)	Last school attended university	-0.057***	-0.059***	-0.050***
		(0.014)	(0.014)	(0.014)
First Language Learned (Ref=English)	Other	-0.078***	-0.080***	-0.079***
		(0.007)	(0.007)	(0.007)
High School Course Type Mostly U/M/OAC (Ref=No)	Yes	0.122***	0.122***	0.128***
		(0.007)	(0.007)	(0.007)
High School avg. (Ref: < 70%)	70-80%	-0.086***	-0.086***	-0.086***
		(0.007)	(0.007)	(0.007)
	>80%	-0.186***	-0.186***	-0.186***
		(0.013)	(0.013)	(0.012)
Year of Entry (Ref: 2007)	2008.year	-0.008	-0.008	-0.008
		(0.012)	(0.012)	(0.012)
	2009.year	-0.024	-0.024	-0.025
		(0.012)	(0.012)	(0.012)
	2010.year	-0.013	-0.012	-0.014
		(0.012)	(0.012)	(0.012)
	2011.year	-0.013	-0.013	-0.015
		(0.012)	(0.012)	(0.012)
	2012.year	-0.022	-0.021	-0.023
		(0.012)	(0.012)	(0.012)
	2013.year	-0.040***	-0.038***	-0.041***
		(0.012)	(0.012)	(0.012)
	2014.year	-0.043***	-0.041***	-0.044***
		(0.012)	(0.012)	(0.012)
Observations		30,554	30,554	30,554
Pseudo R2		0.1237	0.1226	0.1207

Note: Robust standard errors in parentheses; coefficients reported represent the marginal effects evaluated at the mean. ***p<0.01, **p<0.05; *Both English-language learners and native English speakers who scored one level of proficiency below college-level English entered the same course and could not be distinguished; labelled here as ELL-3.

Grades and Graduation Rates

Academic performance in college (grades and graduation rates) is an important marker of success because to be eligible for many articulated pathways (and to maximize transfer credit), a college credential and a minimum college GPA must be attained. **Table 6** shows differences in average GPAs across SES groups (graduates and non-graduates).[21] Low income students have the lowest GPAs, which differed little by parental education. Students from middle and high income students have higher GPAs with students who are both higher income and non-first generation having the highest GPAs.

Table 6: Average grades of college entrants by parental education and income, 2007-2014.

Parental Education	No Degree (First Generation)			Degree		
Income Group	Low Inc	Mid Inc	High Inc	Low Inc	Mid Inc	High Inc
Overall GPA (/4pt)	1.93	2.04	2.08	1.95	2.11	2.15
SD of GPA	1.18	1.18	1.17	1.19	1.18	1.17

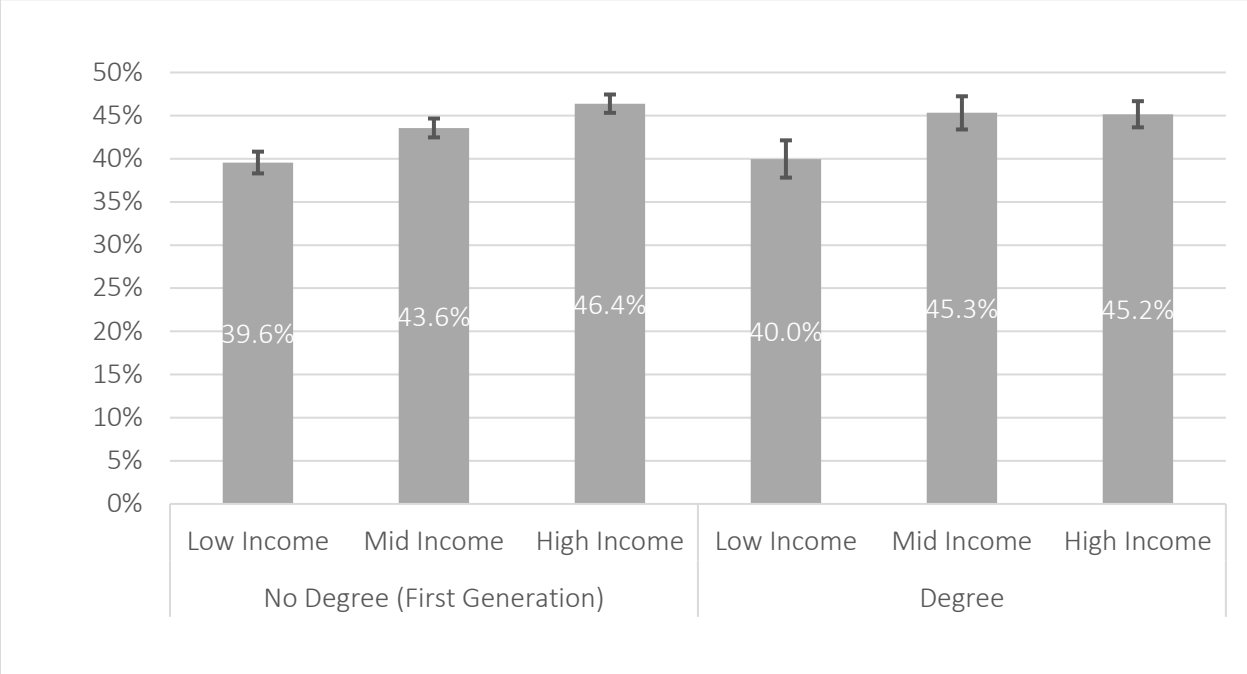
Figure 5 shows the share of students in each SES group who completed any program within 2x their initial program's length (+3 years for 4-year programs).[22, 23] Those from higher income neighbourhoods had higher graduation rates, but no major differences exist between parental education groups. Because of the possibility of early transfer, it is not known whether the differences in attrition are due to students leaving the PSE system or switching institutions.

[21] Level of high school preparation varies widely by SES gradients (McCloy *et al*., 2017).

[22] Note that this will differ from the MTCU KPI rate for Seneca because the MAESD calculations provides for double the program length and grad certificates and degrees, and older students are excluded from this sample.

[23] Overall, the graduation rate (and rate of graduation with a 3.0 GPA or higher) for students from low income neighbourhoods is 40.0% compared to 45.4% for those from high income neighbourhoods (author's calculations are not shown). Those from higher income neighbourhoods are also more likely to graduate with a GPA that facilitates transfer; 18.2% of low income college entrants graduate with a 3.0 GPA or higher, compared to 22.3% of those from high income neighbourhoods (data not shown).

Figure 5. Graduation rates by neighbourhood income and parental education, college entrants, 2007-2013.*



*Note: entrants of 1-, 2- and 3-year programs were given double the program length to graduate, and those entering degree programs were given an additional 3 years. Others are considered to be in-progress. Black bars indicate the bounds of the 95% confidence intervals.

Who Transfers?

Of those students in the sample who graduated from at least one college program, GSS provides information on their activity six months after graduation. These data were used to determine who transferred to university. Table 7 shows the transfer rates for graduates by various characteristics. Six months after graduation, 14.5% of the graduate sample reported being in university. Transfer rates are highest among those who aspired to university upon entry to the college, as the transfer rate among these graduates is 25% compared to only 6% for those who did not indicate that they intended to transfer. Transfer rates for males, females, Canadian citizens, and non-Canadian citizens were all similar, whereas younger graduates were more likely to transfer (17% vs 12%). Interestingly, those who reported English as a first language had a lower transfer rate, whereas those with higher demonstrated language proficiency upon entry had higher transfer rates.

Table 7. Transfer rates to university by sociodemographic characteristics, college graduates, 2008-2014.

Group		Transfer Rate
Number of Respondents		7638
Overall Transfer rate to University		14.5%
Citizenship	Canadian	14.3%
	Non-Canadian	15.4%
Age at Graduation	<22 yrs	17.4%
	22 yrs+	12.3%
Gender	Male	14.1%
	Female	14.8%
First Language	English	13.7%
	Other	16.2%
English-language Placement	Below College – Levels 1 & 2	9.9%
	Below College – Level 3*	14.0%
	College level and above	15.4%

Note:*Both English-language learners and native English speakers who scored one level of proficiency below college-level English entered the same course and could not be distinguished; labelled here as ELL-3.

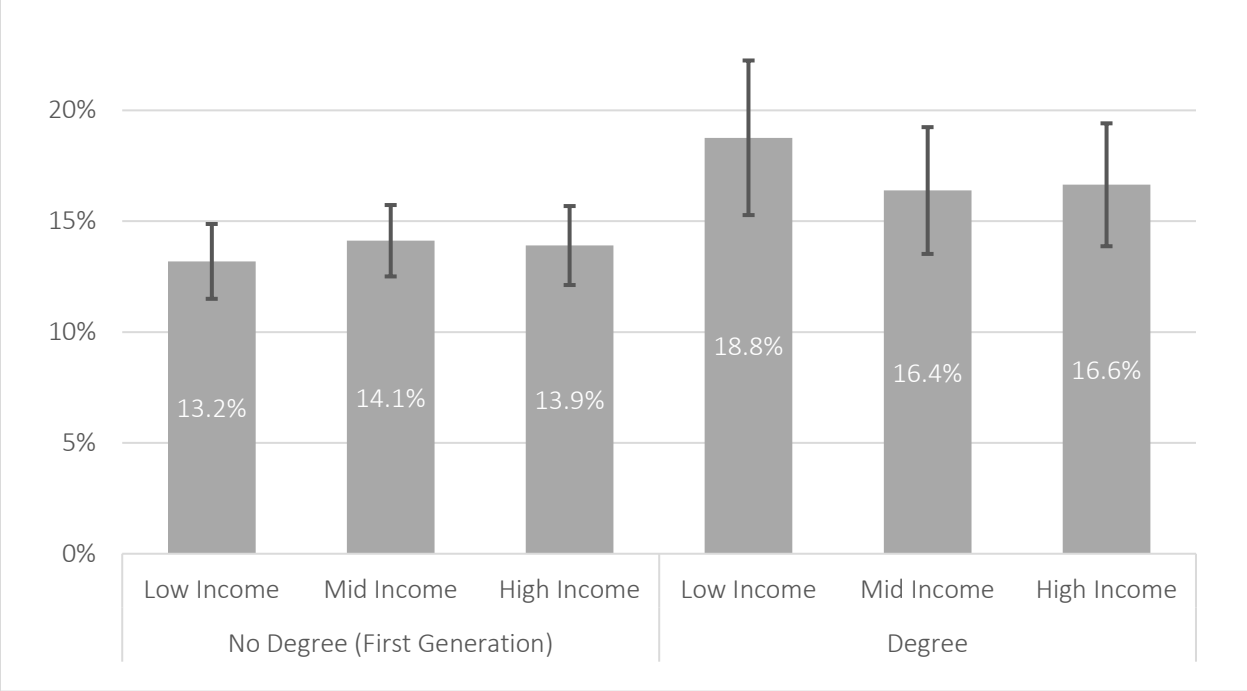
Table 8 shows the differences in transfer rates across credential types, as well as the graduating GPAs. Those completing advanced diploma programs had the highest transfer rate at 20%, whereas those who had completed a degree program had the lowest transfer rate at 8%. Diploma and certificate programs had transfer rates of 14% and 9% respectively. Non-specialized preparatory programs had the highest transfer rate by program type, as expected, given the nature of these programs. Transfer rates range from 36.8% from these types of programs to a low of 2% for health programs. Creative and applied arts and hospitality programs also had notably low transfer rates. As for graduating GPA, those with lower than 3.0 had a transfer rate of 10%, whereas those with a GPA between 3.0 and 3.5 had a transfer rate of nearly double that, at 19%. Those with a GPA above 3.5 had a transfer rate of 20%. Under many articulation agreements, many of the students with a GPA below 3.0 should be ineligible for transfer, yet 10% still do.

Table 8. Transfer rates to university, by college program characteristics and academic performance, college graduates, 2008-2014.

Group		Transfer Rate
Credential Length	1-Year Certificate	9.2%
	2-Year Diploma	14.1%
	3-Year Adv. Diploma	19.7%
	4-Year Degree	7.8%
Credential Type	Business	16.1%
	Community Service	20.2%
	Creative and Applied Arts	4.2%
	Health	2.3%
	Hospitality	3.0%
	Engineering/Technology	11.3%
	Preparatory/Upgrading – Specialized	9.1%
	Preparatory/Upgrading – Non-Specialized	36.8%
College GPA	< 3.0	9.7%
	3.0 to 3.5	18.7%
	Above 3.5	19.8%

Figure 6 shows the transfer rates for graduates across six SES groups. Graduates from low income neighbourhoods and whose parents have a degree have the highest transfer rates (19%), followed by non-first generation graduates from middle and high income neighbourhoods. In comparison, first generation graduates have lower transfer rates which are similar across income groups (between 13% and 14%).

Figure 6.Transfer rates to university by parental education and income, 2008-2014 graduates.

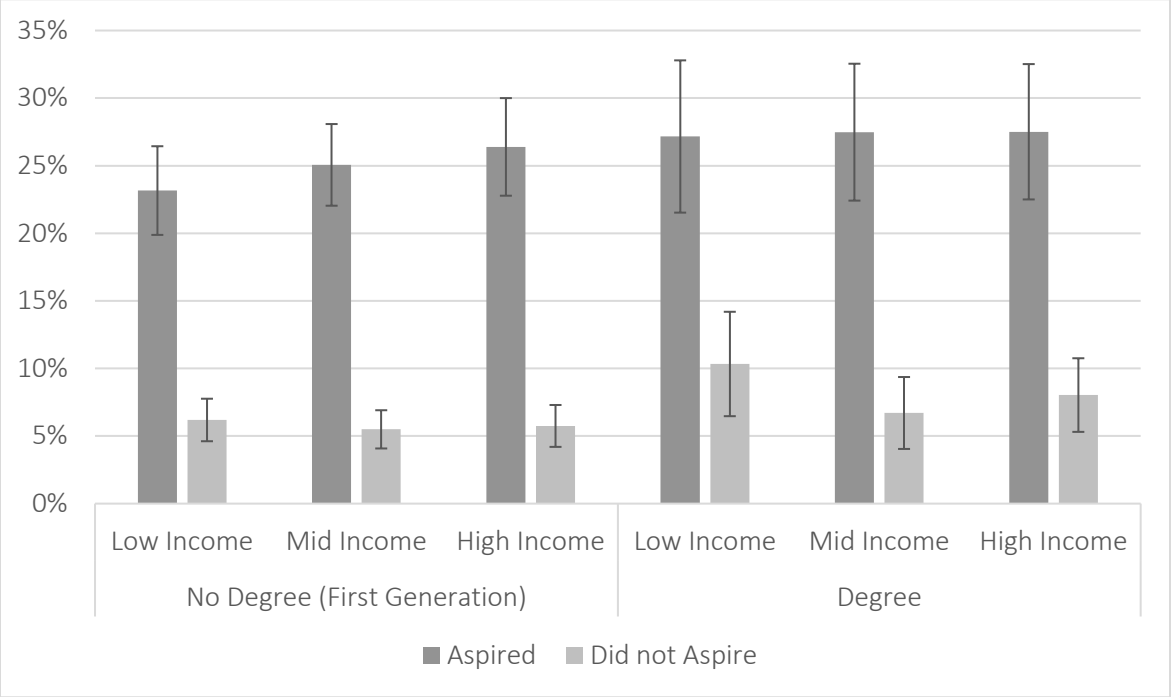


Note: Black bars indicate the bounds of the 95% confidence intervals.

Another way of looking at the transfer issue is to focus only on those graduates who, upon college entry, indicate they want to go to university.[24] Overall, 25.1% of college entrants who planned to attend university after college transferred, compared with just 6.3% of those who entered college without plans. Figure 7 shows that 23.2% of students who were low income *and* first generation converted their university aspirations into reality, by transferring to university within six months of graduation. This compares to 27% of aspiring first generation graduates (with only slight variation across income groups). For students who did not aspire to transfer upon entry to the college, it can be surmised that their aspirations changed over the course of their time at college. Transfer rates in this group are still higher among those who have a parent with a degree (ranging from 6.7% to 10.3%) compared to those who do not (5.5% to 6.2%).

[24] There are numerous alternative methods of computing transfer rates (see Decock, 2007).

Figure 7. Transfer rates by entering aspirations, neighbourhood income and parental education, 2008-2014 college graduates.

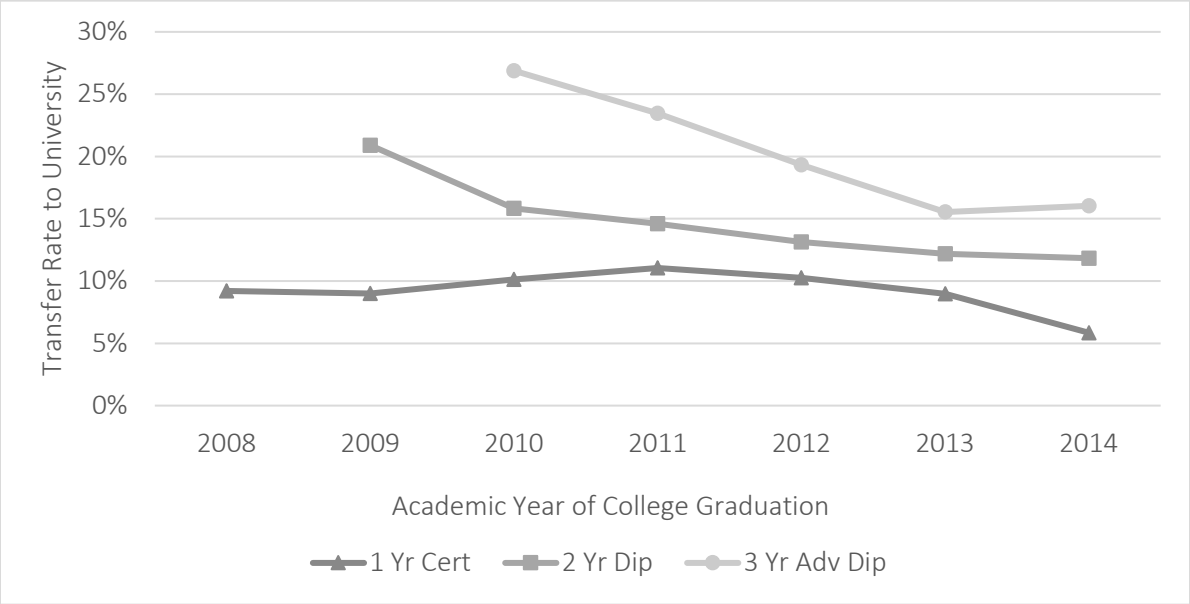


Note: Black bars indicate the bounds of the 95% confidence intervals.

Figure 8 shows the general decline in transfer rates to university by college credential type.[25] Of those who graduated from advanced diploma programs in 2010, 27% transferred to university, and this rate falls to 16% in 2014. Graduates from two-year diploma programs experience a similar decline over the period of study, from 21% of graduates transferring in 2009 to 12% in 2014.

[25] A total of 205 students who graduated from four-year programs (and responded to the GSS) are excluded from Figure 8.

Figure 8: Decline in transfer rates over time, college graduates, 2008-2014.



Regression Results – Who Transfers?

An earlier section of this report described the influence of the various demographic and socio-demographic factors on a college entrant's aspirations for transfer. Conditional on graduation, it is now possible to evaluate which students transferred to university within six months of graduating from a college program. A series of probit models were used to estimate the probability of transferring to university (0/1) and compute and report marginal effects at the means. Models 1 and 2 in Table 9 examine parental education and neighbourhood income as model covariates in isolation from one another. Model 3 uses the combined measure found throughout the paper. Model 4 estimates a student's propensity to transfer using the full sample of GSS respondents, but without controls for aspirations. Model 5 estimates the same relationships as the first four, however the sample is restricted to only students who aspired to university

In model 1, the non-first generation students were 3% points more likely to transfer compared to those who did not have university-educated parents. In model 2, neighbourhood income is found to be largely unrelated to a student's propensity to transfer to university controlling for status in Canada, gender, program, age, English proficiency, first language, and college performance. In model 3, using the combined specification observed throughout the paper, it becomes clear that students from the low income neighbourhoods and with a university-educated parent are the most likely to transfer (4% points more likely than first generation, low income students).

Focusing on the results from model 3, those who graduated in the fall are 18% points less likely than winter graduates to transfer to university within six months of graduating. This is likely due to the student's graduation date being out of sync with the traditional university school year start (beginning in the fall). Those over the age of 20 are 3% points less likely to transfer than their younger peers, and those who spoke English as a first language are also 3% points less likely. Graduates with a 3.0 to 3.5 GPA and a 3.5 GPA+ are 8% and 9% points more likely (respectively) to transfer compared to those with a GPA lower than 3.0. Those graduating from two- and three-year diploma programs are the most likely students to transfer to university. Those in non-specialized preparatory programs (e.g. general arts type

programs) have a particularly high propensity to transfer; those in specialized preparatory programs (e.g. pre-technology type programs) are no more likely to transfer to university than the reference group of business graduates.

Entering students with a parent who has completed a university degree are more likely to transfer to university, but this is only significant among students from low income neighbourhoods. College performance, aspirations, and program characteristics are powerful predictors of transfer to university among college graduates, much more so than socioeconomic characteristics. As noted earlier in this paper, aspirations are strongly related to parental education; once aspiration to university is removed as a control variable, there is a significant gap in transfer propensity between parental education groups (model 4). Much of the observed difference in transfer can be explained by initial aspirations, program choice upon entry to the college, and performance in a student's college coursework.

Initial aspirations prove to be an important predictor of eventual transfer as those who indicated they intended to transfer were 11% points more likely to do so at graduation, all else equal. To examine how this group differs from sample at large, relationships are estimated among only those who aspired to transfer (model 5). For this group, high grades in college become a much stronger correlate of transfer compared with other iterations of the same model. In this case, those with a GPA of 3.0 to 3.5 and 3.5+ are 18% and 21% points, respectively, more likely to transfer compared to those with a GPA lower than 3.0. Additionally, the significance of the SES variables vanishes from this new specification. This indicates that for those who initially wanted to transfer, grades are a determining factor for whether or not they are able to. It appears that the impact SES has on transfer outcomes is primarily by way of student aspirations.

To understand if the transfer results are sensitive to changes in the definition of "first generation", the definition of "first generation" was broadened from "neither parent with a university degree or higher" to neither parent attended any PSE (including incomplete and complete college or trades, and incomplete university). Under this broader definition, first generation students were no more or less likely to transfer than their peers (model not shown). This indicates that having a parent who is a degree holder matters more for university transfer than any parental PSE experience.

Table 9. Regression analysis: Propensity to transfer to university, college graduates, 2008-2014.

		(1) Transfer to University	(2) Transfer to University	(3) Transfer to University	(4) Transfer to Uni - No Aspirations Control	(5) Transfer to Uni - Aspirants
Plans for university (Ref: Other Aspirations)	Aspired to University	0.112***	0.114***	0.112***		
		(0.008)	(0.008)	(0.008)		
SES Group (Ref: First Generation, Low Income)	Mid Inc, First Gen			0.002	0.004	0.004
				(0.010)	(0.010)	(0.024)
	High Inc, First Gen			0.002	0.002	0.006
				(0.010)	(0.011)	(0.026)
	Low Inc, Parental Degree			0.042**	0.055***	0.041
				(0.018)	(0.020)	(0.037)
	Mid Inc, Parental Degree			0.029	0.037**	0.059
				(0.015)	(0.016)	(0.035)
	High Inc, Parental Degree			0.022	0.029*	0.033
				(0.014)	(0.015)	(0.032)

	Low Inc, Ukn Parental Ed			-0.005	-0.002	-0.010
				(0.016)	(0.017)	(0.037)
	Mid Inc, Ukn Parental Ed			-0.017	-0.017	-0.052
				(0.014)	(0.014)	(0.032)
	High Inc, Ukn Parental Ed			-0.002	0.001	-0.012
				(0.018)	(0.019)	(0.040)
Parental Education Alone (Ref: Parent No Degree)	1+ Parent with Degree	0.028***				
		(0.009)				
	Did not know Parental Ed	-0.010				
		(0.009)				
Neighbourhood Income Alone (ref: Low Income)	Mid Income		-0.002			
			(0.008)			
	High Income		0.000			
			(0.009)			
Starting Program Type (Ref: Business)	Community service	0.039***	0.038***	0.040***	0.051***	0.051**
		(0.012)	(0.012)	(0.012)	(0.013)	(0.024)
	Creative and Applied Arts	-0.070***	-0.070***	-0.070***	-0.088***	-0.120***
		(0.008)	(0.008)	(0.008)	(0.009)	(0.020)
	Health	-0.074***	-0.074***	-0.074***	-0.088***	-0.136***
		(0.010)	(0.011)	(0.010)	(0.011)	(0.022)
	Hospitality	-0.064***	-0.064***	-0.063***	-0.085***	-0.110***
		(0.014)	(0.014)	(0.014)	(0.012)	(0.038)
	Engineering/Technology	-0.028***	-0.027**	-0.029***	-0.039***	-0.015
		(0.010)	(0.011)	(0.010)	(0.011)	(0.024)
	Preparatory/Upgrading – Specialized	0.063	0.069*	0.064	0.083*	0.152
		(0.039)	(0.040)	(0.039)	(0.044)	(0.077)
	Preparatory/Upgrading – Non- Specialized	0.329***	0.331***	0.329***	0.445***	0.428***
		(0.036)	(0.036)	(0.036)	(0.036)	(0.043)
Starting Credential Type (Ref: 2yr Diploma)	Certificate 1-yr	-0.089***	-0.092***	-0.089***	-0.121***	-0.173***
		(0.020)	(0.020)	(0.020)	(0.021)	(0.041)
	Advanced Diploma - 3yr	0.058***	0.058***	0.058***	0.072***	0.093***
		(0.009)	(0.009)	(0.009)	(0.010)	(0.023)
	Degree - 4yr	-0.051**	-0.047*	-0.050**	-0.071***	-0.054
		(0.024)	(0.024)	(0.024)	(0.025)	(0.063)
Status in Canada (Ref: no)	Canadian	0.002	-0.003	0.003	-0.006	0.018
		(0.014)	(0.014)	(0.014)	(0.015)	(0.030)
Gender (Ref: Female)	Male	-0.002	-0.001	-0.002	-0.013*	-0.002
		(0.007)	(0.007)	(0.007)	(0.008)	(0.017)
Age at Entry (Ref: Under 20 yrs)	20 yrs+	-0.030***	-0.029**	-0.030***	-0.048***	-0.076***
		(0.011)	(0.011)	(0.011)	(0.012)	(0.028)
English-language Placement (Ref: College-level English)	ELL- level 1&2	-0.010	-0.011	-0.010	-0.006	-0.008
		(0.007)	(0.007)	(0.007)	(0.008)	(0.017)
	ELL – level 3*	-0.018	-0.021	-0.018	-0.014	-0.004
		(0.019)	(0.019)	(0.019)	(0.021)	(0.042)
Previous School Attended (Ref: high school and other non-university)	Last school attended university	0.023	0.028	0.023	0.019	0.065
		(0.014)	(0.014)	(0.014)	(0.015)	(0.037)
English as First Language Ref: yes		-0.030***	-0.030***	-0.030***	-0.042***	-0.050***
		(0.008)	(0.008)	(0.008)	(0.008)	(0.018)
Seneca GPA (Ref: <3.0)	3.0 - 3.5	0.075***	0.074***	0.075***	0.078***	0.175***
		(0.008)	(0.008)	(0.008)	(0.008)	(0.018)
	3.5+	0.087***	0.088***	0.087***	0.085***	0.214***
		(0.009)	(0.009)	(0.009)	(0.010)	(0.022)
	Summer	-0.015	-0.015	-0.016	-0.010	-0.029

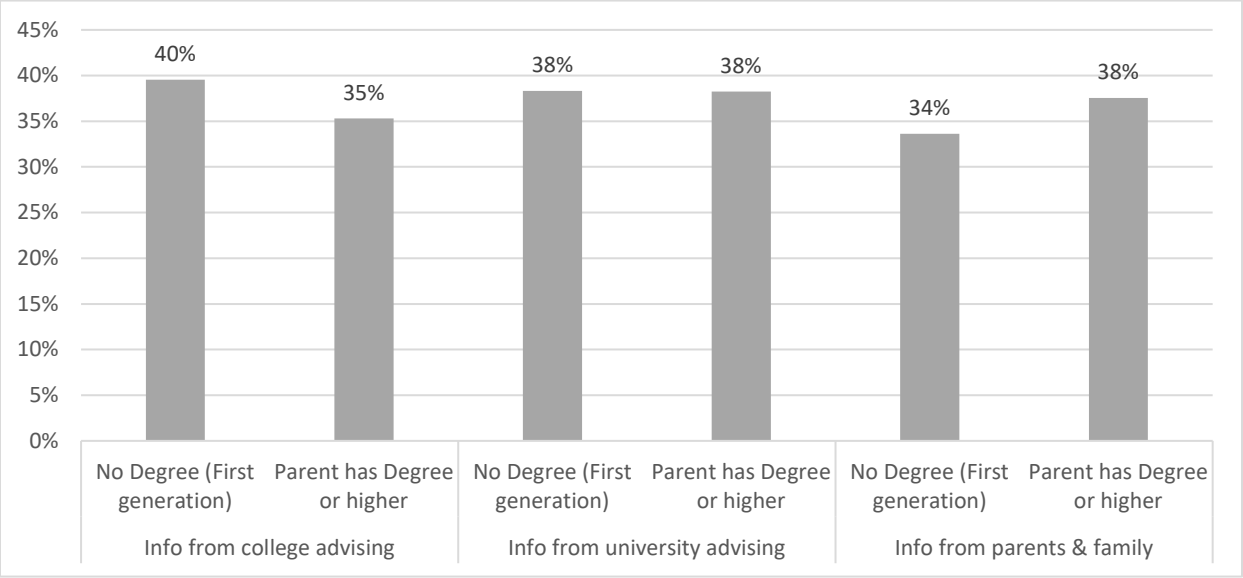
Term Graduated (Ref: Winter)		(0.009)	(0.009)	(0.009)	(0.010)	(0.021)
	Fall	-0.184***	-0.184***	-0.184***	-0.189***	-0.313***
		(0.014)	(0.014)	(0.014)	(0.015)	(0.029)
Academic Year of Graduation (Ref: 2008)	2009	0.011	0.011	0.013	0.023	-0.160
		(0.030)	(0.030)	(0.029)	(0.031)	(0.100)
	2010	0.016	0.014	0.017	0.030	-0.097
		(0.028)	(0.029)	(0.028)	(0.030)	(0.099)
	2011	0.015	0.013	0.016	0.026	-0.126
		(0.028)	(0.029)	(0.027)	(0.030)	(0.099)
	2012	-0.003	-0.005	-0.002	0.010	-0.177
		(0.028)	(0.028)	(0.027)	(0.029)	(0.098)
	2013	-0.012	-0.015	-0.011	-0.003	-0.181
		(0.028)	(0.028)	(0.027)	(0.029)	(0.099)
	2014	-0.000	-0.001	0.001	0.004	-0.168
		(0.028)	(0.029)	(0.027)	(0.029)	(0.099)
Observations		6,605	6,605	6,605	6,615	2,906
Pseudo R2		0.2238	0.2212	0.2241	0.1777	0.1778

Note: Robust standard errors in parentheses; coefficients reported represent the marginal effects evaluated at the mean. ***p<0.01, **p<0.05.; *Both English-language learners and native English speakers who scored one level of proficiency below college-level English entered the same course and could not be distinguished; labelled here as ELL-3.

Transfer experience

Graduates who transferred are asked about their use of a variety of information sources when they were making their decision. Minimal differences exist by parental education (Figure 9), however students who has a university educated parent were somewhat less likely to indicate they used college advising as a source, however, they were slightly more likely to approach their parents and family.

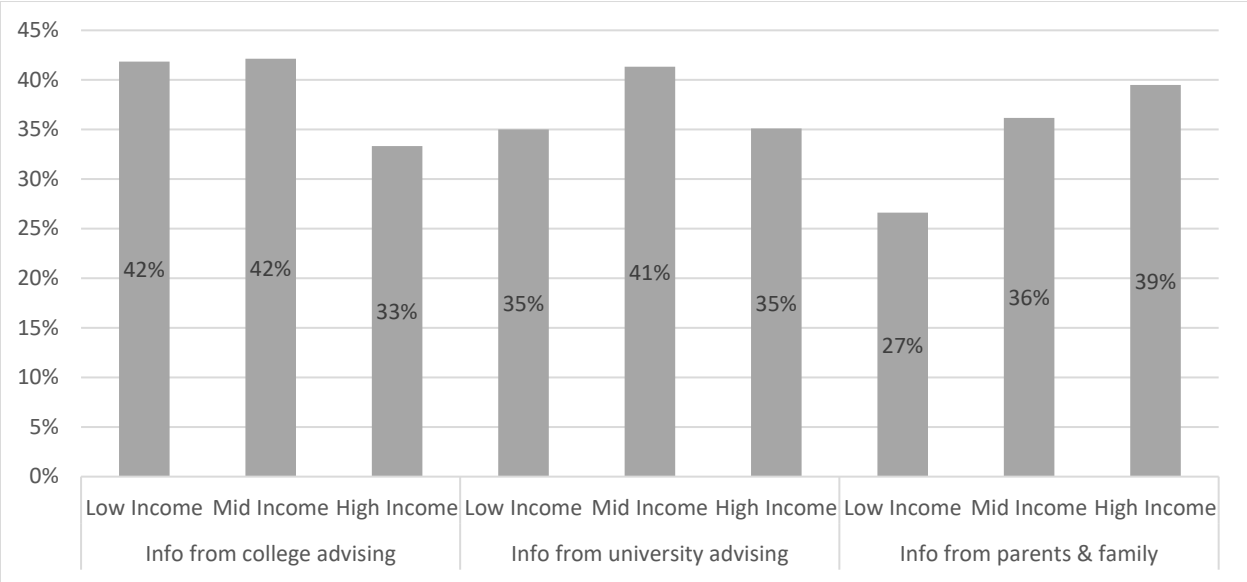
Figure 9. Information sources by parental education, % major source, university transfer students.



Note: Questions about college and university advising were included only in the last two years of the study period (2013-2014) (n=324). Those answering don't know, or refused are excluded.

Figure 10 shows the results for the same questions by neighbourhood income. Graduates from high income neighbourhoods were less likely to have used college advising as a major source. They were, however, more likely to use their family and parents as sources of information. These results suggest that graduates from lower income and/or without university educated parents, may seek out college advising sources, rather than their families for information.

Figure 10. Information sources by neighbourhood income, % major source, university transfer students.



Note: Questions about college and university advising were included only in the last two years of the study period (2013-2014) (n=324). Those answering don't know, or refused are excluded.

Figure 11 and Figure 12 compare the satisfaction with academic preparation and the transfer experience by income and parental education. Satisfaction across categories is high, with no discernable patterns by income and parental education evident.

Figure 11. Satisfaction with academic preparation by parental education and income, university transfer students.

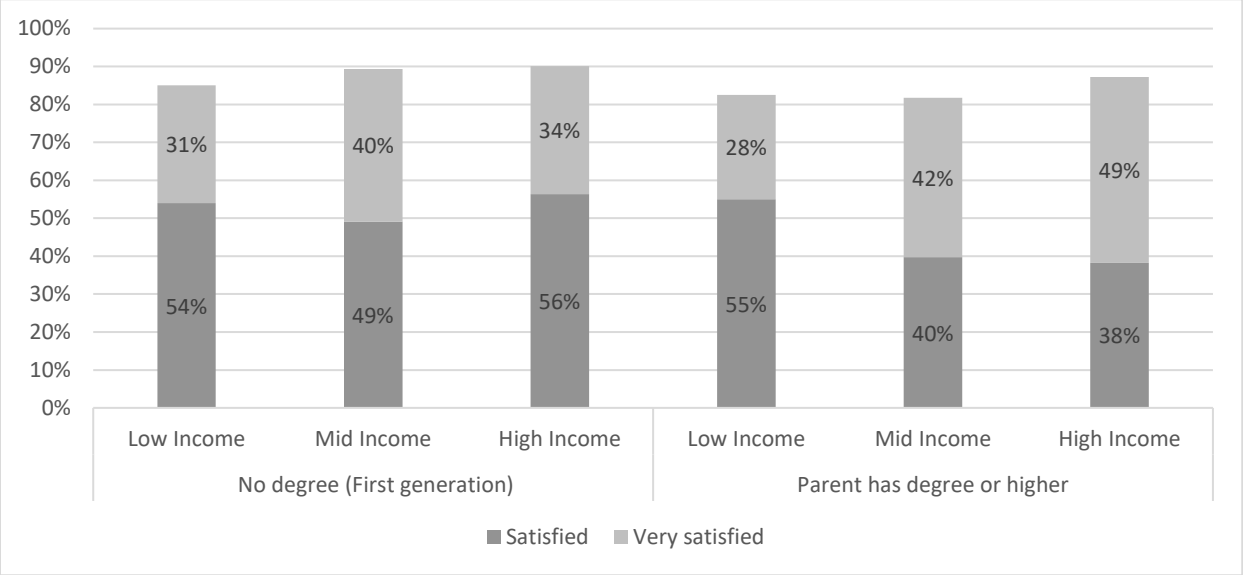
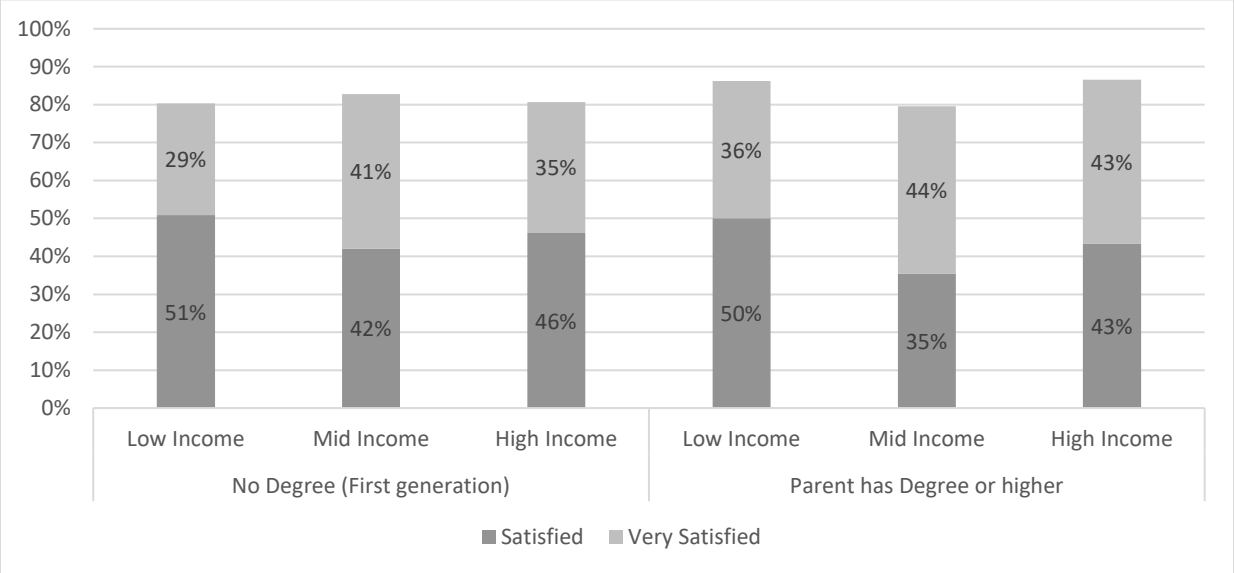


Figure 12. Satisfaction with transition experience by parental education and income, university transfer students.



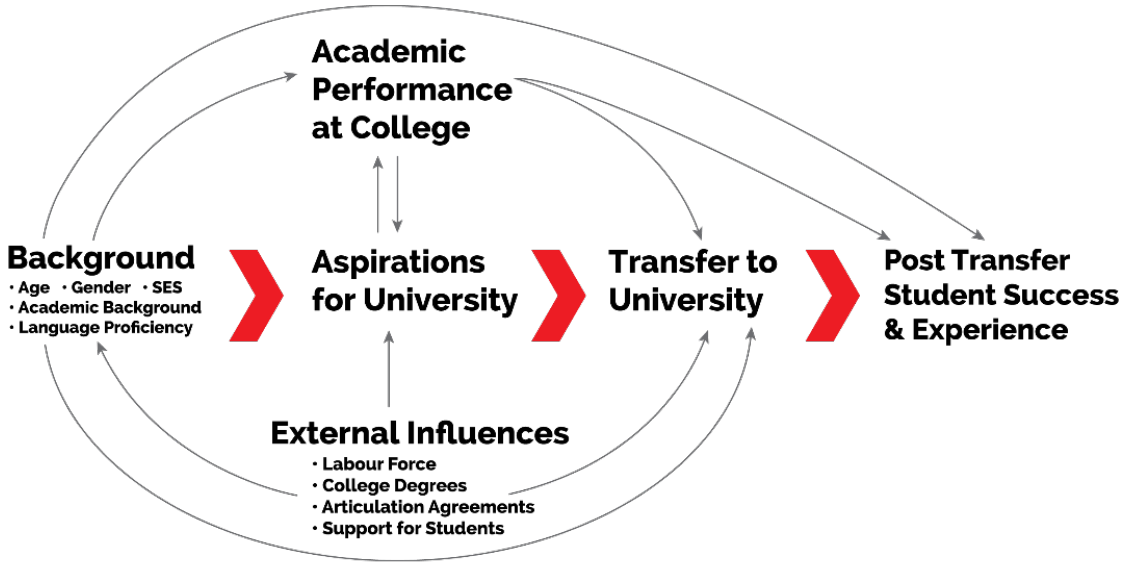
Discussion and Summary

This paper has focussed on the role that parental education and neighbourhood income play in both students intentions to attend university after college, as well as the actual transfer after graduation.

Overall, 44% of entering students indicated that they intend to transfer to university. Of those, 25% transferred to university after graduation, whereas only 6% of the group who did not report plans to

transfer ultimately did. Therefore, understanding aspirations for transfer is an important step in understanding who eventually persists to transfer to university. Figure 13 demonstrates the potential impact of aspirations on transfer outcomes and various influencers of a student's aspirations.[26] Aspirations may be influenced by a number of factors like parental education and income, but presumably can also be influenced by the various experiences that a student has while enrolled in college. Conversely, a student's aspirations can influence their program choice, performance in college, and ultimate decision to transfer. The intentions to transfer deserve special attention in this analysis of transfer outcomes.

Figure 13. Influences on transfer and the transfer experience.



University aspirations are highest among students who have a parent with a degree even when controlling for demographic and academic background, with 49% of non-first generation students aspiring to transfer compared to 43% of those who were first generation. Students from high income neighbourhoods were slightly less likely than their peers to aspire to transfer. However, when both income and education categories are combined, students who are both low income, and have at least one university educated parent are mostly likely to aspire to university.

When looking at a student's ability to have gone to university from high school, it is clear that academic preparation varies widely across SES. First generation students are much less likely to take university preparatory courses required for university in high school, indicating plans to attend university likely started later in high school or in college. An estimated 33% of high income, non-first generation students could have received an offer from university with their high school transcript alone (of whom 41% attended university before Seneca). This compares to only 19% of those who were both low income and first generation. As such, college may be a second chance for many students from lower socioeconomic backgrounds who either did poorly in high school, and/or for those whose aspirations for university

[26] Figure 13 can be found as Figure 1 in McCloy *et al*. (2016).

evolved later in high school or while in college and therefore did not take the required university preparation courses.

Transfer to university itself is also a pathway taken more often by non-first generation college graduates, as they had transfer rates that were 3% points higher than their first generation peers, even when controlling for sociodemographic factors and grades. College grades in particular appear to explain much of the differences observed from the point of graduation to that of transfer. Among those who aspired to go to university, having a GPA above 3.5 (or 3.0 to 3.49) was associated with a 21% point (or 18% point) increase in likelihood of transfer compared to those with a GPA below 3.0. The graduates with the highest grades who aspired to go to university are the most likely students to transfer. College program choice is also tremendously important in explaining transfer propensity.

Overall, this study shows college students with university educated parents are slightly more likely to aspire and to ultimately transfer to university. This is similar to what is found for attendance in university directly from high school, however the effect is much less pronounced. In contrast to studies on the high school population, income has little or no effect on transfer, and students who are both low income and have university-educated parents are the most likely to aspire and to transfer to university. However, this must be contextualized in relation to how transfer students differ from their direct entry university peers. Of those reporting their parents' education, 32% of those who transferred had a parent with a degree, compared to 26% of those who did not transfer. In sharp contrast, over half of first year students at Seneca's neighbouring universities in Toronto, Ryerson and York, report having at least one parent with a degree.[27]

In contrast to parents' education, this study showed that rates of transfer did not differ by income, with 31% of transfer students versus 32% of non-transfer students came from the lowest neighbourhood terciles. Previous research on direct entry Ontario college and university students showed that 32% of college entrants come from the lowest income tercile, compared with only 22% of university students (Dooley, Payne & Robb, 2016).

Therefore, it appears that although the initial decision to attend college or university is influenced by parental education and income, students who attend college initially and decide to continue on to university, differ only slightly by these socioeconomic characteristics. For college graduates who continue on to university, academic performance, program choice, and aspirations for university at college entry are the key determinants. Within the college population, college performance and aspirations for transfer are more important than sociodemographic factors on transfer rates, indicating this pathway may be more merit- and motivation-based. As well, the preliminary finding that transfer students who are lower income or do not have a university educated parent rely less on their parents and family and rely more on college advising services for information, underscores the role institutions can play. This suggests that facilitating and encouraging college to university transfer, as well as supporting students academically to ensure they qualify, may be a vehicle to reduce the socioeconomic inequity in university attendance in Ontario.

[27] York (York Office of Institutional Planning and Analysis custom calculation) and Ryerson's (http://www.ryerson.ca/content/dam/upo/reports/undergrad/nsse/NSSE2011HL.pdf) statistics obtained from the 2011 National Survey for Student Engagement.

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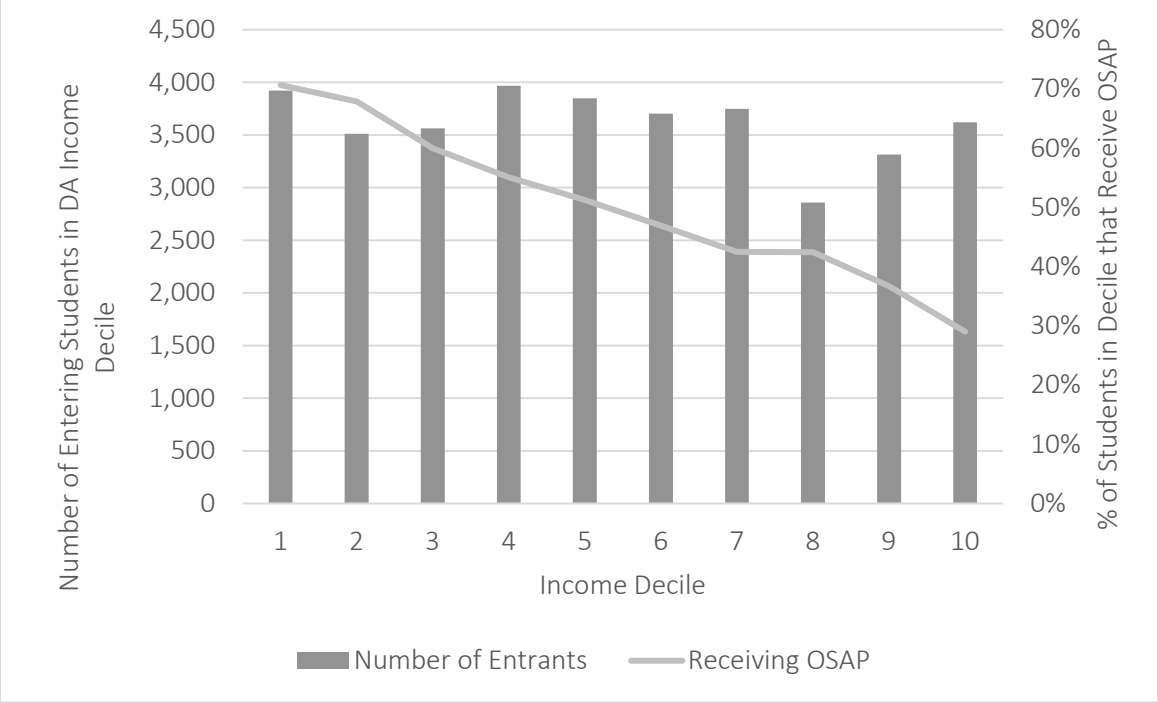
Appendices

Appendix 1. Neighbourhood income decile and OSAP use, college entrants, 2007-2014.[28]



Appendix 2. Comparison of samples, 2007-2014.

Variable	Characteristic	Graduates	Grad resp. GSS
Number of students in dataset		**10,102**	**7,638**
Gender	Female	56.8%	56.3%
	Male	43.2%	43.7%
Income	Low Income	31.5%	31.3%
	Mid Income	36.7%	37.0%
	High Income	31.8%	31.7%
Parental Education	No Degree (First Gen)	63.1%	62.8%

[28]If a student received a loan from the Ontario Student Assistant Program (OSAP) at any point in their college program, they were deemed to be an OSAP recipient. This is used as an individual marker of demonstrated financial need.

Appendix 3. Full description of entering student sample.

Parental Education		No Degree (First Generation)			Degree			Did Not Know		
Neighbourhood Income (DA Level)		Low	Mid	High	Low	Mid	High	Low	Mid	High
Number of Unique Entrants		7,727	8,310	6,087	2,624	2,900	3,173	1,942	1,940	1,351
Canadian Citizen		88.7%	94.1%	96.0%	80.2%	90.1%	93.8%	90.2%	94.0%	96.5%
<20yrs		30.6%	39.5%	44.5%	27.7%	33.5%	36.8%	34.4%	44.7%	46.7%
Male		45.4%	45.9%	50.7%	51.7%	55.0%	58.9%	54.0%	58.5%	61.5%
English as first language		64.9%	73.1%	79.2%	50.1%	65.7%	75.7%	56.2%	64.5%	69.4%
High school courses mostly U/M/OAC level		51.7%	53.7%	54.9%	69.7%	71.9%	72.2%	49.2%	50.4%	54.5%
HS GPA	Below 70%†	56.3%	54.7%	53.5%	53.6%	52.9%	51.3%	61.1%	57.0%	54.6%
	Between 70% and 80%	36.9%	38.2%	38.9%	38.6%	37.9%	40.8%	32.8%	36.0%	38.1%
	Above 80%**	6.7%	7.1%	7.6%	7.8%	9.2%	7.9%	6.1%	7.0%	7.3%
Had 6 or more 12U/M/OAC courses		31.0%	33.3%	35.1%	45.9%	49.1%	51.0%	28.3%	29.6%	33.8%
Best 6 U/M/OAC Average	<70%	39.3%	40.0%	40.2%	36.9%	37.4%	35.7%	43.2%	42.3%	44.2%
	70%-79%	44.0%	43.9%	44.3%	43.3%	42.6%	43.2%	43.6%	41.6%	38.5%
	>80%	16.7%	16.1%	15.5%	19.7%	19.9%	21.1%	13.1%	16.0%	17.3%
Eligible for university with high school grades/courses		18.8%	20.0%	21.0%	28.9%	30.7%	32.7%	16.0%	17.1%	18.9%
Last school attended was university		5.9%	6.6%	7.4%	11.7%	13.7%	15.3%	3.8%	4.3%	5.4%
English Placement	Placed below- level 1&2	9.0%	5.9%	3.7%	8.8%	4.8%	2.4%	9.3%	7.2%	3.6%
	Placed below- level 3	45.6%	43.1%	42.0%	41.0%	35.1%	32.4%	53.5%	48.0%	48.1%
	College level English +	45.4%	51.0%	54.4%	50.2%	60.1%	65.2%	37.2%	44.8%	48.2%
Aspired to transfer to University		43.7%	43.5%	40.7%	51.3%	48.5%	47.0%	41.6%	41.6%	39.0%
Entering Credential Length	1 Yr Certificate	11.3%	11.3%	11.7%	9.3%	9.2%	9.2%	12.7%	11.0%	12.8%
	2 Yr Diploma	55.3%	56.7%	55.7%	46.8%	49.5%	50.7%	52.0%	52.3%	51.0%
	3 Yr Adv. Diploma	30.1%	28.2%	28.2%	37.0%	32.9%	32.1%	31.9%	32.8%	31.4%
	4 Yr Degree	3.3%	3.8%	4.3%	6.9%	8.3%	8.0%	3.4%	4.0%	4.8%
Entering Program	Business	31.6%	29.1%	28.0%	37.9%	33.2%	32.4%	33.4%	31.5%	29.1%
	Community Service	19.2%	22.3%	22.9%	12.2%	14.4%	17.1%	18.6%	20.7%	21.4%
	Creative and Applied	10.7%	11.2%	11.2%	9.6%	11.9%	11.8%	9.2%	10.0%	12.1%
	Health	4.1%	4.9%	5.0%	4.0%	4.7%	4.3%	3.3%	2.9%	3.8%
	Hospitality	5.0%	4.0%	2.9%	3.7%	3.0%	2.4%	4.7%	4.2%	3.6%
	Engineering/Technology	15.2%	13.7%	14.3%	19.9%	18.8%	17.5%	15.7%	15.5%	14.8%
	Preparatory/Upgrading - Specialized	6.1%	6.0%	5.8%	5.2%	5.5%	5.0%	7.0%	6.6%	6.0%
	Preparatory/Upgrading - Unspecialized	8.2%	8.9%	10.0%	7.6%	8.6%	9.4%	8.2%	8.6%	9.2%