

# “Which College Students Transfer to University? The role of parental education and income”

Mitchell Steffler\*  
Ursula McCloy  
Henry Decock

March 2016  
Centre for Research in Student Mobility, Seneca College  
\*mitchell.steffler@senecacollege.ca

## Abstract

It is well understood that access to university varies considerably by parental education and income, whereas community college tends to be accessed in a more equitable fashion. One suggested option to reduce this imbalance is the utilization of the college to university transfer pathway. In this study we compare 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 DA neighbourhood income (low, med, high). Our analysis combines administrative and survey data at a large Toronto college from 2007 to 2014. With these data we track 36,054 college entrants from high school until six months after college graduation. 44% of college entrants aspire to go to university and 14% of graduates transfer to university (within 6 months). Aspirations at entry and transfer after graduation vary considerably by SES group; as does academic preparation, language ability, and program of entry. Two outcomes are evaluated using a series probit models. We find parental education 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. Our next step will be to compare transfer and non-transfer students in a university population.

**Keywords:** Income, Parental Education, College, Transfer, University Aspirations  
**JEL:** I24, I21, I28, J69

## i. Introduction

It is often asserted that the benefits of higher education should be accessible to young people, regardless of familial background. In Ontario, college graduates earn a 40 year premium of \$254,447 over those who have only completed high school, whereas university graduates enjoy an average premium of \$887,764<sup>1</sup> over that same time horizon (Berger&Parkin, 2009). If students from underrepresented groups are unable to attain higher credentials, intergenerational social mobility may be severely limited. Problematically, low income and first generation students are less likely to attend university, but these students are well represented within the community college system (Frenette, 2008) (Dooley et. al, 2011). It has been suggested that having well-functioning transfer pathways to university may serve as an equalizing mechanism, allowing more low income and first generation students to access university than would otherwise be possible (Kerr, McCloy & Liu, 2010).

Ontario's 20 provincially funded universities make mention of underrepresented groups in their strategic mandate agreements, and all make mention of first generation students in particular (Doran et. al, 2015). This is an echo of recommendations from the Rae review in 2005 to, "Assist students who are the first in their family to participate in higher education through: early outreach [...] and through ongoing supports for first generation students once enrolled in a postsecondary program." More recently, low income households have been made a priority as the Canadian and Ontario governments have begun to offer more upfront funding for these students, lowering the cost and (perhaps more importantly) the perceived cost of studying<sup>2 3</sup> Ontario's generous financial support programs may ameliorate any cost barriers facing prospective students, but debt adversity, social factors, and imperfect information can still act as barriers for under-represented groups (Frenette & Robson, 2011).

In this paper we examine eight years of students entering a large Toronto college and track them up until six months after completion. With these data we are able to explore the role of parental education and neighbourhood income status on an individual's aspirations for transfer to university, as well as their transfer status after graduation. We use measures of both neighbourhood income and parental education to better understand the transfer behaviour of college students. Our research addresses the three following research questions: 1) How do background characteristics in the college sample differ between 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 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?

## ii. Literature Review

The existing literature largely examines the differences in access and success of various underrepresented groups, (often) within a single system. Development of college to university transfer mechanisms have been suggested as a way to increase system wide access for underrepresented groups

---

<sup>1</sup> Authors' calculations – converted figures to 2016 constant dollars using CPI.

<sup>2</sup> According to a government of Ontario news release, funding changes begin in the 2016-17 school year, our period of study is unaffected and can be found under the name "Ontario Student Grant." Federal funding is also expected to increase to students from low income households.

<sup>3</sup> 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 (See Neill, 2010).

(Andres and Krahn, 1999) (Kerr, McCloy, Liu, 2010). This study hopes to test how these mechanisms are working for two of these underrepresented groups; namely - low income and first generation students.

Higher parental income and education dramatically increase a student's likelihood to attend university. Butlin (1999) studied data from the Statscan Youth in Transition Survey (YITS) and found that high-school graduates with at least one parent who had a university education were substantially more likely to attend university than their peers. Looker and Thiessen (2005) find that although there are stark differences in educational aspirations across parental SES groups, it was found to have a limited role in influencing children's aspirations, holding other factors (eg. academic performance, demographics and school experience) constant. It was also found that aspirations for university education among the 15 year olds in this study is very high relative to the number who eventually go on. In contrast, our study features an aspiration measure collected at the beginning of a student's PSE career. We expect a student to have a much better idea of how much PSE they expect to complete at the beginning of their PSE career. The relationship between income and university participation is especially clear when examining students who come directly from high school. Similar trends have been found to apply to first generation students, with these students proving more likely to attend college than their counterparts, but less likely to attend university. (Finnie et al, 2011) Another body of work confirms that community college access is fairly equitable across income and parental education groups, unlike university. (Berger, Motte, & Parkin, 2009) (Norrie & Zhao, 2011) (Drolet, 2005).

Research from the United States has shown a significant gap in aspiration rates for at risk groups including low income and First generation students (Engle & Tinto, 2008). Previous work by Dougherty and Kienzl (2006) reinforces the importance of controlling for aspirations to better understand transfer. In their study, traditionally underrepresented groups (blacks) have higher expectations of transfer compared to their peers upon entry to college, and these differences, if uncontrolled for, mean that any gap in transfer rate could be understated without taking into account students intentions or expectations for further education. Additionally, Program selection, use of advising services, and performance at college are all influenced by what a student wants to do after leaving their college. Aspirations are an important factor in eventual transfer to university and many of the sociodemographic characteristics of interest for this study many be influencing transfer behaviour via aspirations (McCloy et. al., forthcoming) (McCloy et. al., forthcoming). Aspirations can also vary considerably by region of birth, timing of arrival in Canada, two factors that are related to parental education levels and household income (McCloy et. al., forthcoming). Work from Austria shows that aspirations have a similar impact on student outcomes for advantaged and disadvantaged students, further highlighting the importance of understanding aspirations (Homel & Ryan, 2014).

Once controlling for grades and high school course selection, much of the gap in university participation can be explained away, but this begs the question of what is causing this disparity in primary and secondary education between first generation and low income students (Frenette, 2007) (Dooley et. al, 2011). Finne, Lascelles and Sweetman (2004) found parental education to be strongly related to highschool performance and if there is a fundamental gap in secondary school ability between underrepresented groups and the general population. This is reflected in the notion that a considerable gap in academic preparation does exist between advantaged and less advantaged students in high school (People for Education, 2013). College may have a role to play in building students' skills and helping them strive to overcome barriers – especially if these students are unable to access university directly from high school.

Ontario and BC studies indicate that within universities, underrepresented students are more prominent among the pool of transfer students and less so within the general university population (Kerr, McCloy & Liu, 2010). In BC, a province with a more integrated college and university system than that of Ontario, Krahn and Andres (1999) also find parental influence to be an important factor in a student's level of PSE achievement. Other studies suggest that college to university pathways are not vehicles for university access, but rather a second chance for a traditional student population. One study in particular looks at low income status in conjunction with first generation status and found that 18% of students who are both "low income" and "first generation" transferred from college compared with 53% of those who were neither (Engle & Tinto, 2008). This calls into question the idea that college to university pathways are necessarily equity improving, and leads us to ask, do low income and first generation college students actually have a higher propensity to university?

### iii. Methodology

#### Data Development

Our analysis is broken into three sections because of the nature of our research questions, as follows:

- **Entrants:** Students who began studies from 2007-2014.<sup>4</sup> We use this sample to better understand student intentions for transfer upon entering the college.
- **Graduates:** We make use of a sample of graduates to answer our questions pertaining to which students actually transfer. Those who have graduated are asked to respond to the Graduate Satisfaction survey (76% response rate). Our analysis is constrained to the first credential they completed at the college.
- **Transfer:** For those who did in fact transfer to university, and examine their experience and how that might differ across SES groups.

The dataset created contains information from the following sources: high school transcript, entrance survey/ placement exam, college transcript, as well as their graduate outcomes survey (GSS).<sup>5</sup> The student's permanent six character postal code is used to attach census characteristics at a low level (DA). For this project, we have decided to focus on those who have entered the college from 2007-2014 inclusive. Entrants of these years are asked questions pertaining to their mother's and father's education levels which are pertinent to our research questions. Furthermore, we removed older students from our sample (leaving those <22 years of age on entry), and we also excluded those whose first program entered was a graduate certificate. We narrowed our sample to students with Ontario high school records, removing Visa students, and restricting to those with valid Ontario postal codes. Using these and other minor constraints, our various samples for study are comprised of 36084 entrants, 10102 graduates (7638 of whom responded to the GSS) and 1106 transfer students (respondents who transferred to university). It should be noted that the sample of entrants contains students who are still in progress as well as those who have graduated or left the college. Overall, 53% of college entrants between 2007 and 2014 fit the criteria for the study. Only 8% of student records during this time frame

---

<sup>4</sup> For simplicity, our analysis focuses on the time leading up to a student's first ministry funded credential (although 6% of the sample is observed completing multiple credentials) and a student's entering program is considered to be the first MTCU approved program the student is enrolled in.

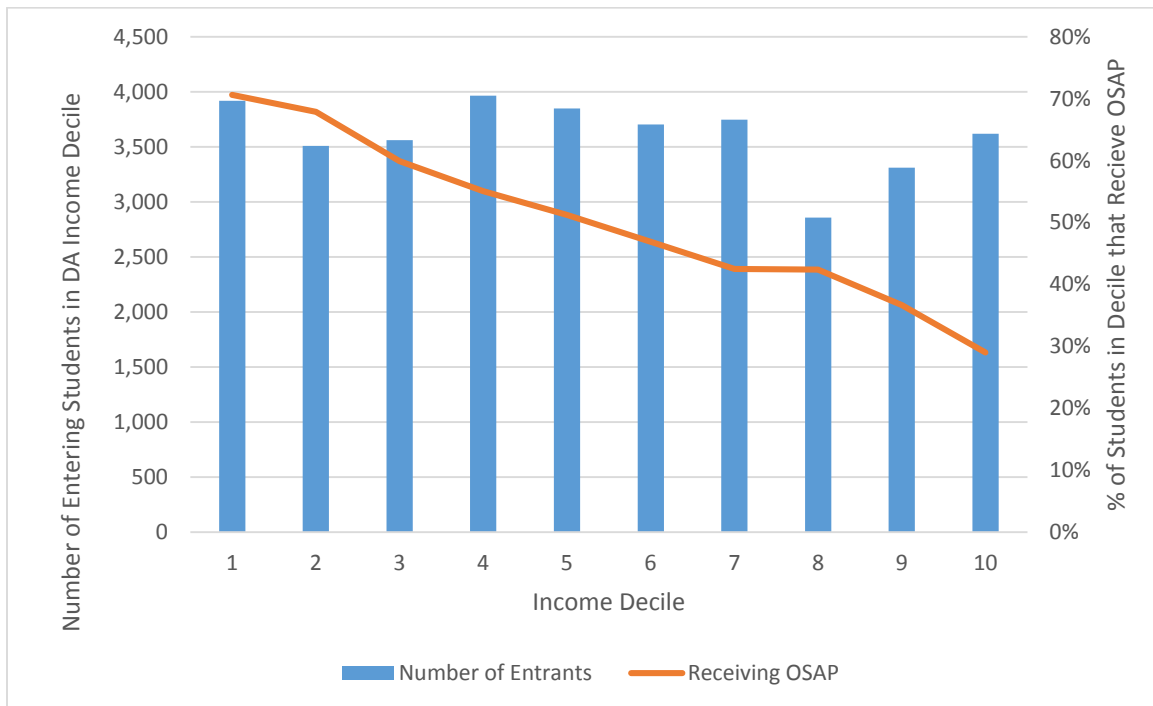
<sup>5</sup> Students can come in and out of the college using multiple student IDs, and can complete several credentials. In order to overcome these challenges, we identified multiple records in our dataset, and where appropriate combined records to form a complete student history

were dropped due to incomplete or invalid information. A complete list of rules used to define our samples can be found in Appendix 1.<sup>6</sup>

### Defining Fields of Interest for the Study

**Neighbourhood income:** In order to obtain a measure of student’s household income, we matched the student’s six character permanent postal code from the college’s student information system 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.<sup>7</sup> In Ontario, the average 2006 Dissemination Area (DA) contains 236 economic families, making this a reasonably precise proxy for economic well-being. Figure 1 further breaks down income into deciles in order to demonstrate how closely the measure tracks with an individual level measure of income – namely OSAP receipt. There is a uniform distribution of entrants between the various income groups.

Figure 1: Neighbourhood Income Decile and OSAP Use



The income distribution of university direct entrants from a previous study was such that 18% of their sample came from the lowest income tercile (Dooley et. al, 2013). Applying similar methodology to our sample of college entrants for the purposes of comparison, we find that 36% of direct college registrants

<sup>6</sup> Each successive sample used for study is a subset of the former. Appendix 1 defines the number of observations in each of our three samples.

<sup>7</sup> Neighbourhoods were given the weight of their overall population prior to creation of terciles. Household equivalency measures were also computed and are used to only to test for robustness of results. Note: “high income” neighbourhoods were required to have an aggregated household income of over \$93494 (2006 dollars) and “low income” had less than \$68321. These cutoffs were constructed using all Ontario DAs using population weights, and dividing the result into even thirds.

come from the bottom third of neighbourhoods.<sup>8</sup> Taken together, this suggests that there is indeed much more participation among low income students in our college sample than there is in university.

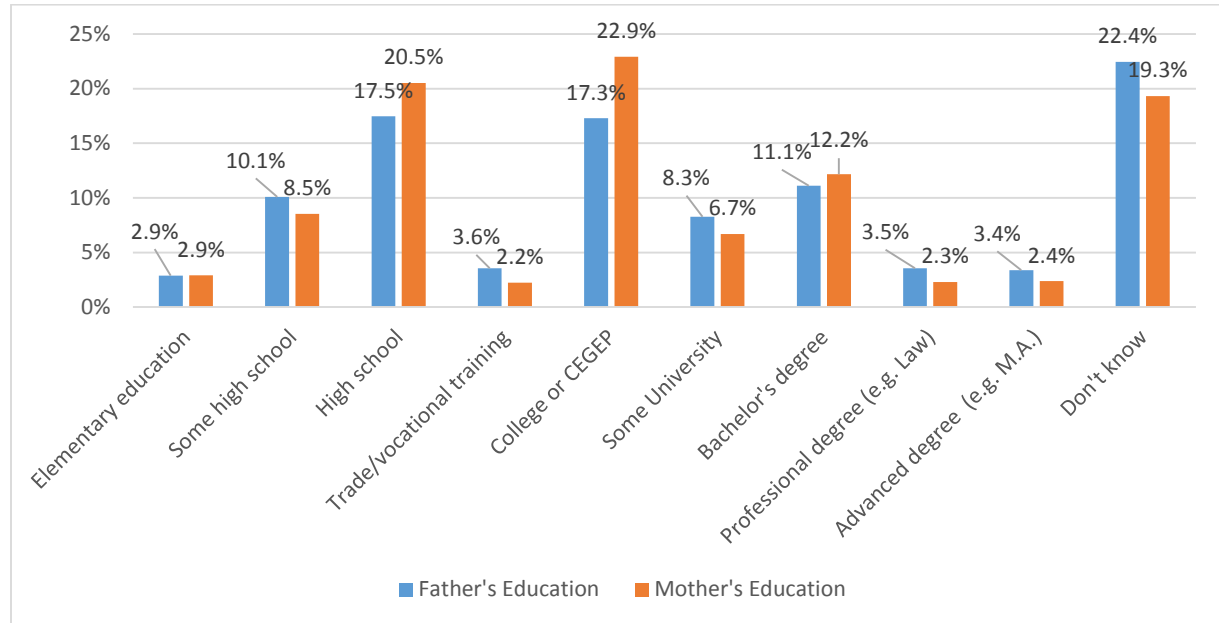
**Parental Education:** In a mandatory survey upon entering the college, students are asked the highest level of education attained by each parent. If *neither* parent was reported to hold a bachelor's degree or higher, a student was classified as being "**First Generation**" or "**Parental Education – No Degree**"<sup>9</sup> We chose this narrow classification for two reasons. Firstly, we are interested in students aspiring/selecting into university; as such, it seemed appropriate to identify those who had parents with experience in university. Secondly, the question asked to students contains options that are not mutually exclusive at certain levels, and the cut-off chosen is safe from an interpretation standpoint. If the question had been worded differently, the authors would have explored variation across a wider range of parental education groups. Figure 2 demonstrates the range of choices for parental education that were collapsed down. It is worth noting that if a student responded "I don't know" to *both* parents' education levels, they remained classified as such. We make reference to the "Did not know" group throughout the paper, as they are interesting in themselves. This group appears to be more similar in many respects to first generation students, though there may be non-first generation students mixed in. A student not knowing their parents' education levels may be a risk factor, and if we did exclude them from our sample, it is possible that we would be removing some of the most disadvantaged students (e.g. little emphasis placed on PSE, non-traditional upbringing....) Practical space constraints and in some cases, small cell sizes, prevent us from reporting the "did not know" group at various stages of our analysis, but are they at no time removed from our dataset.

---

<sup>8</sup> For the production of this one comparison, average equivalent 2006 DA neighbourhood income (weighted by population) used, and those over the age of 20 removed. We do not use these restrictions elsewhere in the paper. Unlike the authors in this study, we use data from one institution which may account for some of the difference.

<sup>9</sup> Typically first generation status is broadened to include any post-secondary experience, and so we have used such a definition to test the robustness of our findings.

Figure 2: Raw Detailed Parental Education



**Combining SES measures:** Since income and education are inextricably linked, we created a series of combined categories to better understand how income and parental education are influencing student transfer behaviour. This loosely follows methodology employed by the Pell Institute in their report on 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). Table 1 demonstrates how our sample of entrants is divided among nine different mutually exclusive groups. 21.4% of our sample is first generation and low income. A total of 61.4% of our sample is classified as being First Generation University (First generation), and 34% are classified as coming from a neighbourhood of the lowest income tercile.

Table 1: Classification of SES Groups

		Parental Education Status (Parent with highest Ed)			
		No Degree (First Generation)	Degree	Did not Know	Total
Neighbourhood Income	Low Income	21.4%	7.2%	5.4%	34.0%
	Mid Income	23.1%	8.1%	5.3%	36.5%
	High Income	16.9%	8.9%	3.7%	29.5%
	Total	61.4%	24.2%	14.5%	100.0%

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

**High School records:** For those who attended an Ontario High School, the college's student information system 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 included only those 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 6 U/M/OAC courses, with the average dependent on the selectivity of the institution. Upon reviewing entrance HS averages reported by Ontario universities in the Common University Data Ontario (CUDO) the minimum reported entering secondary school averages of full-time, first year students was approximately 70% in 2013 (GTA schools higher than some others). Students were determined to be university "eligible" if their high school average was at least 70% in their top 6 grade 12 University or Mixed (U/M/OAC) stream courses.

**Language Placement Testing:** Almost all entering students at the college are required to perform English placement testing. Based on the testing, students were placed into the following:

- 1) Non-credit English for English Language Learners (ELL) (courses offered at 3 levels of proficiency below college level English)
- 2) Non-credit English for those who have English language fundamentals, but who fall below the college level (Non-ELL below college level)
- 3) College Level English (credit) (required for all certificate/ diplomas)
- 4) Degree Level English (for some degree programs)
- 5) Exempt from college level English

For the analysis in this report, students were classified as either: below college level English -ELL, below college English – Non ELL, or at or above College level English.

**Entering student Survey Fields:** During the mandatory placement testing session, students also are asked to complete a background survey. In cases where two or more complete surveys exist, the earliest record was kept to reflect a student's true entering status. In addition to the above mentioned parental education variables, this survey provided the following:

- University aspirations upon entry to the college, "After graduation from my program, I plan to: ...."
- Previous university, "The last school I attended was: ...."
- First language, "The Language I learned first was: ...."

**College Performance:** Full transcripts of all college students who had ever registered in MTCU approved program were extracted and overall GPA was calculated from the average of all courses taken which had a credit value. Since the focus in this paper is on transfer to university, courses that may have been taken previously to the student's first credential were included in the overall GPA, as they remain a part of the students' 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 us to compute persistence measures (such as graduation status) within various timeframes, as well as program level details.

**Graduate Satisfaction Survey (GSS):** This dataset contains information on every college graduate from a ministry 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 our sample, the survey has a response rate of 76% and asks the same core questions in each year of our selected study



period. The graduate survey, mandated and funded by Ontario's Ministry of Training, Colleges and Universities (MTCU), is administered to graduates approximately six months after graduation through telephone surveys conducted by an external service provider.<sup>10</sup> Using these data we are able to derive a number of further education fields pertaining to a student's status six months after graduation:

- Transfer status – did the student transfer to university?
- Transfer experience and perceptions: reported amount of transfer credit; relatedness of university program entered to program of graduation; reasons for furthering their education

### **Program Type**

Entering program type and graduating program type are classifications made using the program of study in the SIS and GSS respectively. In following previous work, these classifications are made based on the occupational cluster codes associated with their first program at the college in the case of entering program, and the first program graduated from in the case of graduating program (McCloy & Liu, 2010). 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 would be considered specialized; a typical arts and science or college access program is non-specialized). Previous research has led us to the conclusion that substantial differences in transfer behaviour exist between these two types of preparatory programs (McCloy et. al., forthcoming).<sup>11</sup>

### **Limitations of Data**

Several important areas are not addressed in this study due to data limitations. Firstly, it is unclear if transfer addresses system-wide inequalities. Because of the disparities noted in university enrollment, the transfer mechanism could actually be bringing a larger share of disadvantaged students into university, even though they are less likely to use the mechanism. Forthcoming system-wide research hopes to address this notion. Secondly, the question of early transfer cannot be addressed in this study as those who transfer prior to completing a college program are undistinguishable from those who discontinued from PSE altogether. This limits the scope of our conclusions to the transfer intentions of the entering population and the transfer behaviour of the graduate population. Thirdly, previous work has discovered large differences in transfer behaviour across regions of birth (McCloy et al., forthcoming). For this study however, data limitations leave us with only a citizenship flag to identify recent immigrants and Cultural differences among immigrants are going unobserved in this study. Lastly, aspirations and transfer are both self-reported at a point in time. A student's college experience may have had a role in changing a student's aspirations, and a student could have transferred well beyond six months after graduation.

### **Analytic Methods**

The entering sample is used to understand student aspirations for transfer to university. Using descriptive statistics and regression models we attempt to understand differences in aspirations across SES groups. Subsequently, the sample of graduates is used to better understand who transfers to university, again, using both descriptive and regression models. Lastly, of the graduates who transferred,

---

<sup>10</sup> On a system wide level, the survey has primarily been used to gauge the performance of colleges on three of the five KPIs: graduate satisfaction, employment rate, and employer satisfaction, each of which are tied to a modest amount of performance funding and are made public.

information sources and motivations for transfer will be described to inform practice and future research.

#### iv. Analysis of Entrants

##### Description of Entering Students

Table 2 summarized important differences in demographic characteristics across SES groups. Non-Canadians are disproportionately among those with university educated parents from a low income neighbourhood (we have removed visa students from our sample).<sup>12</sup> Those in higher income neighbourhoods are more often Canadian citizens and interestingly, are more likely to be male, and appear to be younger upon entry.

Appendix 2 offers a full descriptive table for all entering students in our sample, including the students who responded “Did not know” when asked about their parents education. These students are present in all totals throughout the paper as well as in all of the regression models. The columns pertaining to these students are removed from the descriptive section for brevity.

*Table 2: Demographic Characteristics of Entrants*

Characteristic	No Degree (First generation)			Degree		
	Low	Mid	High	Low	Mid	High
<b>DA Income Group</b>						
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%
% < 20y	61.6%	69.8%	72.4%	57.2%	62.7%	64.7%
% 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%

Program selection can be influenced by socio-economic status as well as a number of other factors (eg. academic preparedness, aspirations). Program choice may be reflective of aspirations and will present students with different transfer opportunities upon completing. 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 (See: McCloy et. al., forthcoming). Those in engineering type programs, may find their program to be more terminal in nature due to the difficulties of transferring to a related university program. Table 3 shows the differences in program selection across SES groups. Regardless of neighbourhood income, first generation students are more likely to select into community service type programs and less likely to select into engineering and technology programs, and they’re also more likely to find themselves in programs of a shorter duration. To point out the 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.

<sup>12</sup> Non-Citizens include permanent residents, non-student visas, and refugees.

Table 3: Entering Program Characteristics

Parental Education	No Degree (First Generation)			Degree		
	Low Income	Mid Income	High Income	Low Income	Mid Income	High Income
<b>Neighbourhood Income</b>						
1 Yr Certificate	11.3%	11.3%	11.7%	9.3%	9.2%	9.2%
2 Yr Diploma	55.3%	56.7%	55.7%	46.8%	49.5%	50.7%
3 Yr Adv. Diploma	30.1%	28.2%	28.2%	37.0%	32.9%	32.1%
4 Yr 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 stream courses in high school is more common among higher income students and those whose parents had a degree, but the same clear relationship is not seen in grades, possibly because of the difference in high school streaming and the crudeness of the GPA measure computed. Lower income and first generation students were more likely to have failed courses in high school, demonstrating a greater degree of academic struggle within these groups of students.

The English placement levels are depicted in the three final rows of Table 4. English language proficiency increases with both income and parental education. This could be partially due to the ethnic and linguistic population in lower SES neighbourhoods, but these differences in demonstrated language ability held true when restricting to only those who had reported English as their first language (not shown).

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. A greater number of high SES students may be using college as a second chance (keep in mind graduate certificates are removed from this analysis). Regression models will allow us to better understand these relationships and how they influence transfer behaviour.

Table 4: Academic Preparation of Entrants

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

Based on the definition for university eligibility defined in our methodology section, we are able to determine that those with university educated parents are far more likely to have the courses required for admission from high school. Figure 3 depicts university eligibility across SES groups for our sample of college entrants. 32.7% of High income, non-first generation students could have went to university with their high school courses, whereas only 18.8% of low income, first generation students could have done the same. 17.1% of those who did not know their parents’ education were deemed eligible for university (ranging from 16.0% to 18.9% by income), making these students the least likely to be able to go to university directly from high school.

Figure 3: University Eligibility of Entering Students

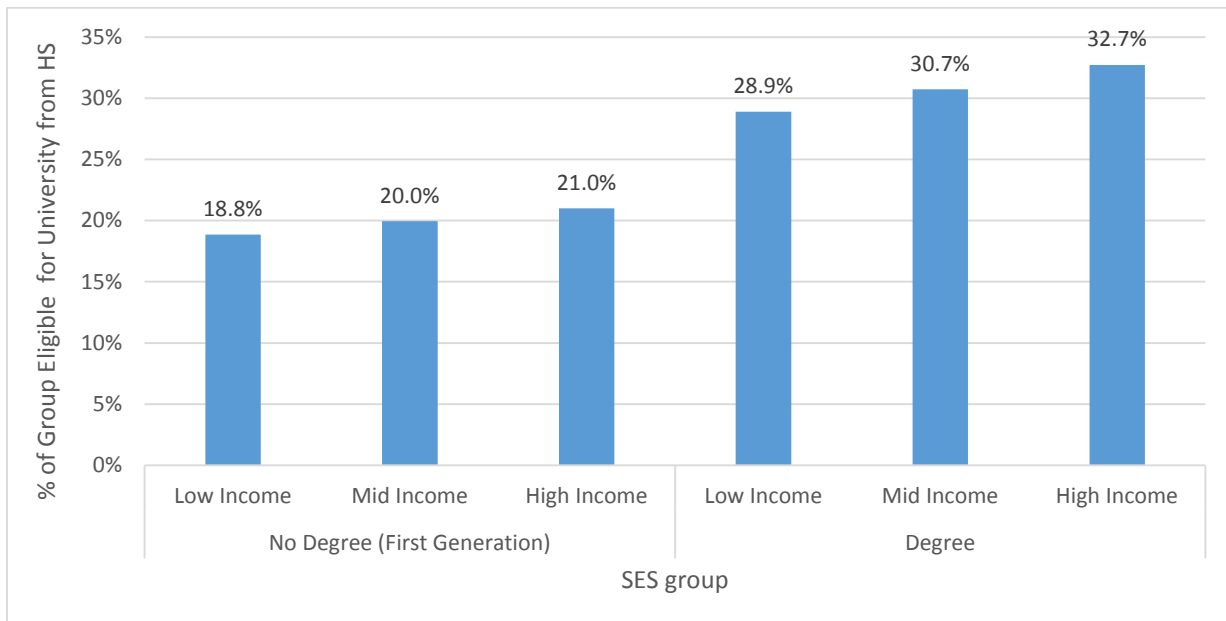
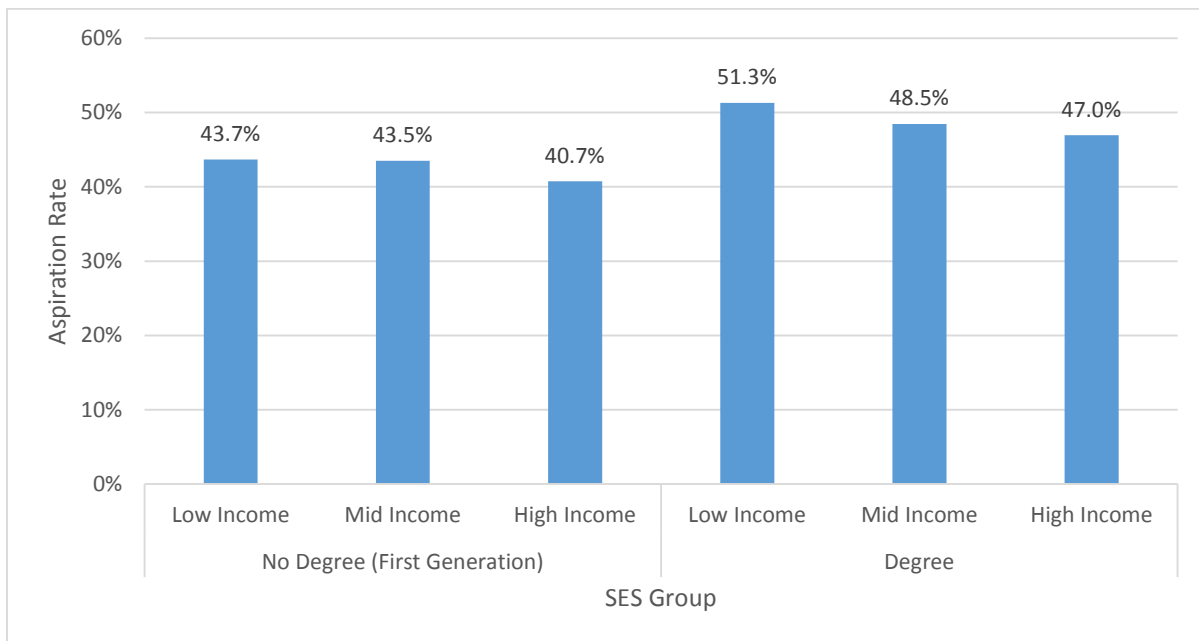


Figure 4 demonstrates that students with university educated parents from low income neighbourhoods are the most likely to aspire to transfer to university. Higher income students appear less likely to aspire to transfer to university, regardless of parental education. Those who did not know their parent's education levels had among the lowest aspiration rates for transfer (not shown).

Upon entry to the college, students were asked about their intended activity after graduation. Those who responded that they most wanted to go to university after graduating from their college program were considered to have aspired to university. 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 relatively lower levels of university aspirations (see appendix 1).<sup>13</sup> For the remainder of the descriptive sections of this paper, we focus only on the distinction between those whose parents completed university and those whose parents have not completed not done so (first generation); we continue to treat the "Did not know" group separately.

Figure 4: Who Aspired to University Upon Entry?

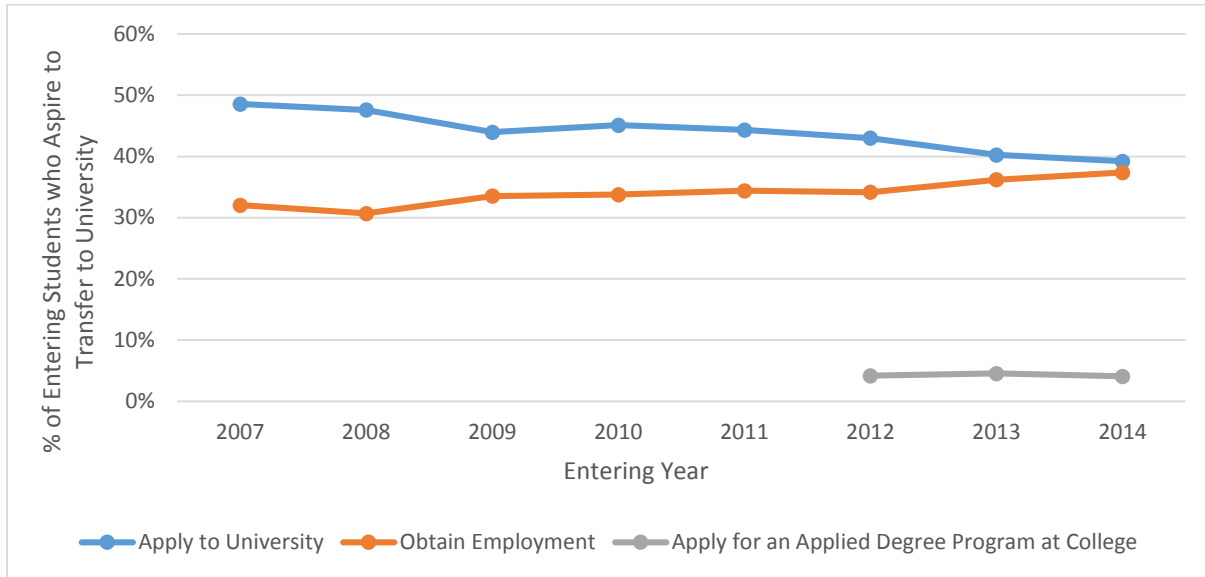


Aspirations for transfer to university have declined over our sample period, and the creation of college degrees has created a new alternative for students seeking a degree. Figure 5 illustrates how entering students responded when asked "After graduation from my program, I plan to:"<sup>14</sup> These time varying trends are controlled for in our regression analysis.

<sup>13</sup> Aspirations for transfer among those whose mother or father had non-university PSE were substantially lower than those with completed university or completed some university (not shown).

<sup>14</sup> 234 entrants who responded, "Apply for an applied degree at [college name]" prior to the 2012 academic year are not depicted in figure 5. In these cases, they would have written the entering survey after their first semester

Figure 5: Changing Aspirations over Time of Entering Students



### Regression Findings – Who Aspires?

Income and parental education represent two related influencing factors that act on a student's desire to transfer to university. The two factors are highly correlated and to introduce them into the same regression could bias the coefficients of interest and make for difficult interpretation. Since income and parental education are inextricably linked, we combine these two measures into a single variable, and estimate the relationship of a students' aspirations for transfer. This is reported as model 1 in Table 5. In the following two models presented (model 2 and model 3) we look at income and parental education separately along with a string of control variables at the individual level. In each case we make use of probit models to estimate the relationships, and our outcome of interest is "Did the student aspire to attend university upon entry to the college (0/1)?" We present the marginal effects estimated at the mean and robust standard errors to allow for easy interpretation.

In model 1, the group of students with university educated parents from low income neighbourhoods are the most likely to aspire to transfer. When compared to students who are from low income neighbourhoods *and* are first generation, this group is 7% more likely to aspire to transfer. Those who did not know either parents education were the least likely to aspire to transfer, with only the low income group standing out. There is a gap in aspirations even after controlling for relevant factors.

Examining models 2 and 3, neighbourhood income and parental income play a significant but decidedly small role in a student's aspirations for transfer to university. Once controlling for status in Canada, gender, program, age, start date, previous university, English proficiency, first language, and high school performance, the non- first-generation students remain 6% more likely to aspire to transfer than their

---

enrolled in an MTCU funded program. Additionally, other responses were offered to the students but are not depicted in figure 5.

first generation peers, all else equal. Students from high income neighbourhoods are 2% less likely to aspire to transfer compared to low income students.

In the descriptive section, we noticed only a slight difference between males and females in transfer aspirations. Yet, in our regression models however we are able to establish that male college entrants are 8% less likely to aspire to transfer to university than their female counterparts when holding other factors constant. After conducting analysis for males and females separately it was 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 were 13% less likely to aspire than their younger peers. Those demonstrating lower levels of English proficiency (Specifically those in ELL courses) are 3% more likely to aspire than those placed in college level English (or above). Citizens were 5% less likely to aspire than landed immigrants, those who spoke English as a first language 8% less likely, and those with previous university are 6% less likely. Students who took university level 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 were 22% and 38% less likely to aspire, respectively. Those in three year advanced diplomas are 11% 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.

Because our results are contingent on our definition of “low, mid and high income” as well as “first generation” we experimented with changing how these categories are defined (not shown). Firstly, we use a measure of average equivalent income to determine income cut-offs. When estimating the same relationship with these new income measures, it yielded statistically significant estimates that are sign consistent with those reported above. Secondly, broadening the definition of “first generation” from, “either parent with a university degree or higher” to include students whose parents have experience in college or the trades (complete or incomplete) yielded mixed results (not shown). Under this new definition, first generation students remained less likely to aspire to transfer but many of the estimates lost some of their magnitude and their statistical significance. This indicates that having a parent who is a degree holder matters more for university aspirations than *any* parental PSE experience.

Table 5: Estimated Propensity to Aspire to University

Reference Group	Variables	Aspirations for University (1)	Aspirations for University (2)	Aspirations for University (3)
<b>SES Group (Ref: First Generation, Low Income)</b>	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)		
	<b>Parental Education Alone (Ref: First Gen)</b>	1+ Parent with Degree		0.060*** (0.007)
Did not know Parental Ed			-0.025*** (0.009)	
<b>Neighbourhood Income Alone (ref: Low Income)</b>	Mid Income			-0.003 (0.007)
	High Income			-0.018** (0.008)
<b>Starting Program Type (Ref: Business)</b>	Community service	0.065*** (0.009)	0.063*** (0.009)	0.063*** (0.009)
	Creative and Applied Arts	-0.221*** (0.009)	-0.222*** (0.009)	-0.221*** (0.009)
	Health	-0.010 (0.016)	-0.012 (0.016)	-0.009 (0.016)
	Hospitality	-0.292*** (0.012)	-0.292*** (0.012)	-0.292*** (0.012)
	Engineering/Technology	-0.046*** (0.009)	-0.046*** (0.009)	-0.044*** (0.009)
	Preparatory/Upgrading -Specialized	0.204*** (0.024)	0.205*** (0.024)	0.206*** (0.024)
	Preparatory/Upgrading - Non Specialized	0.424*** (0.011)	0.424*** (0.011)	0.425*** (0.011)
	<b>Starting Credential Type (Ref 2yr Diploma)</b>	Certificate 1-yr	-0.380*** (0.020)	-0.380*** (0.020)
Advanced Diploma - 3yr		0.105*** (0.008)	0.105*** (0.008)	0.105*** (0.008)
Degree - 4yr		-0.219*** (0.016)	-0.220*** (0.016)	-0.213*** (0.016)
<b>Status in Canada (ref: no)</b>	Canadian	-0.048*** (0.012)	-0.050*** (0.012)	-0.057*** (0.012)
	<b>Gender (Ref: Female)</b>	Male	-0.083*** (0.007)	-0.084*** (0.007)
<b>Age at Entry (Ref: Under 20 yrs)</b>		20 yrs+	-0.125***	-0.123***



Reference Group	Variables	Aspirations for University (1)	Aspirations for University (2)	Aspirations for University (3)
		(0.009)	(0.009)	(0.009)
<b>English Placement (Ref: College English)</b>	Placed below –non ELL	0.028***	0.029***	0.025***
		(0.007)	(0.007)	(0.007)
	Placed below -ELL	0.027	0.028	0.020
		(0.015)	(0.015)	(0.015)
<b>Previous School Attended (Ref: High school and other)</b>	Last school attended university	-0.057***	-0.059***	-0.050***
		(0.014)	(0.014)	(0.014)
<b>Ref: yes</b>	English as First Language	-0.078***	-0.080***	-0.079***
		(0.007)	(0.007)	(0.007)
<b>HS Stream (Ref: No)</b>	HS Courses mostly HS U/M /OAC	0.122***	0.122***	0.128***
		(0.007)	(0.007)	(0.007)
<b>High School avg. (Ref: &lt; 70%)</b>	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)
<b>Year of Entry (Ref: 2007)</b>	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)
<b>Observations</b>		30,554	30,554	30,554
<b>Pseudo R2</b>		0.1237	0.1226	0.1207
<b>Robust Standard errors in parentheses, coefficients reported represent the marginal effects evaluated at the mean.</b>				
<b>*** p&lt;0.01, ** p&lt;0.05</b>				

### Grades and Graduation Rates

A 3.0 GPA (B average) is often considered to be the threshold for transfer to many university programs from the college system. As mentioned in the data development section, we have transfer information on those who have graduated and responded to the GSS survey. For those who left prior to graduation, it is possible that students have transferred early; such movement is not uncommon (Smith et al., forthcoming). Graduation is an important marker of success because in order to be eligible for many articulated pathways (and to maximize transfer credit) a college credential must be completed.

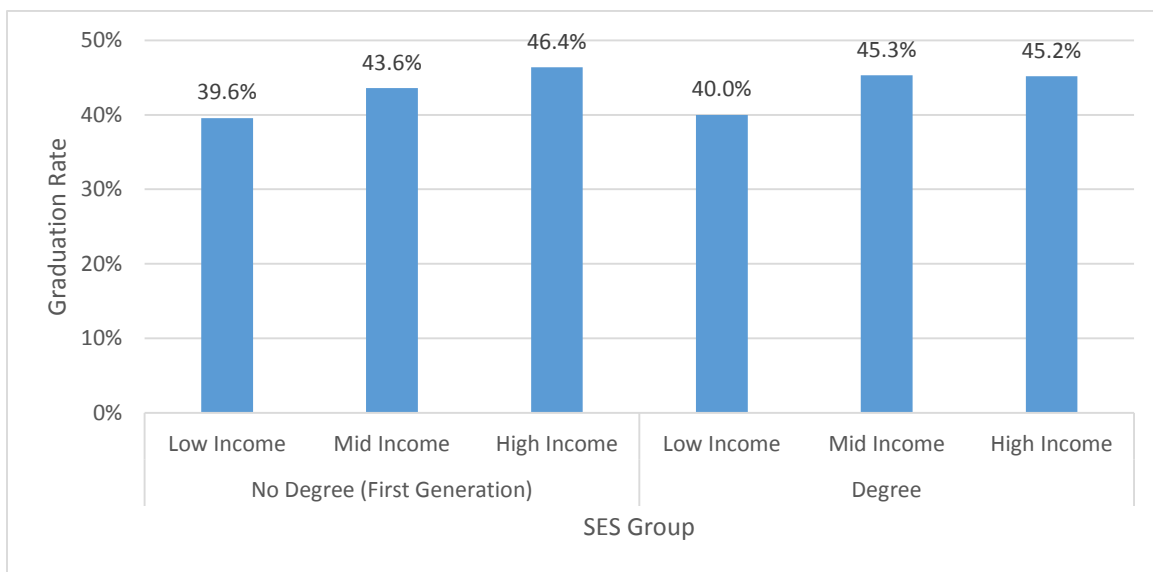
For those students who were unable to go directly to university using their high school coursework, college can serve an access function which allows students to enter university, without providing a large amount of transfer credit. Better performing students are more likely to be eligible for such a pathway. Table 6 shows apparent differences in overall GPAs across SES groups of all students in our sample (graduates and non-graduates).

Table 6: Average Grades of Entering Student Sample

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

Figure 6 represents 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).<sup>15 16</sup> 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, we do not know if the differences in attrition are due to people leaving the PSE system or switching institutions. Considering that aspiration rates and transfer are higher for low income, non-first generation students, early transfer may explain the differences observed in persistence.

Figure 6: Graduation Rates



Comparing Entrant Sample to Graduate Sample

Of those students in our sample who graduated from at least one college program, the Graduate Satisfaction Survey (GSS) provides information on their activity 6 months out. Using these data we are

<sup>15</sup> Note that this will differ from the MTCU KPI rate for Seneca: 1) the MTCU calculations provides for double the program length; 2) grad certificates and degrees are excluded from this sample, as well as older students.

<sup>16</sup> When graduates are further divided based on cumulative GPA. Overall, the graduation rate (and rate of graduation with 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 – not shown). Those from higher income neighborhoods 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 neighborhoods (not shown).

able to determine who transferred to university. To ensure comparability across the samples, we examine some of the key variables of interest from various samples used in our analysis Table 7 below:

*Table 7: Comparison of Samples*

Variable	Characteristic	Administrative Sample		Survey Sample	
		All Entrants	Graduates	Grad resp. GSS	University Transfers
	Number of students in dataset	<b>36,054</b>	<b>10,102</b>	<b>7,638</b>	<b>1,106</b>
<b>Gender</b>	Female	49.4%	56.8%	56.3%	57.3%
	Male	50.6%	43.2%	43.7%	42.7%
<b>Income</b>	Low Income	34.1%	31.5%	31.3%	30.8%
	Mid Income	36.5%	36.7%	37.0%	37.0%
	High Income	29.4%	31.8%	31.7%	32.2%
<b>Parental Education</b>	No Degree (First Gen)	61.4%	63.1%	62.8%	59.7%
	Degree	24.1%	23.8%	23.9%	28.3%
	Did not Know	14.5%	13.1%	13.3%	12.0%

There are three noteworthy differences between the three samples. Graduates are more predominantly female, and higher income. A larger share of those in the sample of transfer students have parents with university education when compared to the graduate group as a whole. Differences in academic preparation, program choice, and other socio-ethnic characteristics may or may not be driving the slight differences observed across the four samples. In the next sections, actual transfer decisions for those who completed a credential.

#### v. Who Transfers?

##### Transfer Rates

Table 8 shows the computed transfer rates for graduates who responded to the GSS. Six months after graduation, 14.5% of our sample reported being in university (transfer rate). 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-citizens were all similar. Those who graduated at age 22 and over had a transfer rate of 12%, lower than that of students who were younger than 22 (17%). Those who spoke English as a first language had a lower transfer rate, but those with higher demonstrated language proficiency upon entry had higher transfer rates.

Table 8: Transfer Rates to University of GSS Respondents

Group		Transfer Rate
<b>Number of Respondents</b>		7638
<b>Overall Transfer rate to University</b>		14.5%
<b>Citizenship</b>	Canadian	14.3%
	Other	15.4%
<b>Age at Graduation</b>	<22 yrs	17.4%
	22yrs+	12.3%
<b>Gender</b>	Male	14.1%
	Female	14.8%
<b>First Language</b>	English	13.7%
	Other	16.2%
<b>English Placement</b>	Below College - ELL	9.9%
	Below College - Non ELL	14.0%
	College level and above	15.4%
<b>Plans at Entry</b>	University aspirations	25.1%
	No University Aspirations	6.3%

Table 9 shows the differences in transfer rates across credential types, as well as graduating GPAs. Those completing advanced diploma programs had the highest transfer rates 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 which makes intuitive sense 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 a 3.0 had a transfer rate of 10%, whereas those between a 3.0 and 3.5 had a transfer rate of nearly double that, at 19%. Those above a 3.5 had a transfer rate of 20%. Under many articulation agreements, many of the students below 3.0 should be ineligible for transfer, however 10% still do. For those who were able to transfer, it is suspected that these students receive less transfer credit and may take longer to graduate from university.

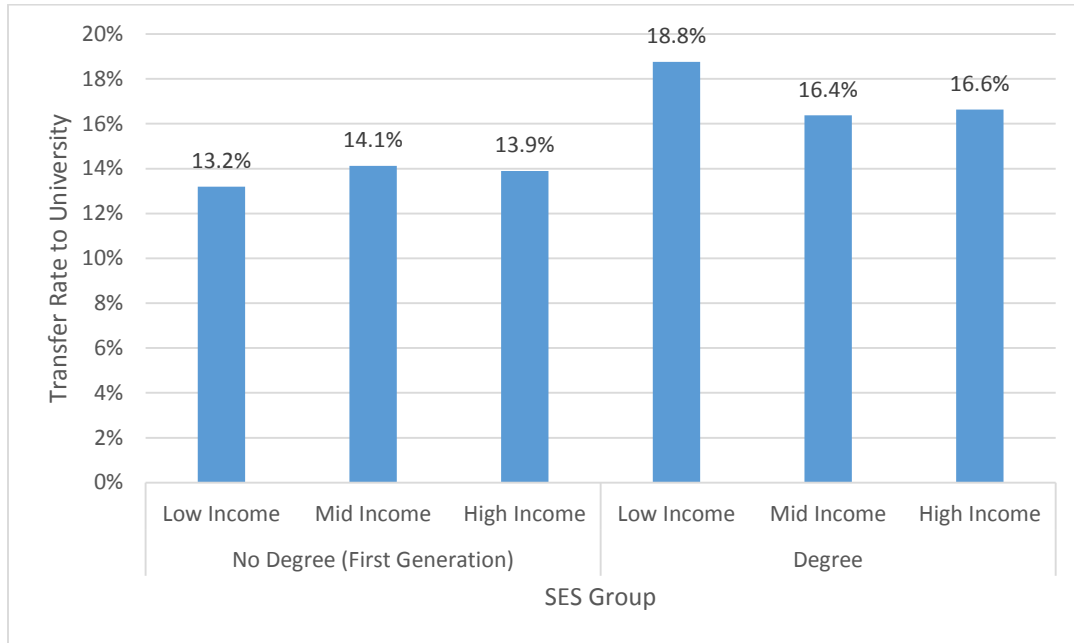
Table 9: Transfer Rates to University by Program Type and Grades

Group		Transfer Rate
<b>Credential Length</b>	1 Year Certificate	9.2%
	2 Year Diploma	14.1%
	3 Year Adv. Diploma	19.7%
	4 Year Degree	7.8%
<b>Credential Type</b>	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 <sup>17</sup>	9.1%
	Preparatory/Upgrading - Non Specialized	36.8%
<b>College GPA</b>	< 3.0	9.7%
	Between 3.0 to 3.5	18.7%
	Above 3.5	19.8%

Students with university educated parents have the highest transfer rates (16% to 19% of graduates, depending on income group). First generation graduates have lower transfer rates (between 13% and 14%). Figure 7 shows the transfer rates for graduates across six SES groups.

<sup>17</sup> A large share of these students enroll in collaborative type programs, and are not classified as “university transfer” in the GSS (McCloy et. al., forthcoming)

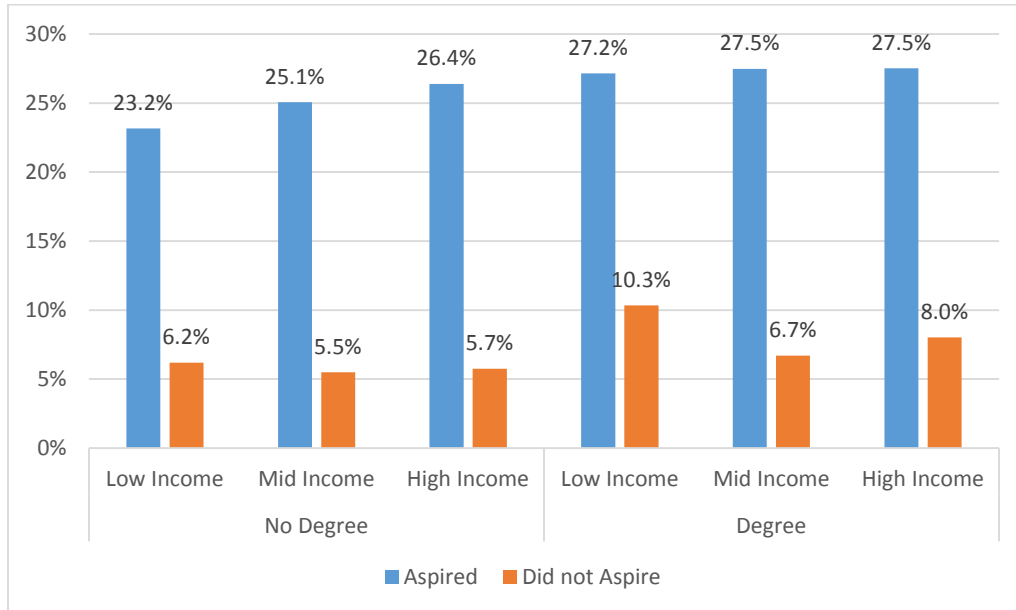
Figure 7: Transfer Rates to University by Parental Education and Income



Another way of looking at the transfer issue is to focus only on those graduates who indicated that they wanted to go to university upon entry to the college.<sup>18</sup> Figure 8 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 graduating. This compares to 27% of aspiring graduates who are non-first generation ended up registering in university (with only slight variation across income groups). For students who did not want 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 (6.7% to 10.3%) compared to those who do not (5.5% to 6.2%).

<sup>18</sup> There are numerous alternative methods of computing transfer rates (see Decock, 2007)

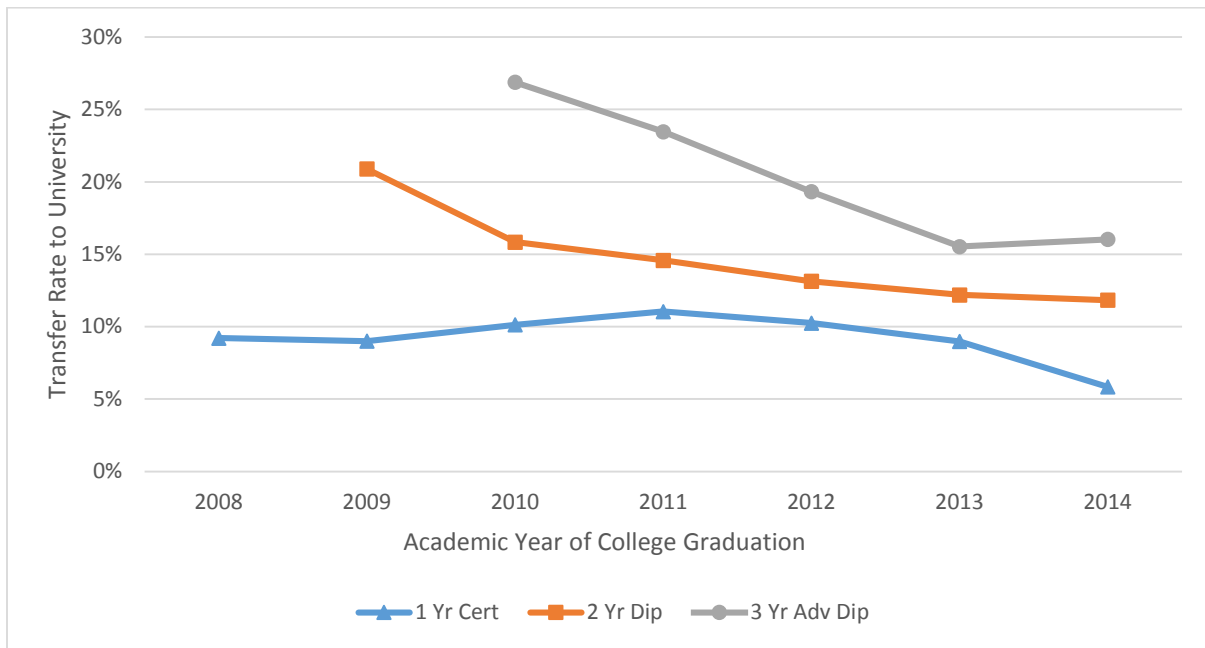
Figure 8: Transfer Rates and Entering Aspirations



Looking again at all GSS respondents, transfer from two and three year programs to university has declined over time. Figure 9 shows the general decline in transfer rates to university by college credential type.<sup>19</sup> 27% of 2010 graduates from advanced diplomas transfer to university, and this falls to 16% in 2014. Two year diplomas experience a similar decline over our period of study, falling from 21% of graduates in 2009 to 12% in 2014. In order to ensure that differences in timing are not accounting for differences observed in transfer behaviour, we control for year of graduation in our regression models.

<sup>19</sup> 205 students who graduated from four year programs (and responded to the GSS) are excluded from figure 9. 44 date outliers are omitted from the figure for simplicity.

Figure 9: Decline in Transfer Rates over Time



### Regression Results – Who Transfers?

In the earlier section of this report, we looked at the influence the various demographic and socio-demographic factors on a college entrants' aspirations for transfer. Conditioned on graduation, we are now able to evaluate which students transferred to university within 6 months of graduating from a college program. We use a series of probit models that estimate the probability of transferring to university (0/1) and compute and report marginal effects at the means. Model 1 and 2 in Table 10 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 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 high school performance,. In model 1, the non- first-generation students remain 3% more likely to transfer compared to those who did not have university educated parents. In model 3, using the combined specification observed throughout the paper, it becomes clear that the low income neighbourhoods with a university educated parent are the most likely to transfer (4% more likely than first generation, low income students).

Focusing on the results from model 3, those who graduated in the fall are 18% less likely than winter graduates to transfer to university within 6 months of graduating. This, we suspect, is due to the student's graduation being out of sync with the typical school year, beginning in the fall. Those over the age of 20 are 3% less likely to transfer than their younger peers, and those who spoke English as a first language are also 3% less likely. Graduates with a 3.0 – 3.5 GPA and a 3.5 GPA+ are 8% and 9% 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 and specialized preparatory programs (e.g. pre-technology type programs) were no more likely to transfer to university than the reference group of business graduates.

Still focusing on model 3, males and females do not have an observable difference in transfer propensity. Those who spoke English as a first language were 3% likely to transfer than their peers. Entering language placement however was not a significant influencing factor. Those entering the college older than 20yrs were also 3% less likely to transfer to university.

Initial aspirations prove to be an important predictor of eventual transfer as those who indicated they intended to transfer were 11% more likely to do so at graduation, all else equal. It has been suggested that when thinking of transfer we ought to be concerned with those who indicated a desire for transfer. To see how this group differs from the rest of the population we reduced our sample of graduates to 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 3.0 – 3.5 GPA and a 3.5 GPA+ are 18% and 22% more likely (respectively) 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 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 through aspirations.

Table 10: Propensity to Transfer to University

		(1)	(2)	(3)	(4)	(5)	
		Transfer to University	Transfer to University	Transfer to University	Transfer to Uni - No Aspirations Control	Transfer to Uni - Aspirants	
<b>Plans for university (Ref: Other Aspirations)</b>	Aspired to University	0.112*** (0.008)	0.114*** (0.008)	0.112*** (0.008)			
<b>SES Group (Ref: First Generation, Low Income)</b>	Mid Inc, First Gen			0.002 (0.010)	0.004 (0.010)	0.004 (0.024)	
	High Inc, First Gen			0.002 (0.010)	0.002 (0.011)	0.006 (0.026)	
	Low Inc, Parental Degree			0.042** (0.018)	0.055*** (0.020)	0.041 (0.037)	
	Mid Inc, Parental Degree			0.029 (0.015)	0.037** (0.016)	0.059 (0.035)	
	High Inc, Parental Degree			0.022 (0.014)	0.029* (0.015)	0.033 (0.032)	
	Low Inc, Ukn Parental Ed			-0.005 (0.016)	-0.002 (0.017)	-0.010 (0.037)	
	Mid inc, Ukn Parental Ed			-0.017 (0.014)	-0.017 (0.014)	-0.052 (0.032)	
	High inc, Ukn Parental Ed			-0.002 (0.018)	0.001 (0.019)	-0.012 (0.040)	
	<b>Parental Education Alone (Ref: Parent No Degree)</b>	1+ Parent with Degree	0.028*** (0.009)				
	Did not know Parental Ed	-0.010 (0.009)					
<b>Neighbourhood Income Alone (ref: Low Income)</b>	Mid Income		-0.002 (0.008)				
	High Income		0.000 (0.009)				
<b>Starting Program Type (Ref: Business)</b>	Community service	0.039*** (0.012)	0.038*** (0.012)	0.040*** (0.012)	0.051*** (0.013)	0.051** (0.024)	
	Creative and Applied Arts	-0.070*** (0.008)	-0.070*** (0.008)	-0.070*** (0.008)	-0.088*** (0.009)	- (0.020)	
	Health	-0.074*** (0.010)	-0.074*** (0.011)	-0.074*** (0.010)	-0.088*** (0.011)	- (0.022)	
	Hospitality	-0.064*** (0.014)	-0.064*** (0.014)	-0.063*** (0.014)	-0.085*** (0.012)	- (0.038)	
	Engineering/Technology	-0.028*** (0.010)	-0.027** (0.011)	-0.029*** (0.010)	-0.039*** (0.011)	-0.015 (0.024)	
	Preparatory/Upgrading -Specialized	0.063 (0.039)	0.069* (0.040)	0.064 (0.039)	0.083* (0.044)	0.152 (0.077)	
	Preparatory/Upgrading - Non Specialized	0.329*** (0.036)	0.331*** (0.036)	0.329*** (0.036)	0.445*** (0.036)	0.428*** (0.043)	
	<b>Starting Credential Type (Ref 2yr Diploma)</b>	Certificate 1-yr	-0.089*** (0.020)	-0.092*** (0.020)	-0.089*** (0.020)	-0.121*** (0.021)	- (0.041)
		Advanced Diploma - 3yr	0.058*** (0.009)	0.058*** (0.009)	0.058*** (0.009)	0.072*** (0.010)	0.093*** (0.023)
	Degree - 4yr	-0.051** (0.024)	-0.047* (0.024)	-0.050** (0.024)	-0.071*** (0.025)	-0.054 (0.063)	

		(1)	(2)	(3)	(4)	(5)
<b>Status in Canada (ref: no)</b>	Canadian	0.002 (0.014)	-0.003 (0.014)	0.003 (0.014)	-0.006 (0.015)	0.018 (0.030)
	<b>Gender (Ref: Female)</b>	male	-0.002 (0.007)	-0.001 (0.007)	-0.002 (0.007)	-0.013* (0.008)
<b>Age at Entry (Ref: Under 20 yrs)</b>	20 yrs+	-0.030*** (0.011)	-0.029** (0.011)	-0.030*** (0.011)	-0.048*** (0.012)	- 0.076*** (0.028)
	<b>English Placement (Ref: College English)</b>	Placed below –non ELL	-0.010 (0.007)	-0.011 (0.007)	-0.010 (0.007)	-0.006 (0.008)
Placed below -ELL		-0.018 (0.019)	-0.021 (0.019)	-0.018 (0.019)	-0.014 (0.021)	-0.004 (0.042)
<b>Previous School Attended (Ref: High school and other non-university)</b>	Last school attended university	0.023 (0.014)	0.028 (0.014)	0.023 (0.014)	0.019 (0.015)	0.065 (0.037)
	<b>Ref: yes</b>	English as First Language	-0.030*** (0.008)	-0.030*** (0.008)	-0.030*** (0.008)	-0.042*** (0.008)
<b>Seneca GPA (Ref: &lt;3.0)</b>	3.0 - 3.5	0.075*** (0.008)	0.074*** (0.008)	0.075*** (0.008)	0.078*** (0.008)	0.175*** (0.018)
	3.5+	0.087*** (0.009)	0.088*** (0.009)	0.087*** (0.009)	0.085*** (0.010)	0.214*** (0.022)
<b>Term Graduated (Ref: Winter)</b>	Summer	-0.015 (0.009)	-0.015 (0.009)	-0.016 (0.009)	-0.010 (0.010)	-0.029 (0.021)
	Fall	-0.184*** (0.014)	-0.184*** (0.014)	-0.184*** (0.014)	-0.189*** (0.015)	- 0.313*** (0.029)
<b>Academic Year of Graduation (Ref: 2008)</b>	2009	0.011 (0.030)	0.011 (0.030)	0.013 (0.029)	0.023 (0.031)	-0.160 (0.100)
	2010	0.016 (0.028)	0.014 (0.029)	0.017 (0.028)	0.030 (0.030)	-0.097 (0.099)
	2011	0.015 (0.028)	0.013 (0.029)	0.016 (0.027)	0.026 (0.030)	-0.126 (0.099)
	2012	-0.003 (0.028)	-0.005 (0.028)	-0.002 (0.027)	0.010 (0.029)	-0.177 (0.098)
	2013	-0.012 (0.028)	-0.015 (0.028)	-0.011 (0.027)	-0.003 (0.029)	-0.181 (0.099)
	2014	-0.000 (0.028)	-0.001 (0.029)	0.001 (0.027)	0.004 (0.029)	-0.168 (0.099)
<b>Observations</b>		6,605	6,605	6,605	6,615	2,906
<b>Pseudo R2</b>		0.2238	0.2212	0.2241	0.1777	0.1778

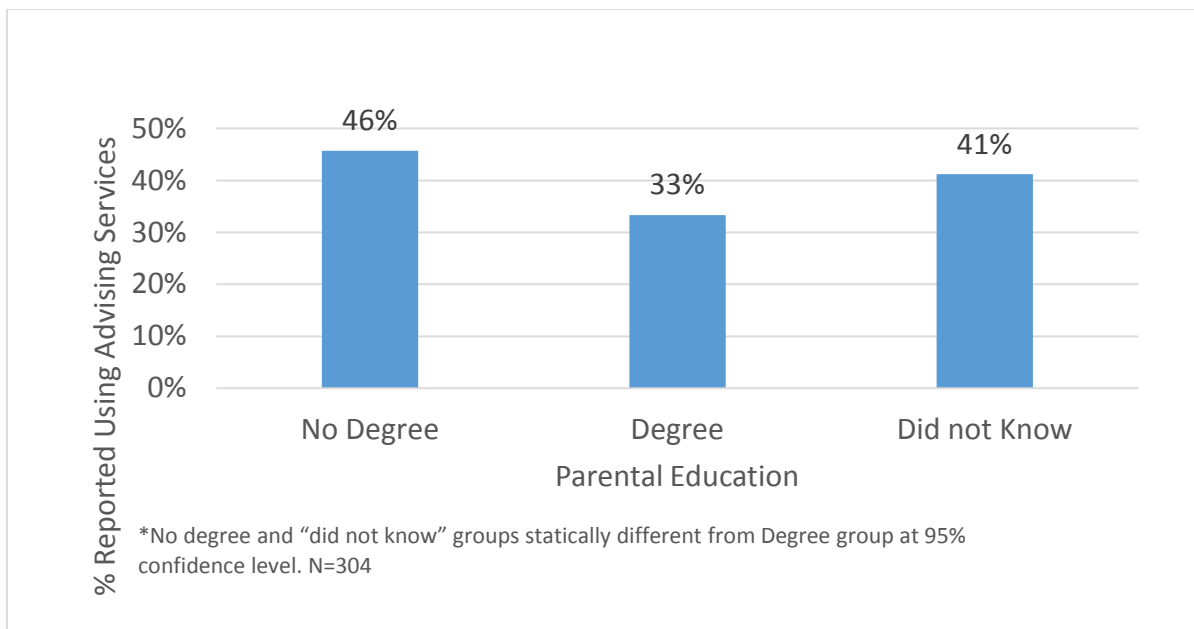
Entering students with parents who had completed a university degree were more likely to transfer to university, however this was only significant among students from low income neighbourhoods. College performance, aspirations, and program characteristics are powerful predictors of transfer to university among college graduates, much more so than socio-economic characteristics. In an earlier section we noted that aspirations are strongly related to parental education, and so, aspirations to university is removed as a control variable, there is a significant gap in transfer propensity between parental education groups. Much of the observed difference in transfer can be explained by initial aspirations, program choice upon entry to the college, and well as performance in a student's college coursework.

#### vi. Analysis of Students Who Have Transferred to University

A total of 1106 graduate respondents had indicated that they successfully transferred to university on the Graduate Satisfaction Survey. These students have been asked an additional set of questions

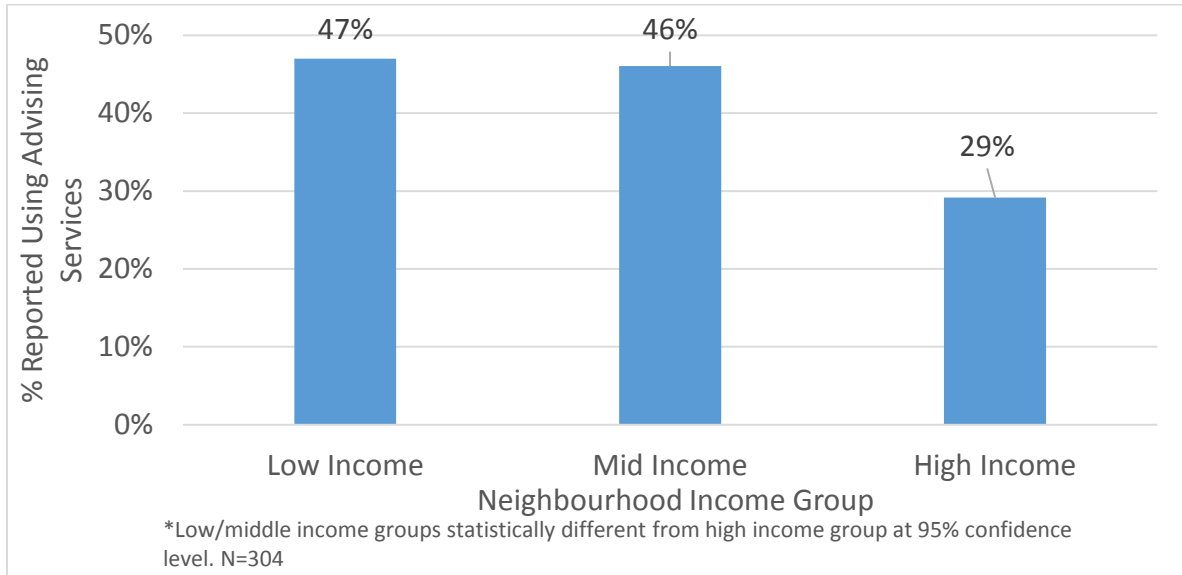
pertaining to their transfer experience as well as their information sources for transfer.<sup>20</sup> Figure 10 shows that First generation university students are more likely to use transfer services. 46% of first generation students reported using such services compared to 33% of those with a parental degree. Figure 11 shows that students from high income neighbourhoods more frequently report using credit advising services than their peers. There may be a special need for these informational services if students do not have a person in their life with university experience. Some colleges, including the one in our study, have dedicated degree and credit transfer offices (DCTO). Transfer outcomes may be equalized in our sample due to an abundant availability of information and advising services. However, any analysis on the impact of advising services is beyond the scope of this report. In forthcoming work that has been funded by ONCAT, we will investigate the role of the DCTO and the impact it has on student outcomes

*Figure 10: Use of Advising Services by Parental Education*



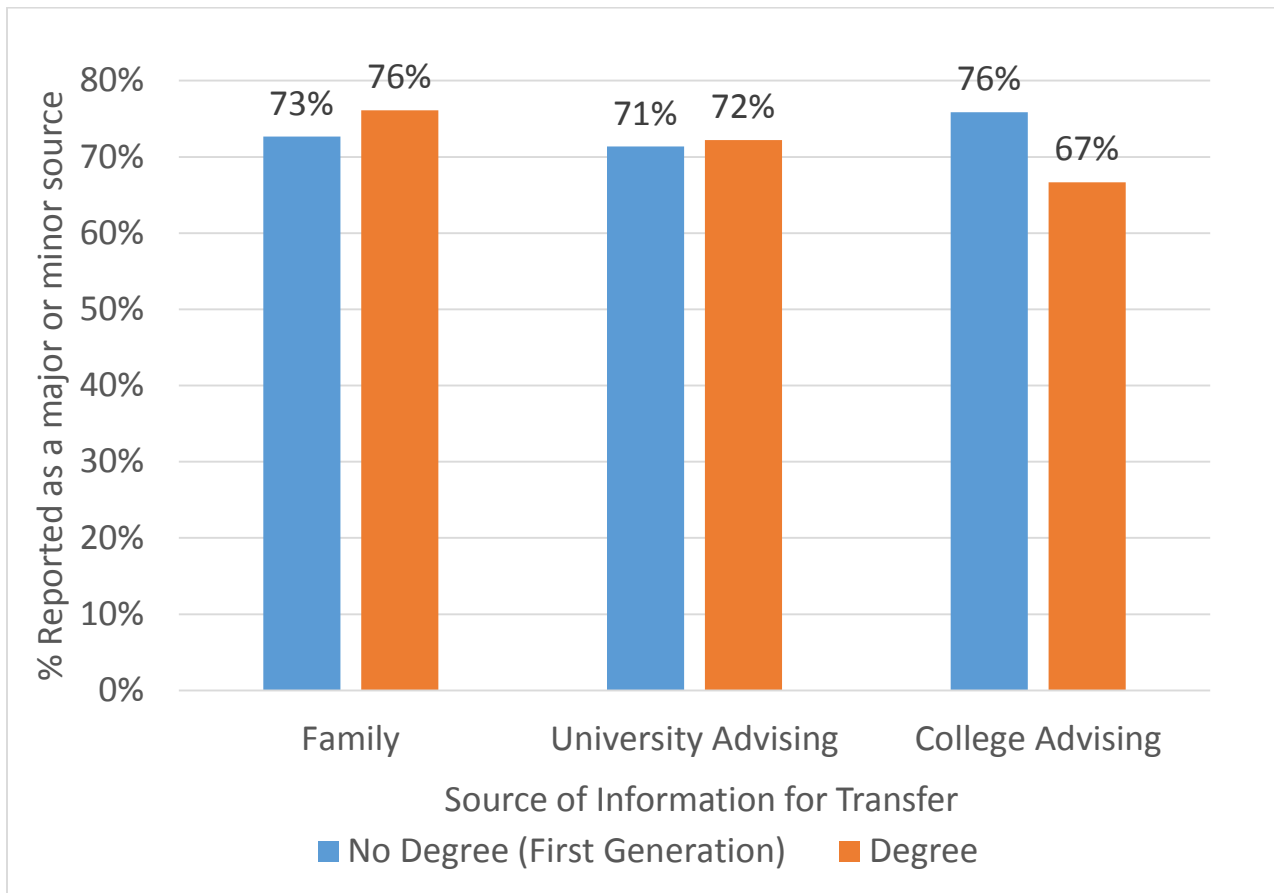
<sup>20</sup> This part of our analysis relies on much smaller samples sizes due to the recent nature of the question in GSS survey. The question began in the 2013 academic year.

Figure 11: Use of Advising Services by Neighbourhood Income



An additional series of questions is asked to transfer students on the GSS that pertain to the information sources they used for their transfer. These questions are described in figure 12. No statistically significant differences exist between income or parental education groups, but about 7 in 10 students reported that family, university advising, and college advising services were all at least minor sources of information for transfer (when asked about each source separately on the survey).

Figure 12: Transfer Students Report Information Sources



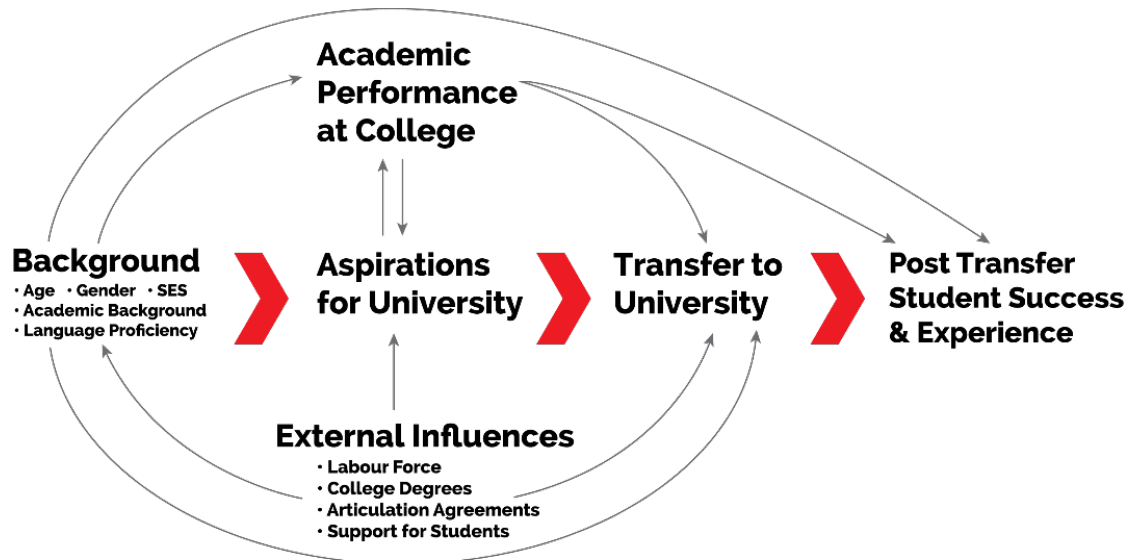
### vii. Discussion and Summary

This paper has examined students of a single large Toronto college, and the socioeconomic determinants of university transfer behaviour. By following students from their entry in the college, through to graduation, and eventual transfer to university, it is possible to understand which students are entering the college with the intention to transfer to university, as well as which students are successful in achieving their goals of university enrollment upon graduation.

Overall, 44% of entering students indicated that they intend to transfer to university. The transfer rate of those who aspired to transfer upon entry is 25%, and 6% for those who did not. Understanding aspirations for transfer is an important step in understanding who eventually persists to transfer to university. Aspirations can 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 our analysis of transfer outcomes. Figure 13 demonstrates the potential impact of aspirations on transfer outcomes and various influencers of a student's aspirations.<sup>21</sup>

<sup>21</sup> Figure 11 can be found as Figure 1 in (McCloy et.al., forthcoming).

Figure 13: The Role of Aspirations in Transfer



Before controlling for sociodemographic and grades, university aspirations are highest among students whose parents have a degree. This was particularly strong among students who lived in low income neighbourhoods. Overall, 49% of non-first generation students aspired to transfer compared to 43% of those who were first generation. Students from high income neighbourhoods proved no more likely than their peers to aspire to transfer. Regression findings confirm that those who have a parent with a degree are 6% more likely to aspire to transfer compared to first generation students (all else equal). This effect is concentrated among students who lived in low income neighbourhoods. The differences in aspirations are important because controlling for academic and program factors (areas that in themselves have substantial SES gradients) students with more highly educated parents were still more likely to aspire to go to university. These findings were tested with different iterations of the same estimates and our findings held robust. First generation college students aspire to university less often even holding other factors constant.

Actual transfer to university is a pathway frequented more often by non-first generation college graduates, as they had transfer rates that were about 3% points higher than their first generation peers. First generation students who did aspire to university were also somewhat less effective in converting those aspirations into reality. When controlling for available socio-demographic factors and grades, First generation students are still 3% more likely to transfer to university than their non-first generation peers. College course 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 3.0-3.49) was associated with a 21% (or 18%) 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. A small unexplained gap in transfer still exists between first generation and non-first generation students, meaning that transfer upon graduation is being exercised above and

beyond controllable differences that exist between the two groups. First generation graduates transfer to university less often and so the transfer system certainly does not disproportionately benefit those from less advantaged backgrounds. Since certain groups of students are under-represented in university, transfer may still be beneficial for access. Future research should also be aimed at understanding how transfer students differ from their direct entry university peers. This type of study would also be better suited to understanding how the system as a whole is serving first generation and low income students.

Student advising services are important for first generation and low income students. Preliminary findings indicate that college advising services may have a special role to play in facilitating university transfer for these under-represented groups as they are far more likely to use them than their peers. A forthcoming study focusing on students who use Seneca's Degree and Credit Transfer Office will further investigate the role that these college services have on transfer behaviour. (Decock et. al, forthcoming)



## References

- Arnold, C. (2012). *Transfer literacy: Assessing informational symmetries and asymmetries*. Toronto: Ontario Council on Admissions and Transfer (ONCAT).
- Butlin, George (1999). *Determinants of Post-Secondary Participation*. Statistics Canada: Education Quarterly Review, V.5, N.3, pp. 9-35.
- Berger, J, & Parkin, A. (2009). *The Value of a Degree: Education, Employment and Earnings in Canada. The Price of Knowledge: Access and Student Finance in Canada 4* (2009): n. pag. Web.
- Decock, H. (2006). *A case study analysis of Ontario CAAT graduates who transfer to a university*. Doctoral thesis. Toronto: University of Toronto.
- Decock, H. (2007). *Calculating the College-to-University Transfer Rate in Ontario*. *College Quarterly* Winter.1: n. pag. College Quarterly. Web
- Decock, H., McCloy, U., Liu, S. & Hu, B. (2011). *The transfer experience of Ontario College graduates who further their education – an analysis of Ontario’s College Graduate Satisfaction Survey*. Toronto: Higher Education Quality Council of Ontario.
- Decock, H., McCloy, U., Steffler, M. (forthcoming) *Seneca College’s Degree and Credit Transfer Office: a Profile of Users and an Evaluation of Outcomes*. Toronto: Ontario Council on Articulation and Transfer.
- Dooley, Martin D.; Payne, A. Abigail; Robb, A. Leslie (2009) *University Participation and Income Differences: An analysis of applications by Ontario secondary school students*. Toronto: Higher Education Quality Council of Ontario.
- Dooley, M. D, Payne, A. A., Robb, L. A., McMaster University (2011). *Understanding the Determinants of Persistence and Academic Success in University: An Exploration of Data from Four Ontario Universities*. Toronto: Higher Education Quality Council of Ontario.
- Doran, J., Ferguson, A. K., Khan, G. A., Ryu, G., Naimool, D., Hanson, M. D., & Childs, R. A. (2015). *What are Ontario’s Universities Doing to Improve Access for Under-represented Groups?* Toronto: Higher Education Quality Council of Ontario.
- Dougherty, K. J. & Kienzl, G. S. (2006). *It’s not enough to get through the open door: Inequalities by social background in transfer from community colleges to four-year colleges*. *Teachers College Record*. 108(3), 452–487.
- Drolet, M. (2005). *Participation in Post-secondary Education in Canada: Has the Role of Parental Income and Education Changed over the 1990s?* @ Issue Paper No. 11. Higher Education Quality Council of Ontario.
- Engle, J. & Tinto, V. (2008). *Moving beyond access: college success for low-income, first generation students*. Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education.
- Frenette, M. (2008). *Why are Lower Income Students Less Likely to Attend University? Evidence from Academic Abilities, Parental Influences, and Financial Constraints*. in, *Who Goes? Who Stays? What Matters? Accessing and Persisting in Post-Secondary Education in Canada*. Eds. R. Finnie, R. E. Mueller,

A. Sweetman, and A. Usher. Montreal and Kingston: McGill-Queen's University Press, Queen's Policy Studies. 279

Frenette, M. & Robson, J. (2011) *Financial Literacy of Low-income Students: Literature Review and Environmental Scan*. Toronto: Higher Education Quality Council of Ontario

Finnie, R., Childs, S., & Wismer, A. (2011a). *Under-Represented Groups in Postsecondary Education in Ontario: Evidence from the Youth in Transition Survey*. Toronto: Higher Education Quality Council of Ontario.

Finnie, Ross, Eric Lascelles and Arthur Sweetman (2005). "Who Goes? The Direct and Indirect Effects of Family Background on Access to Post-Secondary Education" in *Higher Education in Canada*, Charles Beach, Robin Boadway, and Marvin McInnis (eds). Montreal and Kingston: McGill University Press; 295-338.

Government of Ontario News Release (2016). *New Ontario Student Grant Making Tuition Free for Tens of Thousands of Students*. *News.ontario.ca*. Government of Ontario, 1 Mar. 2016. Web. 21 Mar. 2016. <<https://news.ontario.ca/opo/en/2016/03/new-ontario-student-grant-making-tuition-free-for-tens-of-thousands-of-students.html>>.

Kerr, A., McCloy, U., & Liu, S. (2010). *Forging pathways: students who transfer between Ontario colleges and universities*. Toronto: Higher Education Quality Council of Ontario.

Homel, J. & Ryan, C. (2014). *Educational outcomes: the impact of aspirations and the role of student background characteristics*. Adelaide, Australia: Vocational Centre for Education Research.

HRSDC (Human Resources and Skills Development Canada). (2004). *Aspirations of Canadian youth for higher education*. Ottawa: HRSDC.

Krahn, H., & Andres, L. (1999). Youth pathways in articulated postsecondary systems: enrollment and completion patterns of urban young men and women. *The Canadian Journal of Higher Education*. 29(1)

McCloy, U. Decock, H., Steffler, M. (forthcoming a) *Pathways from Seneca College's preparatory programs: From college entrance to graduation from university*. Toronto: Ontario Council on Articulation and Transfer.

McCloy, U., Steffler, M. Decock, H. (forthcoming b) *The impact of labour market and policy changes on university transfer: The case study of Early Childhood Education*. Toronto: Ontario Council on Articulation and Transfer.

Neill, C. (2013) *What You Don't Know Can't Help You: Lessons of Behavioural Economics For Tax-Based Student Aid*. Vol. 393. N.p.: CD Howe Institute, 2013. Print. Commentary.

Ontario Ministry of Training, Colleges and Universities. (2011). *Policy statement for Ontario's credit transfer system 2011*. Toronto: Queen's Printer. Retrieved November 11, 2015, from <https://www.tcu.gov.on.ca/eng/eopg/publications/CreditTransferE.pdf>

People for Education (2013) *Mind the Gap: Inequality in Ontario's Schools 2013*. Toronto, ON. Annual Report on Ontario's Publicly Funded Schools, People for Education.

Rae, B. (2006). *Ontario a Leader in Learning: Report & Recommendations*. Toronto, ON: Queen's Printer, 2005. Feb. 2005. Web. 21 Mar. 201

Smith, R., Decock, H., Lin, S., Piaskoski, D., Sidhu, R., Meskes, J., & McCloy, U. (forthcoming) *Transfer Pathways in Higher Education: York University and Seneca College as a Case Study*. Toronto: Higher Education Quality Council of Ontario.

## Appendices

## Appendix 1: Sample Selection Criteria

Record Characteristic	Students (dropped)	% of 2007- post with Trait
Total number of Students in College's Dataset (2001 - 2015)	171,876	-
Less:		-
Those who began before 2007	76,828	-
Those who began in a Grad Certificate Program	7,395	7.8%
Those who began as Seneca students older than 22yrs	27,150	36.3%
Those who began as/ Finished as a Visa Student	9,863	15.8%
<i>Those without BDAT responses regarding parental Education     (asked to entrants from 2007 onward only)</i>	7,554	31.4%
Those with incomplete HS record (Under 6 courses on file)	5,864	43.6%
Those without Valid Ontario Postal Codes/ Supressed DA data	549	6.2%
Those who began in/ finished in Nursing	619	2.6%
<b>Sample used for Analysis Section 1 - Full sample</b>	<b>36,054</b>	
Less:		
Non-graduate of a program between 2007 – 2014 (mix of in-progress and leavers)	25,940	
Graduates who only have only completed a Grad Certificate	12	
<b>Sample used for Analysis Section 2 - Graduates only</b>	<b>10,102</b>	
Less:		
Non-respondents to the KPI Graduate Survey	2,464	
<b>Sample used for Analysis Section 3 - Graduate Transfer Rates</b>	<b>7,638</b>	
Less:		
Graduates who did not transfer to university	6,532	
<b>Sample used for Analysis Section 4 - Transfer Experience</b>	<b>1,106</b>	

## Appendix 2: 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
<b>Number of Unique Entrants</b>		7,727	8,310	6,087	2,624	2,900	3,173	1,942	1,940	1,351
<b>Canadian Citizen</b>		88.7%	94.1%	96.0%	80.2%	90.1%	93.8%	90.2%	94.0%	96.5%
<b>&lt;20yrs</b>		30.6%	39.5%	44.5%	27.7%	33.5%	36.8%	34.4%	44.7%	46.7%
<b>Male</b>		45.4%	45.9%	50.7%	51.7%	55.0%	58.9%	54.0%	58.5%	61.5%
<b>English as first language</b>		64.9%	73.1%	79.2%	50.1%	65.7%	75.7%	56.2%	64.5%	69.4%
<b>High school courses mostly U/M/OAC level</b>		51.7%	53.7%	54.9%	69.7%	71.9%	72.2%	49.2%	50.4%	54.5%
Below 70%†		56.3%	54.7%	53.5%	53.6%	52.9%	51.3%	61.1%	57.0%	54.6%
<b>HS GPA</b>										
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%
<b>Had 6 or more 12U/M/OAC courses</b>		31.0%	33.3%	35.1%	45.9%	49.1%	51.0%	28.3%	29.6%	33.8%
<b>Best 6 U/M/OAC Average</b>										
<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%
<b>Eligible for university with high school grades/courses</b>		18.8%	20.0%	21.0%	28.9%	30.7%	32.7%	16.0%	17.1%	18.9%
<b>Last school attended was university</b>		5.9%	6.6%	7.4%	11.7%	13.7%	15.3%	3.8%	4.3%	5.4%
<b>English Placement</b>										
Placed below-ELL		9.0%	5.9%	3.7%	8.8%	4.8%	2.4%	9.3%	7.2%	3.6%
Placed below- non-ELL		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%
<b>Aspired to transfer to University</b>		43.7%	43.5%	40.7%	51.3%	48.5%	47.0%	41.6%	41.6%	39.0%
<b>Entering Credential Length</b>										
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%
<b>Entering Program</b>										
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%