Student Loan Outcomes of Ontario Transfer Students

Evidenced Based on PSIS-CSLP Data Linkages

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Executive Summary

A flexible postsecondary education system provides college and university students with opportunities to transfer between programs and institutions when their aspirations and circumstances change. There exists a large body of research that describes the socio-demographic characteristics and academic trajectories of transfer students in Ontario as well as other Canadian jurisdictions, and more recent research has examined the labour market performance of transfer students following graduation (see, for example, Finnie, Dubois, and Miyairi 2017). Much less is known, however, about borrowing costs among transfer students. This study aims to fill gaps in the literature related to trends in student borrowing among transfer and non-transfer students in Ontario's postsecondary system.

This research utilizes and links two datasets from Statistics Canada's Educational Labour Market Longitudinal Platform (ELMLP): Postsecondary Student Information System (PSIS) and Canada Student Loans Program (CSLP). The data linkages provide a unique opportunity to carry out a comprehensive system wide analyses of student debt among transfer students in Ontario. These datasets are used in this study to address the following research questions:

1. What are the characteristics of direct-entry and transfer students who entered postsecondary in Ontario in 2009?
2. What are the characteristics of student loan holders across transfer groupings?
3. Which educational pathways lead to the largest student debt burden upon graduation?
4. Are there significant differences in student debt across educational pathways?
5. Which variables are important predictors of post-secondary pathways and student debt?

Highlights

Transfer students were less likely to complete their programs than their direct-entry counterparts, and they were more likely to borrow government student loans.Transfer students were enrolled in their programs longer than non-transfer students, which resulted in a heftier financial burden—particularly among those whose transfer involved university.

- Federal student loan holders enrolled for the longest period of time were those who entered university and transferred to college, as well as those entered into college and transferred to university.
- The highest amount of student debt was incurred by students who transferred between universities and direct-entry university students; direct-entry college students incurred the least amount of debt.

Demographic (i.e., gender, age, country of birth, parental income), program-related factors (field of study, length of study), and transfer pathways were important predictors of reliance on government funding to subsidize the cost of postsecondary education.

- Female students, on average, incurred more debt by the end of their studies than male students.
- Students who entered PSE later (i.e., 19-year-olds) tended to borrow more money than younger students (i.e., 17- to 18-year-olds).
- Students born outside of Canada were less likely to borrow a federal student loan than Canadian-born students; however, among borrowers, those who were born outside of Canada incurred more debt, on average, than students born in Canada.
- Students who studied in the humanities and social sciences had, on average, the lowest amount of debt at the end of their programs, while those who studied the fine arts had the highest amount of debt.

Introduction

Postsecondary education (PSE) in Ontario is a hierarchical, dynamic, and complex system structured to provide students with a multitude of postsecondary pathways. Many students follow a straightforward route through a single postsecondary institution; however, many do not. Increasingly, students are following academic trajectories that are fluid, involving multiple programs and institutions. Postsecondary programs and policies must therefore evolve to support students who pursue less conventional pathways by accommodating their changing, and potentially challenging, circumstances. For these reasons, student mobility is an increasingly important policy issue in Ontario.

Students' interests and personal circumstances often change while they are enrolled in postsecondary programs. Students may be motivated to transfer to a new institution or program due to family obligations, financial limitations, or the discovery of more suitable or lucrative fields of study (Speers, Stockdale and Martin 2012). Lower income students in particular may have multiple obligations outside of their PSE that require transfers across institutions. Students motivated to transfer often do so midstream, which has the potential to create additional challenges, particularly for students with insufficient resources to successfully navigate the transfer process. Managing bureaucratic processes, negotiating an adequate transfer of credits, adjusting to new social norms and academic environments, and obtaining sufficient funding are among the challenges students face when transferring institutions (Allen, Smith and Muehleck 2014; Kerr, McCloy, and Liu 2011; Gawley and McGowan 2006; Townsend and Wilson 2006). Transfer students also experience challenges with social integration, grade decline, and completion times (Kerr, McCloy, and Liu 2011; Tobolowsky and Cox 2012; Percival et al. 2016). These factors may lead to prolonged borrowing and increased student debt among both graduates and early leavers.

Federal and provincial governments, along with postsecondary institutions, play a key role in supporting student mobility across institutions and promoting successful PSE transitions. Government student loan programs play a complementary role in helping low- and middle-income students make these transitions; however, the extent to which loans facilitate successful transitions through PSE in Ontario is not known. This study will contribute to research on this understudied issue through a system-wide analysis of student borrowing patterns among transfer students in Ontario's colleges and universities. This research is intended to inform a follow-up study that will utilize the data linkages in the present study, as well as linkages with administrative data at the secondary level, to investigate the roles that high school performance and pathways to postsecondary play in PSE outcomes, particularly as they pertain to PSE transfers and student borrowing patterns.

Demographic (i.e., gender, age, country of birth, parental income), program-related factors (field of study, length of study), and transfer pathways were important predictors of reliance on government funding to subsidize the cost of postsecondary education.

- Female students, on average, incurred more debt by the end of their studies than male students.
- Students who entered PSE later (i.e., 19-year-olds) tended to borrow more money than younger students (i.e., 17- to 18-year-olds).
- Students born outside of Canada were less likely to borrow a federal student loan than Canadian-born students; however, among borrowers, those who were born outside of Canada incurred more debt, on average, than students born in Canada.
- Students who studied in the humanities and social sciences had, on average, the lowest amount of debt at the end of their programs, while those who studied the fine arts had the highest amount of debt.

Student Loans

Canada, similar to other industrialized nations, relies heavily on PSE to improve productivity and increase human capital in the evolving knowledge-based economy. Evidence continues to show that PSE is critical for increasing worker productivity and labour market outcomes (see Drewes 2010; Frank and Walters 2012; Ostrovsky and Frenette 2014; Frenette 2019), and it is especially important for helping young people who are economically disadvantaged achieve their labour market potential (Frenette 2019). To improve access to PSE and stimulate upward mobility among individuals from low- and middle-income families, the Government of Canada offers funding through the Canadian Student Loans Program (CSLP) (Employment and Social Development Canada 2019). The CSLP is administered by the Department of Employment and Social Development and delivered in partnership with participating provinces[1] to help students pay for their postsecondary programs through loans and non-repayable grants. A key objective of the CSLP is to improve access to PSE for students who cannot otherwise afford tuition fees and other costs associated with attending college or university. The amount of government funding provided by the CSLP depends on a variety of factors including, for example, course load, education expenses, disability status, marital status, number of dependents, type and location of the postsecondary school, and parental income for dependent students[2] (Kapsalis 2006).

A wealth of research has investigated the borrowing patterns of students who follow traditional (direct-entry) postsecondary pathways (Ben-Ishai 2006; Kapsalis 2006; Finnie, Childs and Wismer 2010; Luong 2010; Frenette 2011; Wright, Walters and Zarifa, 2013; Ferguson and Wang 2014); however, little is known about the debt levels of those who follow less conventional PSE trajectories, particularly those who transfer institutions. Student transfers represent a small yet significant portion of the PSE population in Ontario and their numbers are growing. Transfer students are more likely to require additional supports than their direct-entry counterparts to help them navigate an increasingly complex and hierarchical postsecondary system. Additionally, transfer students typically experience higher dropout rates and longer completion times than their direct-entry counterparts (Finnie et al. 2020; Zarifa et al. 2020). Thus, the student debt levels and outcomes of transfer students in Ontario represent a pressing and growing policy concern for this potentially at-risk group. This study provides a timely contribution to the existing research on student mobility by examining student debt and repayment outcomes among transfer students across Ontario's community college and university programs and comparing their graduation outcomes to their direct-entry counterparts.

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1. Quebec, Nunavut, and the Northwest Territories do not participate in the CSLP and are instead provided with alternative forms of federal funding to operate their own student aid programs.
2. Dependent students are defined as those who are single, not a sole-support parent, have been out of high school for fewer than four years prior to the start of their study period, have not been employed for 12 consecutive months on two or more occasions, whose parents are both living, and are not a permanent ward of a child and family services agency.

Data and Methods

Data for this research are drawn from two linked administrative datasets in Statistics Canada's Education and Labour Market Longitudinal Platform (ELMLP): Postsecondary Student Information System (PSIS) and the Canada Student Loans Program (CSLP). PSIS is a national administrative dataset that contains yearly data on all public university and college enrolments and graduates by program, credential type, and field of study. Data collection for the PSIS began during the 2005–06 school year, though full-scale reporting for Ontario did not start until 2009–10. The CSLP dataset provides recipient-level information on Canada Student Loan disbursements and repayments. CSLP data in the Research Data Centre (RDC) are documented by loan year, which starts in August and ends in July. The CSLP dataset includes data from 2003–04 to 2016–17. A key advantage of using the CSLP dataset to assess student borrowing is that it contains administrative records for parental income and student debt, which eliminates errors associated with self-reported surveys.

Together, PSIS and CSLP data are especially useful for comparing the characteristics and outcomes of students who transfer across institutions relative to those who do not, and determining whether transfer students are disproportionately burdened by student debt. Data from both the PSIS and CSLP were available from 2009–10 through 2016–17. This period overlaps with the selection criteria used by Frenette (2019), who utilized student records in the PSIS between the 2009–10 and 2014–15 reporting cycles to track a single cohort of students entering post-secondary programs.[3] A longer period is used in our analysis because transfer students in Ontario typically take longer than direct-entry students to complete their programs (Kerr et al. 2011; Percival et al. 2016).

Merged Dataset

To prepare the data for analyses, the PSIS and CSLP datasets were sorted and merged using the Register_group_ID variable, a unique record identifier that is shared across these and other datasets in the ELMLP. This study is restricted to student records for Ontario community college programs and university bachelor's degree programs. Students who started or completed their post-secondary education outside of Ontario are excluded from this analysis.

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3. Enrollment and graduation records were not available for all colleges in Ontario until the 2014 academic year. For reporting cycles before 2014–15 the ELMLP includes records for 13/22 colleges; the information for colleges without complete records were imputed by Statistics Canada (see Frenette, 2019:9). While the complete data for the 2014-15 community college records were not available at Statistics Canada's RDCs at the time of this research, there would have been an insufficient number of data cycles to track the 2014-15 cohort through their programs to completion.

The combined dataset contains information on all college and university students who began their academic programs in 2009–10 (Year = 2009). Included in the dataset for each student are institution name, type of institution (university or college), field of study, gender, country of birth, last recorded year of enrolment, graduation status (graduated or not), and program end date (complete for graduates and incomplete for most non-graduates). Program end date was used to assess the date of first successful post-secondary credential. The CSLP also captures the total federal portion of student loans owed at the end of the study period. This variable is used to distinguish between borrowers and non-borrowers, and to assess the amount of debt among borrowers. The total amount owing for each student in the dataset at the end of their program is adjusted to 2017 dollars using the consumer price index.[4]

Student Selection

The records selected for this analysis include students between the ages of 17 and 19 (born between 1991 and 1993) who started their first year of post-secondary education in September 2009. Our selection strategy is similar to that used by Brown (2010) and was employed to permit direct comparisons across programs for a single cohort of similarly aged students. Mature students (i.e., those born before 1991) and students who did not start their programs in the fall were excluded from the analyses, as they are characteristically different from traditionally aged registrants and those who start at the beginning of the academic year. For instance, preliminary analyses using the present data indicated that mature students and students who did not start their postsecondary programs in September were much more likely enroll in college rather than university programs. The implications of our data selection process are discussed further in the Future Directions section of this manuscript. Finally, a small fraction of students with multiple enrollment records during the fall snapshot date of the 2009 reporting cycle were also excluded. This remaining sample included 91,950 students who were between 17 and 19 years of age when they started their Ontario postsecondary programs in September 2009.

4. Students of the lowest SES would be more likely to have some, if not all, of their government funding subsidized through student grants, which is not captured in this study. While the analysis of grant recipients is fruitful investigation, student debt provides a more pressing policy concern because loans must be repaid, and are directly related to financial stress, hardship, and future credit (Canadian Council on Learning 2010).

Mobility Pathways: Graduates

Preliminary analyses revealed that the vast majority of direct-entry students had graduated by the end of their fifth year (2014), which is consistent with recent research (see Frenette 2019). Just over three-quarters of students captured in PSIS who entered their programs in 2009 were enrolled in university and 23% were enrolled in community college. In general, university students completed their programs in their fourth or fifth years, corresponding with the 2012–13 and 2013–14 academic cycles. The graduation "spread" for college students was wider: most records showed that graduation occurred in years two through four, though a small but notable proportion completed their programs within the first and fifth years (2015). Most graduates (88%) obtained their first credential from the postsecondary institution they first attended in September 2009, while 12% graduated from a program at a different institution. It is these transfer students who are the focus of the present study. To contextualize the findings, the outcomes of transfer students are compared to their direct-entry counterparts using the following graduation pathways:

1. University: Direct-Entry (students who started and graduated from the same university).
2. University to College (students who started in university and graduated from college).
3. University to University (students who started in one university and graduated from another university).
4. College: Direct-Entry (students who started and graduated from the same college).
5. College to College (students who started in one college and graduated from another college).
6. College to University (students who started in college and graduated from a university).

The derived transfer variable does not consider students who transfer across fields of study within the same institution, nor does it distinguish between students who make one versus multiple transfers. However, our preliminary estimates reveal that those who transfer across multiple institutions (swirlers) represent only a very small fraction (approximately 0.5%) of the postsecondary student population.

Descriptive Results

Table 1 (p. 28) displays the descriptive results for non-transfer (i.e., direct-entry) and transfer students who started their program of study in the province of Ontario in 2009 by graduation status and Canada student loan information at the end of their study period.

Findings revealed that four out of five (82%; n=65,260) direct-entry students had completed their programs by the end of the study period, whereas just over half (57%, n=6,460) who transferred to a different institution had completed their programs during the same period. With respect to student loans, a greater proportion (57%; n=6,490) of students who transferred post-secondary institutions had a loan balance at the end of their study period compared to students who did not transfer (47%; n=37,960).

Data in **Table 1** are visualized in **Figures 1** and **2** (pp. 28 and 29). These findings demonstrate that, relative to their direct-entry counterparts, transfer students were less likely to have completed their programs within eight years, and they were more likely to make use of government student loans.

Table 2 (p. 30)[5] displays the descriptive characteristics of Ontario postsecondary students who enrolled in September 2009 by transfer grouping.

Gender [6]

Overall, postsecondary students entering university in 2009 were more often female, regardless of route of entry. Specifically, 57% of female students entered directly into university compared to 43% of male students. Female transfer students also made up a larger proportion of university to university (57%) transfers, and university to college (52%) transfer groups than males.

Analyses of gender differences in college post-secondary pathways revealed that males and females were equally represented among direct-entry students and college-to-university transfer students. Those who transferred across colleges were somewhat more likely to be male (54% male vs. 46% female). Overall, these findings indicate that university students were more likely to be female, while the gender composition of college students included roughly equal numbers of females and males.

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5. Minor discrepancies in totals are attributable to rounding requirements as part of Statistics Canada's disclosure requirements.
6. Statistics Canada uses the term sex. Due to issues relating to reporting and cell size, we could only report estimates for males and females.

Age

Table 2 highlights differences in the age composition of students by institution type. Data indicate that those who began PSE in a university and stayed in a university—whether by direct-entry or transfer—tended to be younger (i.e., 17 and 18 years of age) than those who entered college. College students, on the other hand, were slightly older, and this was true for direct-entry and college-to-college transfers.

Country of Birth

The overwhelming majority of students in Ontario's PSE institutions were born in Canada: more than 90% of direct-entry and transfer students at universities and colleges were Canadian-born (see **Table 2**). Compared to their counterparts in the college system, students born outside of the country made up a larger proportion of those in the university direct-entry pathway, as well as the pathways that involved transfer to or from university.

Field of Study

Descriptive analyses of PSIS and CSLP data revealed differences in program of study by postsecondary pathway (see **Table 2**). Among direct-entry university students, the greatest proportion entered STEM fields (27%), followed by the humanities (20%) and social sciences (19%). Similar results were observed among those who transferred between universities: STEM fields accounted for 26% of university-to-university transfers, the humanities made up 21%, and 19% were in the social sciences. Among direct-entry college students, one in five entered business and STEM programs. The same was true for those who transferred between colleges.

Differences in field of study were notable among university-to-college and college-to-university students. Those who transferred from a university to a college program were more often studying in the humanities (27%) and social sciences (23%). This finding suggests that university entrants to the social sciences and humanities may transfer to college in search of career training or practical experience to prepare them for the labour force. Those who transferred from a college to a university program were more commonly studying in health-related fields (24%), suggesting that students interested in health-related fields may use college as a stepping-stone to university.

Length of Study

As expected, direct-entry students to college and university were most likely to be enrolled in their programs for four years (or less for college students) to five years (see **Table 2**). In college, close to nine out of ten direct-entry students were enrolled in their programs for four years or fewer—not a surprise given that college diploma programs are typically one to three years in length. Among university non-transfers, 58% were enrolled for four years and another 29% were enrolled for five years, for a total of 87%. Again, this is to be expected, as university undergraduate programs are typically four-year programs, though it is clear that a substantial proportion of students require an additional year to complete their degrees.

In contrast to direct-entry students, transfers typically spent more time in PSE. Among university-to-university, university-to-college, and college-to-university transfer students, roughly one half were enrolled for upwards of five years. With 54% of students enrolled for at least six years, students who followed a college-to-university pathway spent the most amount of time in PSE, suggesting that the university system may less readily apply college credits to university programs. Students who transferred from college to college were less likely than other transfer students to spend six or more years in PSE; though, at more than one third of enrollments, the number was substantial.

Graduation

Descriptive statistics summarized in **Table 2** indicate that, among direct-entry university students, 86% (n=52,770) completed their programs. The majority of university-to-university and university-to-college transfers also graduated, though the numbers were considerably lower (69% and 56%, respectively). A similar pattern was evident among direct-entry and college transfer students, whereby direct-entry students were more likely to graduate (67%) than transfer students—just 40% of college-to-college students graduated from their programs, while 54% of college-to-university transfers completed theirs. Taken together, these findings demonstrate that, generally, students who began their PSE at a university were more likely to graduate than those who began at college, and both university and college transfer students were less likely to complete their programs than their direct-entry counterparts.

Loan Balance at End of Study

Lastly, **Table 2** demonstrates that direct-entry students were least likely to have a loan balance at the end of their study period: 50% of students in the university pathway, and 39% of students in the college pathway, had incurred a Canada student loan. This gap may be explained by the lower tuition costs and shorter duration of college programs relative

to university programs in Ontario which, generally, makes college less costly than university, thereby reducing the need for student borrowing to fund postsecondary education.
In contrast to their direct-entry counterparts, more than half of transfer students had received a Canada student loan. About 55% of university-to-college, college-to-university, and college-to-college transfers—and nearly two-third of university-to-university transfers—had a loan balance at the end of their studies.

These data are visualized in **Figure 4** (p. 31), which highlights the finding that transferring between post-secondary institutions increases the likelihood that students will borrow funds to help subsidize the extra cost of schooling.

Student Loan Holders

Data in Table 3 (p. 31) display the graduation rates of Canada student loan holders who started their program of study in the province of Ontario in 2009 for both direct-entry and transfer students. **Table 3** reveals that, among Canada student loan holders, the vast majority (83%; n=29,150) of non-transfer students completed their programs, whereas 17% (n=6,060) did not. Among Canada student loan holders among all transfer students, as many as 43% (n=2,370) did not complete their programs.

Table 4 (p. 32) displays the sample characteristics for all Canada student loan holders in Ontario who started their programs in 2009 by transfer grouping. The table includes demographic characteristics, program-related information, as well as parental income and student debt. The demographic and program-related characteristics of the student loan subsample are largely similar to the characteristics of all students who entered PSE shown in **Table 2**, with a few notable exceptions. First, PSIS and CSLP data on student loan holders suggest that females were disproportionately more likely than males to rely on student loans to fund their postsecondary education. The gap was greatest among students who entered college and stayed in college: 50% of direct-entry college students and 46% of college-to-college transfers were female. Among Canada student loan holders, however, 56% of direct-entry college students and 52% of college-to-college transfers were female. Smaller but persistent gaps were evident among the remaining transfer pathways, whereby females were more likely than males to have received a Canada student loan.

The second notable difference between the overall sample who entered PSE in Ontario in 2009 and the subsample of student loan holders is length of study. Among students who began their postsecondary programs at a university, student loan holders were somewhat less likely than the overall sample to have completed their programs in four years. Among direct-entry university students, for example, 58% of the overall sample completed their studies within four years compared to 54% of loan holders. This gap was not evident for college entrants. This finding suggests that a longer study period is associated with an increased reliance on student loans to fund the cost of education among students who attended university but not college, likely because at Ontario universities, the cost of tuition tends to be higher, and the duration of programs tends to be longer.

In addition to student demographic characteristics and program-related information, differences in parental income and outstanding student loans were analyzed. Results are summarized in **Table 4**.

Parental Income

Among student loan holders who entered university, the mean annual parental income ranged from $62,600 to $67,400. Among those who entered college, parental income was lower, ranging from $55,900 to $57,700. Within the university entrants group, the average parental income was lowest among students who transferred from university to college, suggesting that family income may be a factor that determines whether students will continue with university studies or pursue a less costly option (see **Figure 5**, p. 33).

Student Debt

Finally, **Table 4** highlights differences in outstanding Canada student loans among loan holders across the six educational pathways. It is important to note that student loans in the province of Ontario are funded by both the federal and provincial governments. The amounts reported here only represent the federal portion of student loans, which accounts for approximately 60% of the total amount of student debt upon study completion (Employment and Social Development Canada 2019). The provincial government contributes the remaining 40% (Employment and Social Development Canada 2019).

Findings demonstrate that students who spent time in university incurred substantially more debt than students who attended college, and students who transferred tend to take on more debt than students who did not (with the exception of university-to-college transfers, see **Figure 6**, p. 35). Among Canada student loan holders who attended only university, the mean amount of debt was about $16,000 (in 2017 dollars) as of their last record in PSIS. In comparison, students who entered college and remained in college incurred an average of $6,800 to $8,400, or 50% to 60% of the total amount of debt held by university students.

Among college-to-university and university-to-college transfers, total debt was, as expected, higher than students in college only pathways and lower than those in university only pathways. Those who began their postsecondary education at college and transferred to a university tended to incur more debt than students who started at university and transferred to college.

Regression Results

Logistic Regression

Multiple logistic regression models were used to regress student borrowing on transfer groupings while accounting for observable variables from the PSIS and CSLP datasets that are known predictors of post-secondary pathways and student debt. These variables include gender, age at the start of program, country of birth, field of study, length of study, graduation, and parental income. **Table 5** (p. 34) presents the results of the logistic regression analyses. All independent variables were treated as categorical (reference categories are denoted in the table). The purpose of **Model 1** is to compare the six educational pathways without controls. **Model 2** assesses the effect of the transfer variable, while holding constant the other variables noted above.

Results from the first model revealed that students who transferred between universities, colleges, and those who transferred between college and university, were significantly more likely than direct-entry university students (i.e., the reference group) to borrow from the CSLP to subsidize the cost of their post-secondary education (p <.01). Non-transfer (i.e., direct-entry) college students, on the other hand, were less likely than non-transfer university students to borrow a Canada student loan (p<.001).

When adding control variables to isolate the effect of transfer group on student borrowing, results revealed that differences in the likelihood of borrowing from the CSLP by transfer grouping diminished or disappeared in many instances. Though the effect of transfer group variable was statistically significant (p<.001), findings suggest that college-to-college, university-to-college, and college-to-university transfer students were no more or less likely to borrow federal student loans than direct-entry university students.[7] However, differences in the likelihood of incurring debt remained for direct-entry college and university-to-university transfers, whereby direct-entry college students were less likely to borrow (p<.001), and university-to-university transfers were more likely to borrow, than their direct-entry university counterparts.

In terms of the control variables, findings revealed that female students were more likely than male students to borrow funds from the CSLP when controlling for the other variables

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7. Additional logistic regression models were performed only for Canada student loan holders who graduated from their program (see **Appendix Table A1**) and those who had not graduated by the end of the study period (see **Appendix Table A2**). There were very few differences when comparing the estimates in **Table 6** with those in **Tables A1** and **A2** in the **Appendix**. The analysis focusing on non-graduates revealed some subtle differences in relation to program of study and the variable that captures transfer and non-transfer groupings.

in the model[8] (p<.001). Students who were older at entry to PSE (i.e., those aged 19) were more likely to require a loan than those aged 17 and 18 years (p<.001), and Canadian-born students were more likely than those born outside of Canada to borrow a federal student loan (p<.001).

The effect of field of study was also statistically significant (p<.001). The estimates and corresponding levels of statistical significance are provided in **Table 5**. Length of study was also statistically significant (p<.001): students enrolled in postsecondary education for four, five, and six to seven years were more likely than those enrolled for four years to require a loan from the Canadian government to support their studies in university and college (p <.001). These findings indicate that demographic factors (i.e., gender, age, country of birth) and program-related factors (i.e., field of study, length of study) are all important predictors for determining which students rely on government funding to help subsidize the cost of post-secondary education.

To facilitate meaningful interpretation of the transfer group variable, regression estimates were converted to predicted probabilities. Results are presented in **Table 6** (p. 35) and plotted in **Figure 7** (p. 36). **Model 1** in **Table 6** displays the predicted probability of receiving a government loan to help subsidize the cost of post-secondary education for transfer and non-transfer students without controls in the model, and Model 2 presents the predicted probabilities when holding the socio-demographic and program-related variables constant. The estimates in **Table 6** are accompanied by 95% confidence intervals. The 95% confidence intervals in **Model 2** are obtained by holding the other variables constant at their proportions.

Estimates in **Table 6** revealed that the predicted probability of borrowing funds to subsidize the cost of postsecondary education was .50 for direct-entry university students. The same was true for college-to-college, college-to-university, and university to college transfer students. In contrast, the probability of borrowing a federal student loan was higher among students who transferred between universities (.58). Among direct-entry college students, on the other hand, the probability of borrowing from the Canada Student Loan Program was .41. These findings suggest that transferring between universities imposes a heavier financial burden on students, which is likely attributable to the increased amount of time it takes to complete their program of study.

The effects displayed in **Figure 7** provide a visualization of the estimates in **Table 6**. The confidence intervals in the displays are particularly valuable for identifying statistically significant differences across transfer pathways. Moreover, comparing the predicted probabilities with and without controls also highlights that, when holding other variables in the model constant, differences in the predicted probability of borrowing narrows among transfer pathways, meaning that some of the differences across the educational pathways identified in **Model 1** are attributable to the control variables added in **Model 2**.

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8. When not otherwise stated, all estimates derived from regression models with control variables are to be interpreted as controlling for the other variables in the model.

Ordinary Least Squares Regression

A second regression analysis was used to predict the amount of student debt held by transfer students at the end of their programs; hence, it excludes students who did not borrow from the CSLP during their programs. For this analysis, we employed a standard linear regression model where the dependent variable was the total amount of the Canada student loan owing at the end of the last reporting cycle for the first post-secondary program (adjusted to 2017 dollars). For this model, the parental income variable in the CSLP dataset, which was only assessed for students identified as 'dependents,' was included. The parental income variable is grouped into quintiles. The first quintile includes dependent students in the lowest 20% of parental incomes and the fifth quintile includes students with parental incomes in the top 80 to 100%. Dependent students are defined as those individuals who are single, not a sole-support parent, have been out of high school for fewer than four years prior to the start of their study period, have not been employed for 12 consecutive months on two or more occasions, and are not a permanent ward of a child and family services agency. The vast majority of 17- to 19-year-old students with federal loans are classified as 'dependents.'

Table 7 displays the results of ordinary least squares (OLS) regression analysis predicting the amount of student debt among Canada student loan holders. **Model 1** revealed differences in the amount of student debt incurred by students by transfer pathway. As expected, students in direct-entry community college programs borrowed less money compared to their direct-entry university counterparts (p<.001), as did students who transferred between colleges (p<.001), from university to college (p<.05), and from college to university (p<.01). Taken together, OLS regression results demonstrate that the highest amount of student debt was incurred among direct-entry university students and those who transferred between universities, while direct-entry college students incurred the least amount of debt.

Model 2 builds on **Model 1** by including control variables to isolate the total amount of money borrowed from the CSLP to subsidize the cost of post-secondary education, after controlling for relevant predictors in the model. As shown in **Table 7**, **Model 2** revealed that the socio-demographic variables had statistically significant effects on the total amount students borrowed from the CSLP throughout the study period. Interestingly, female students incurred more debt by the end of their studies compared to male students (p<.001), and students aged 19 years borrowed more money to subsidize their education costs relative to students who were 17 and 18 years old at the time they entered post-secondary (p<.001). With respect to country of birth, students born outside of Canada incurred more student debt compared to students born in Canada (p<.001). The effect of parental income was statically significant (p<.001), meaning that it was an important predictor of how much money students borrowed from the CSLP. In relation to the reference category, students in the second, third and fourth quintiles for parental income incurred more debt relative to those in the first quintile (p<.001). Students in the top quintile borrowed less money compared to those in the lowest quintile (p<.001). These findings are not unexpected, as students in the lowest quintile are most likely

to have some of their schooling costs subsidized through non-refundable grants requiring them to borrow less. Likewise, students in the highest quintile may be most likely to have some of their schooling costs subsidized through their parents.

Model 2 demonstrates that program-related factors were significant predictors for the total amount of debt incurred by students. The effect of field of study was statically significant (p<.001), indicating that students who studied in the humanities, social sciences, STEM, business, and health-related fields, as well as those classified as 'other,' borrowed less money compared to those studying fine arts programs (p<.001). Students studying in the humanities and social sciences had the lowest amount of student debt by the end of their programs, whereas students studying in the fine arts had the highest total debt. Not surprisingly, length of study was also statically significant (p<.001). Relative to those who were enrolled in their programs for four years, students who were enrolled for five, six and seven or more years incurred more debt (p<.001). Students enrolled for five years had the highest total amount of debt, whereas students enrolled for four years had the least amount of debt. Findings further revealed that the effect of transfer group was statically significant (p<.001). The regression model indicates that direct-entry to university and university-to-university transfers incurred the most debt, while direct-entry college students and college-to-college transfers borrowed about $8,000 to $9,000 less from the CSLP relative to those in the direct-entry university category (p<.001) when holding other variables in the model constant. College-to-university transfers also borrowed less money than their direct-entry counterparts by an average of roughly $5,400 (p<.001). Those who transfer from university to college, on the other hand, borrowed an average of $2,500 less than non-transfer university students (p<.001).

Additional standard linear regression models were employed to examine how the total amount of student debt changed based on graduation. In comparison to **Model 2** in **Table 6**, the only difference in the finding for students who graduated was in relation to transfer groupings. Specifically, the difference in the total amount of debt between students who entered college and transferred to university, and those who entered university and did not transfer, was no longer statistically significant when controlling for graduation. Additionally, students who transferred between universities borrowed more money from the CSLP by the end of their studies compared to those in direct-entry university (p<.001).

The regression estimates for the total loan amount at the end of the students' studies were converted into predicted values of the dependent variables (amount owing at the end of study record) for the key variable that distinguishes among transfer and non-transfer students. Predicted probabilities are presented in **Table 8** (p 37).

Model 1 displays the predicted loan amount by transfer grouping for all loan holders without controls. The loan estimates in this model are similar to the estimates provided in **Table 4**, however they are accompanied by their corresponding 95% confidence intervals for statistical inferences across the categories. The estimates in **Model 2** are derived from the regression estimates from **Table 7**, which control for observable characteristics in the PSIS and CSLP

datasets. These estimates indicate that students who enter PSE through university and stayed at the same institution incurred an average of $16,034 of debt, whereas those who transferred between universities and those who entered university and transferred to college borrowed on average $16,091.38 and $10,673, respectively. In other words, when controlling for the other variables in the model, there was essentially no difference between the total amount borrowed for direct-entry university and those who transferred between universities; however, those who entered university and transferred to college owed about $5,400.00 less. In comparison, students in direct-entry college programs borrowed an average of $6,902.20, while those who transferred to another college owed $7,865.26, and those who transferred to university owed $13,533.09. The difference between direct-entry college students and college-to-college transfers in terms of the total amount of debt incurred was just under $1,000. In contrast, those who entered college and transferred to university owed $6,630.89 less than their direct-entry college counterparts.

The predicted probabilities from **Model 1** and **Model 2** are displayed in **Figure 8** (p. 37). Comparing these two figures revealed that the differences in the amount of student loans borrowed across transfer and non-transfer students do not change after controlling for the other variables in the model.

Discussion

Taken together, results of this research highlighted the heftier student loan burden among students who attend PSE in Ontario. Among the 2009 cohort, students who attended university—either for a portion or the entirety of their postsecondary studies—were more likely to receive a Canada student loan and hold higher loan balances than those who attended college. This finding is consistent with data from the Government of Canada's statistical review (Employment and Social Development Canada 2019). Moreover, postsecondary students who transferred across institutions during their studies were more likely to borrow than students who stayed at the same institution. This finding is likely explained by the duration of their studies, whereby transfer students tend to be enrolled in PSE for a longer period than non-transfer students.

In terms of borrowing amounts among transfer students, the results revealed that college-to-college transfers, on average, carried a lower debt burden at the end of their studies relative to students who transferred from college to university and vice versa. These findings are consistent with our expectations, as university tuition is typically higher than college tuition, and university programs are generally longer (three to four years) than college programs (which are normally one to two years in length). While university-only pathways are typically more expensive and require a higher level of borrowing, students who pursue these pathways are most likely to graduate from their programs, which may better position them for repaying their student debt following completion of their studies.

Differences in the likelihood of borrowing and average debt at PSE completion among transfer pathways persisted after taking into account important predictors of postsecondary pathways and debt, including gender, age, immigrant status and, among loan borrowers, parental income. Students in university pathways were most likely to complete their schooling, and students who transferred between colleges, and between college and university, were less likely to graduate, more likely to borrow government student loans, and at greater risk of not graduating than those who remained at the same institution for the duration of their studies (as illustrated in **Tables 1** and **2**). As such, transfer students are an important group for study, particularly as it relates to the consequences associated with their disproportionate student loan burden—such as the risk of defaulting on student loan repayments.

By accounting for multiple transfer pathways, this research has demonstrated that transfer students face challenges that their direct-entry counterparts do not, which has implications for their future labour market performance as well the long-term financial strain associated with a heavier debt load. For this reason, transfer students require greater attention in PSE research.

Limitations

Most student borrowing in Canada is coordinated through one system, whereby participating provinces and territories work collaboratively with the federal government to provide funding to students. In this system, as mentioned previously, the federal government funds approximately 60% of assessed financial need for full-time students, and the remaining 40% is funded by their respective provinces and territories. Students residing in Ontario, then, receive 40% of their funding through the Ontario Student Assistance Program (OSAP). As such, the amount of money borrowed from provincial student loans programs is not available in the ELMLP. While our analysis of CSLP data only reflects federal student financial aid, these results provide good evidence regarding the relative levels of student debt among direct-entry and transfer students. Still, future research that considers both federal and provincial student loans will provide a better understanding of the overall student debt burden experienced by transfer students.

Second, while this research provides a good picture of debt burden and the effects of student mobility on borrowing for those who do and do not complete their programs, a longer time frame is necessary to track the default levels for this cohort of PSE graduates. Transfer students are less likely to complete their programs than their direct-entry counterparts, putting them at a higher risk of failing to repay their student loans and experiencing greater financial stress. Future research will therefore benefit from using additional reporting cycles of the PSIS and CSLP to shed light on the default levels of Ontario transfer students.

Future Directions

The focus of this research was on the post-secondary pathways and student loan outcomes of 17–19-year-old transfer students who entered their postsecondary programs for the first time in September 2009. However, our preliminary analyses revealed that students who do not enter PSE directly out of high school are much more likely to attend college, whereas a majority 17-19-year-olds attend university. Likewise, students who enter PSE later have very different postsecondary trajectories and outcomes (Kerr 2011; Chen 2017; Kallison 2017; Kim and Baker 2015). In fact, a recent U.S. study has identified several challenges that many adult learners transitioning into post-secondary face as they navigate their way through their programs (Shapiro et al. 2019). Such challenges include "barriers related to student support services, childcare, credit transfer, class scheduling, and financial aid" (Shapiro et al. 2019:18).

Our preliminary analyses also revealed that both college and university "late starters" (i.e., students who entered their program after September) were less likely to attain a post-secondary credential within five years than students who started their programs in September. The extent to which program entry date is related to pathways and loan outcomes is beyond the scope of this research. However, we suspect that this and other factors will influence the pathways and outcomes of new and emerging populations of postsecondary students, many of whom will transfer through programs. We are currently working on a follow-up study to assess the outcomes of transfer students who pursue non-traditional routes into PSE.

Finally, the extent to which lower graduation rates and loan outcomes of transfer students are attributable to unobserved individual or institutional characteristics, particularly relating to preparation and ability, could not be assessed using data in PSIS and CSLP. The follow-up study mentioned above will also draw on data linkages between the ELMLP and Toronto District School Board to enable an investigation of the extent to which unobserved characteristics in this study can explain transfer pathways and borrowing patterns. The results of this research will help improve our understanding of the challenges experienced by transfer students as they navigate through postsecondary education in Ontario.

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Figures

Table 1: Graduation Rate and Loan Balance of Non-transfer and Transfer Students in Ontario, 2009 Cohort (n=91,3505)

	Non-transfer students (n=80,000)		Transfer students (n=11,350)	
Variables	%	n	%	n
Graduation				
No	18	14,740	43	4,890
Yes	82	65,260	57	6,460
Loan balance at end of study period				
No	53	42,040	43	4,860
Yes	47	37,960	57	6,490

Figure 1: Graduation Rate for Post-secondary Students by Non-Transfer and Transfer Groups, 2009 Cohort (n=91,350)
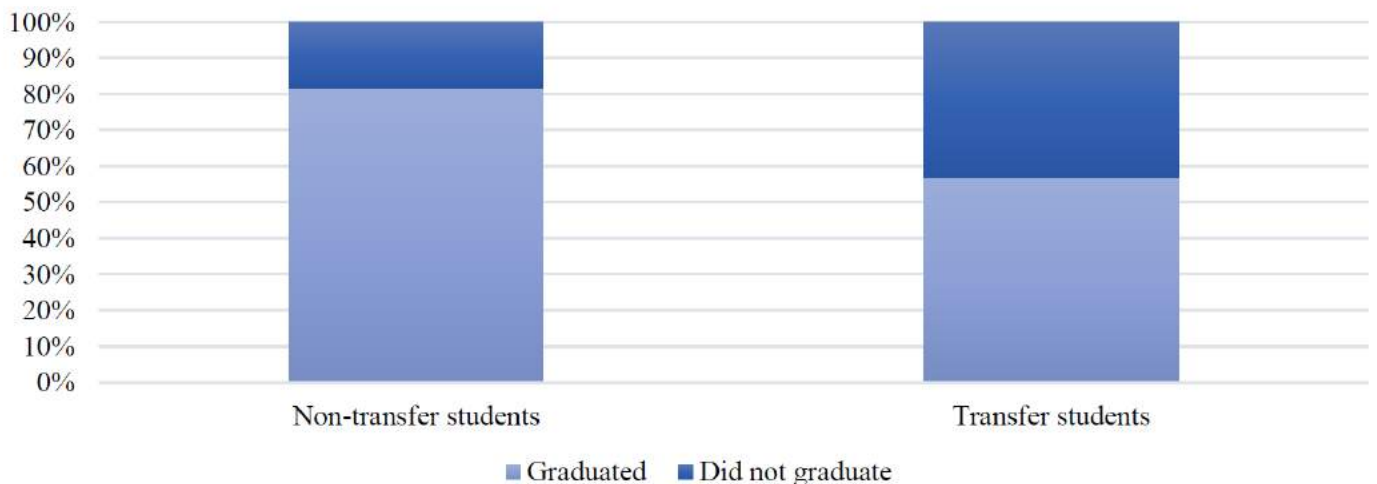
Figure 2: Proportion of Post-secondary Students with a Loan Balance at the End of their Study Period by Non-transfer and Transfer Groups, 2009 Cohort (n=91,350)
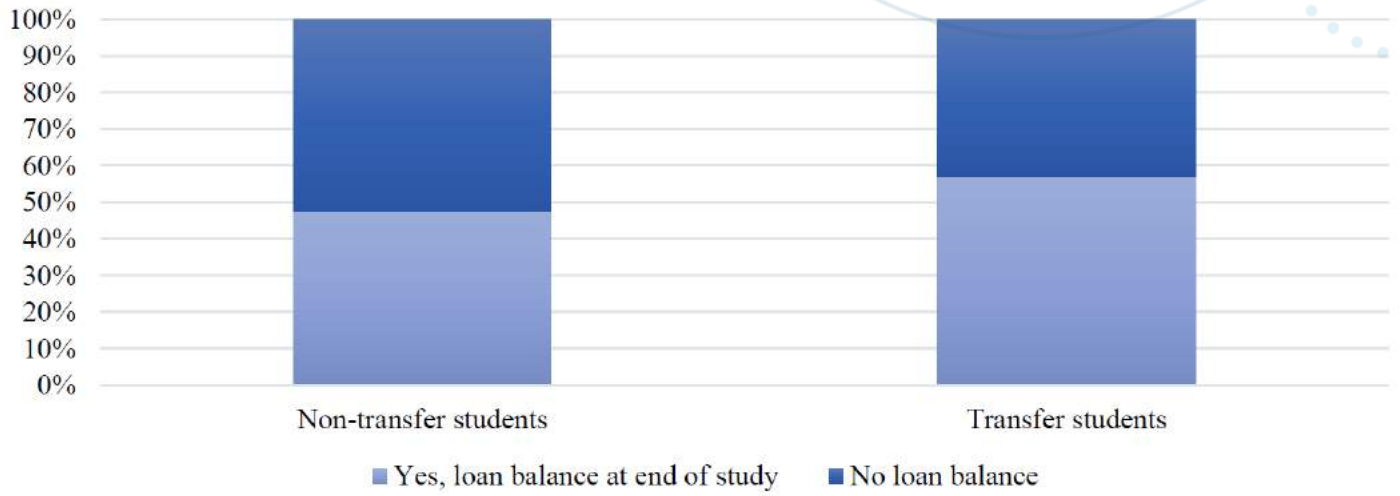
Table 2: Sample Characteristics of Students Entering Post-Secondary Education in Ontario in 2009 by Transfer Groupings (n=91,350)

Variable	Direct Entry University (n=61,290)		University to University (n=3,260)		University to College (n=5,570)		Direct Entry College (n=18,700)		College to College (n=1,830)		College to University (n=690)	
	%	n	%	n	%	n	%	n	%	n	%	n
Gender												
Male	43	26,340	43	1,390	48	2,680	50	9,310	54	990	50	340
Female	57	34,950	57	1,870	52	2,890	50	9,390	46	840	50	340
Age												
17-18 years	67	41,250	71	2,330	61	3,400	49	9,120	48	870	50	340
19 years	33	20,040	29	930	39	2,180	51	9,580	52	960	50	340
Country of Birth												
Canada	90	55,100	92	2,990	92	5,130	97	18,180	97	1,770	93	640
Outside Canada	10	6,200	8	270	8	440	3	520	3	60	7	50
Field of Study												
Fine Arts	4	2,620	3	110	5	300	12	2,170	12	220	11	70
Humanities	20	12,500	21	700	27	1,490	7	1,260	8	140	8	50
Social Sciences	19	11,390	19	610	23	1,290	11	2,060	11	200	8	60
Business	16	10,100	14	470	12	690	21	4,000	20	370	19	130
STEM	27	16,610	26	860	20	1,120	19	3,570	20	370	12	80
Health and related fields	8	5,090	5	170	6	340	13	2,400	12	220	24	160
Other	5	2,980	11	350	6	340	17	3,240	17	310	18	130
Length of Study												
2012/13 (4 years or less)	58	35,280	26	840	32	1,780	88	16,510	43	780	24	160
2013/14 (5 years)	29	17,990	26	860	23	1,290	5	1,010	18	330	22	150
2014/15 (6 years)	8	4,680	19	600	14	780	3	470	12	220	18	130
2015/16-2016/17 (7+ years)	5	3,340	29	960	31	1,720	4	700	27	500	36	250
Graduation												
No	14	8,530	31	1,020	44	2,450	33	6,210	60	1,090	49	340
Yes	86	52,770	69	2,250	56	3,130	67	12,490	40	740	51	350
Loan balance at end of study												
No	50	30,550	37	1,220	45	2,500	61	11,490	46	850	43	300
Yes	50	30,740	63	2,040	55	3,080	39	7,210	54	980	56	390

Figure 3: Graduation Rate of Post-secondary Students by Non-transfer and Transfer Groupings, 2009 Cohort (n=91,350)
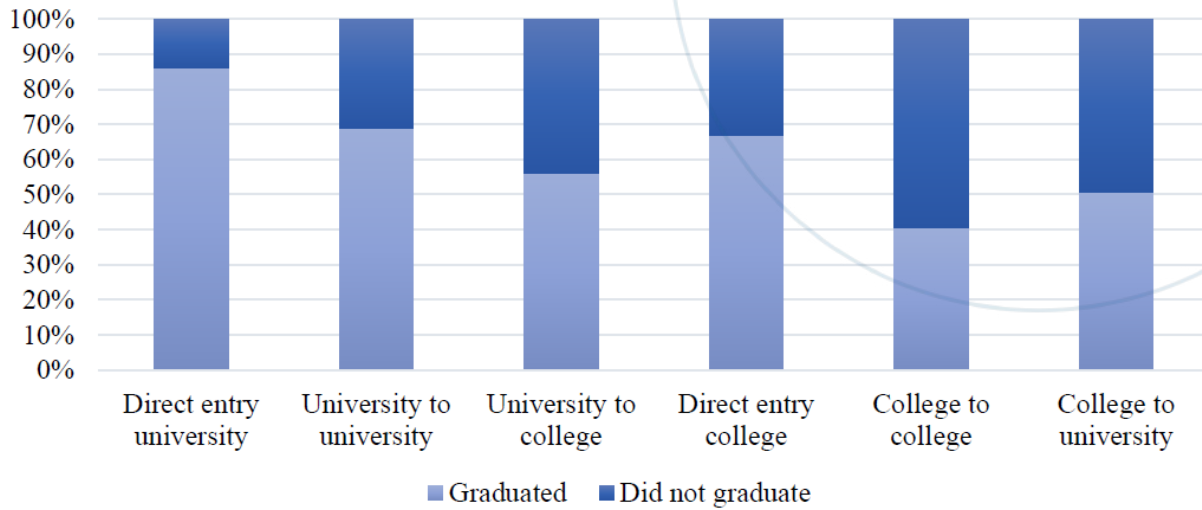
Figure 4: Percentage of Post-Secondary Students with a Loan Balance at the End of their Study Period by Non-transfer and Transfer Grouping (n=91,350)
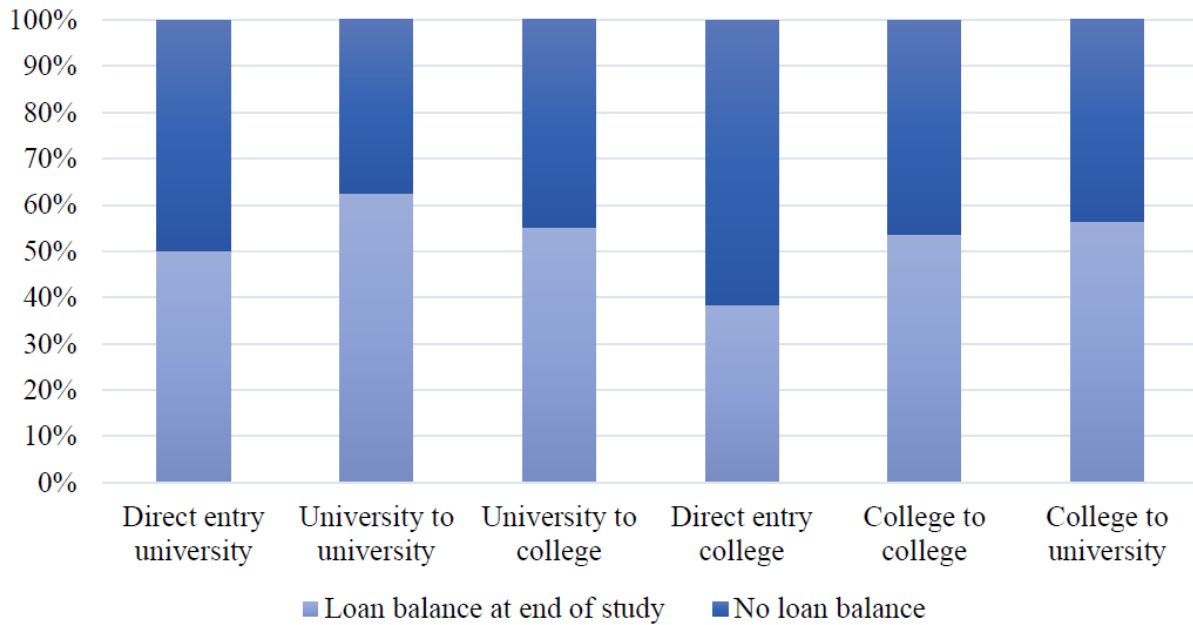
Table 3: Graduation Rate of Canada Student Loan Holders in Ontario by Non-transfer and all Transfer students, 2009 Cohort (n=40,770)

	Non-transfer students (n=35,220)		All transfer students (n=5,550)	
Variable	(%)	n	(%)	n
Graduation				
No	17	6,060	43	2,370
Yes	83	29,150	57	3,180

Table 4: Sample Characteristics of Canada Student Loan Holders in Ontario by Non-transfer and Transfer Groupings, 2009 Cohort (n=40,770)

Variable	University Direct Entry %	University Direct Entry n	University to University %	University to University n	University to College %	University to College n	College Direct Entry %	College Direct Entry n	College to College %	College to College n	College to University %	College to University n
Gender												
Male	41	11,850	40	720	46	1,230	44	2,920	48	380	49	150
Female	59	16,780	60	1,070	54	1,430	56	3,670	52	420	51	150
Age												
17-18	68	19,490	72	1,290	61	1,620	47	3,060	49	390	52	160
19	32	9,140	28	500	39	1,040	54	3,520	51	410	48	150
Country of Birth												
Canada	91	26,070	91	1,640	93	2,460	97	6,380	96	770	94	280
Outside Canada	9	2,560	9	160	7	200	3	210	4	40	6	20
Field of Study												
Fine Arts	4	1,200	4	60	6	150	14	910	13	110	7	30
Humanities	18	5,260	19	340	25	650	6	400	6	50	6	20
Social Sciences	18	5,110	18	330	23	610	11	730	11	90	9	30
Business	16	4,650	15	260	12	330	21	1,420	19	160	20	60
STEM	29	8,420	28	500	21	570	18	1,160	19	160	12	40
Health and related fields	9	2,600	6	100	7	180	15	980	15	120	26	80
Other	5	1,400	11	200	6	170	15	1,000	16	130	15	50
Length of Study												
2012/13 (4 years or less)	54	15,390	24	440	29	780	88	5,770	44	350	25	70
2013/14 (5 years)	31	8,990	27	480	24	620	6	380	19	150	23	70
2014/15 (6 years)	8	2,430	19	350	15	390	3	170	11	90	19	60
2015-17 (7+ years)	6	1,820	29	530	32	860	4	260	26	210	34	100
Graduation												
No	14	3,920	31	550	46	1,210	33	2,140	58	460	48	140
Yes	86	24,710	69	1,240	54	1,440	67	4,450	42	340	52	160
Parental income (mean in dollars)	65,100		67,400		62,600		56,000		57,700		55,900	
Student Debt (mean in dollars)	16,000		16,400		11,000		6,800		8,500		14,600	

Figure 5: Annual Parental Income of Canada Student Loan Borrowers by Non-transfer and Transfer Grouping at Entry to Post-secondary Education (n=40,770)
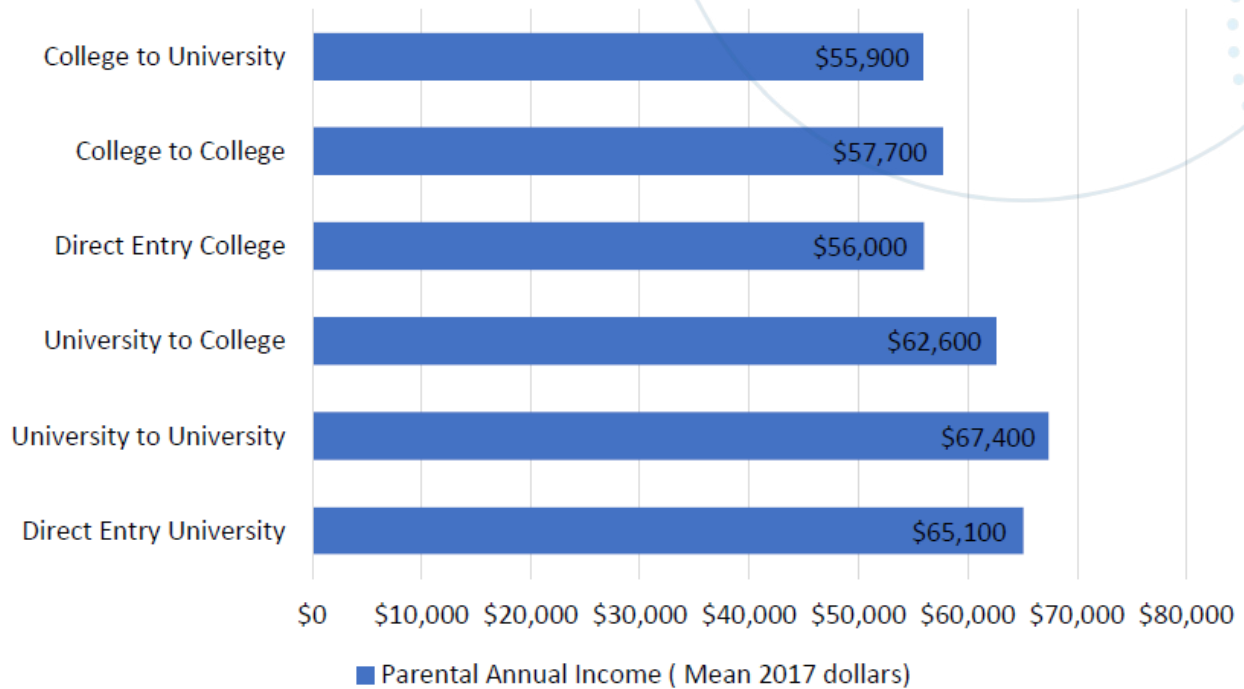
Figure 6: Total Amount of Canada Student Loan Debt at the End of the Study Period by Non-Transfer and Transfer Groupings, 2009 Cohort (n=40,770)

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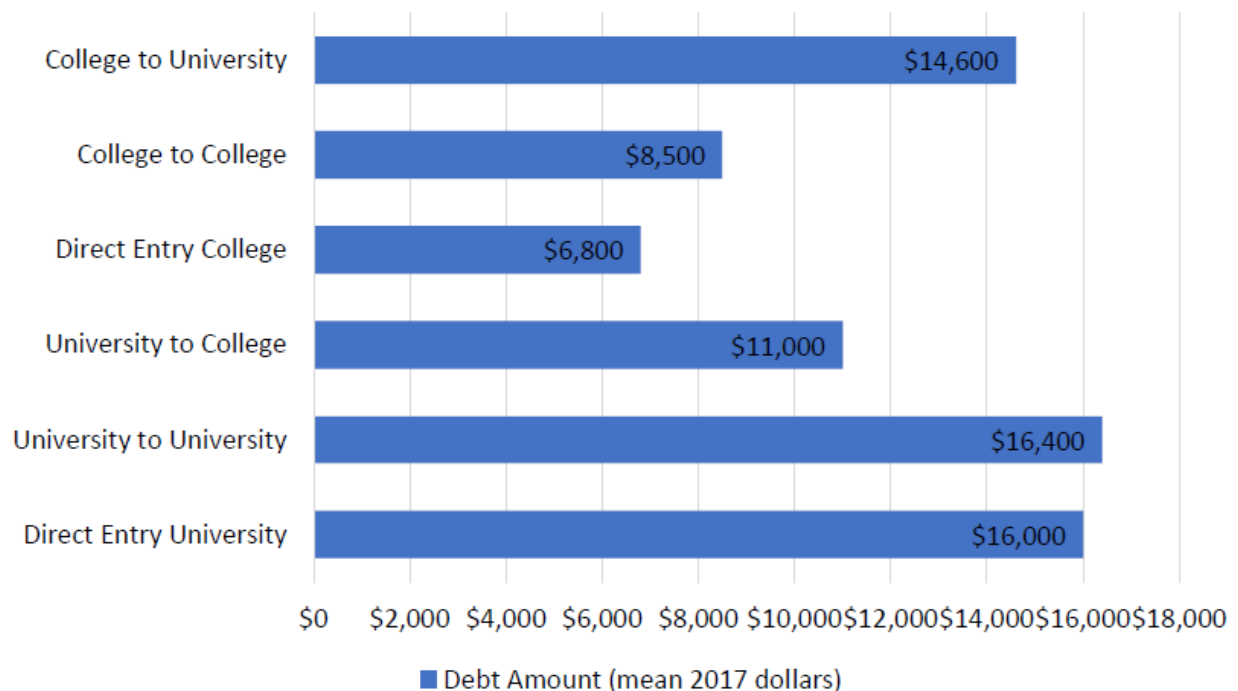
Table 5: Logistic Regression Predicting Student Borrowing from Canada Student Loan Program - 2009 Cohort (n=91,350)

Variables	Model 1			Model 2		
	b	SE(b)	p	b	SE(b)	p
Gender						
Male (ref)				-	-	-
Female				0.274	0.014	***
Age						
17-18 years (ref)						
19 years				0.136	0.014	***
Country of Birth						
In Canada (ref)				-	-	-
Outside of Canada				-0.275	0.025	***
Field of Study						***
Fine arts (ref)				-	-	-
Humanities				-0.291	0.032	***
Social sciences				-0.167	0.032	***
Business				-0.078	0.032	*
STEM				0.07	0.031	*
Health and related fields				0.104	0.035	**
Other				-0.144	0.037	*
Length of Study						***
2012/13 (4 years) (ref)				-	-	-
2013/14 (5 years)				0.407	0.017	***
2014/15 (6 years)				0.607	0.027	***
2015/16 & 2016/17 (7+ years)				0.695	0.027	***
Transfer groups			***			***
Direct entry university (ref)	-			-	-	-
University to university	0.51	0.028	***	0.313	0.029	***
University to college	0.200	0.04	***	0.049	0.038	NS
Direct entry college	-0.470	0.02	***	-0.394	0.019	***
College to college	0.140	0.05	**	-0.032	0.049	NS
College to university	0.270	0.08	***	-0.028	0.079	NS
Constant	0.0063	0.008		-0.287	0.031	
Log Likelihood	-62,673.05			-61,700.67		
LR χ^2	1,212.3			3,157.06		
Prob > χ^2	***			***		
$R^2_{McFadden}$	0.0096			0.0249		

*p ≤ .05   **p ≤ .01   ***p ≤ .001

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Table 6: Predicted Probabilities of Students Borrowing from the Canada Student Loan Program by Transfer Group (n=91,350)

Transfer Group	Model 1			Model 2		
	Margins	95% CI		Margins	95% CI	
Direct entry university	0.50	0.50	0.51	0.50	0.49	0.51
University to university	0.62	0.61	0.64	0.58	0.56	0.60
University to college	0.55	0.53	0.57	0.52	0.50	0.53
Direct entry college	0.39	0.38	0.39	0.41	0.40	0.42
College to college	0.54	0.51	0.56	0.50	0.47	0.52
College to university	0.57	0.53	0.60	0.50	0.46	0.53

Figure 7: Plotted Predicted Probability of Borrowing from the Canada Student Loan Program, with and without Controls

Probability of borrowing from CSLP (Without Controls)

**Probability of borrowing from CSLP (With Controls)**
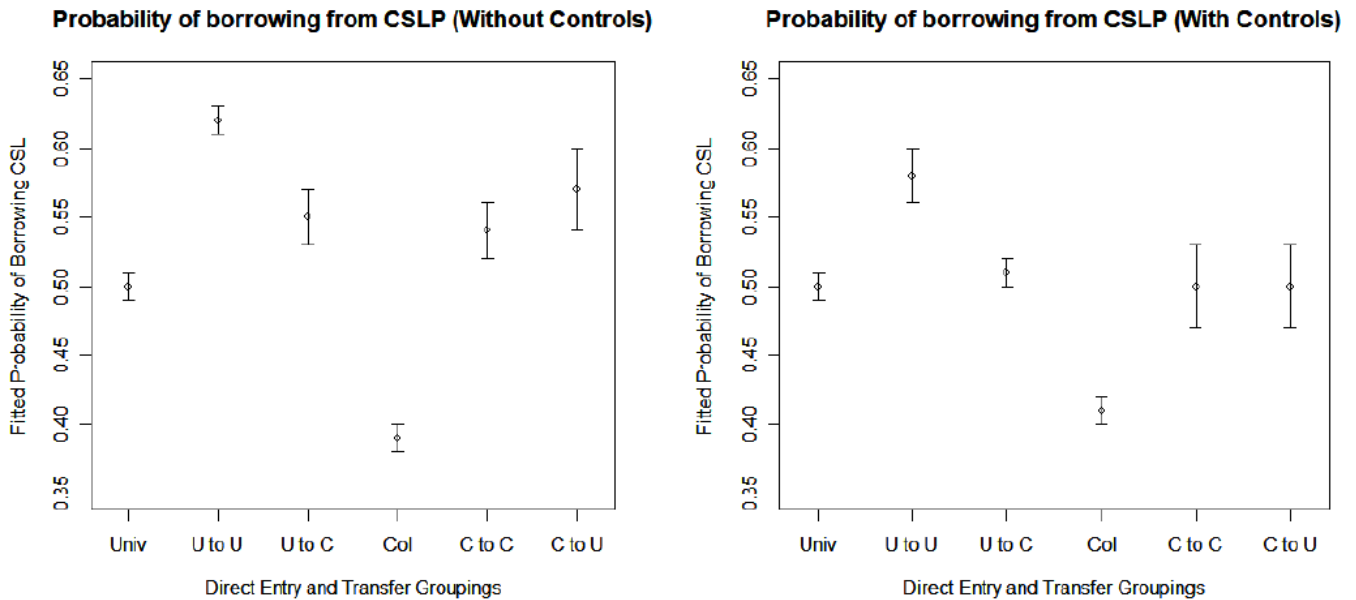
Table 7: Ordinary Least Square Regression Predicting Amount of Debt at End of Study Period - 2009 Cohort (n=40,770)

Variables	Model 1 b	Model 1 SE(b)	Model 1 p	Model 2 b	Model 2 SE(b)	Model 2 p
Gender						
Male (ref)				-	-	-
Female				840.25	88.63	***
Age						
17-18 years (ref)				-	-	-
19 years				818.20	89.35	***
Country of Birth						
In Canada (ref)				-	-	-
Outside of Canada				1,059.30	160.44	***
Parental income						***
1st quintile (ref)				-	-	-
2nd quintile				910.74	132.23	***
3rd quintile				1,744.23	132.63	***
4th quintile				782.16	133.43	***
5th quintile				-3,266.14	134.66	***
Field of Study						***
Fine arts (ref)				-	-	-
Humanities				-2,690.50	202.49	***
Social sciences				-2,604.13	200.79	***
Business				-1,946.13	199.97	***
STEM				-1,400.82	193.80	***
Health and related fields				-1,451.96	215.71	***
Other				-1,827.49	230.40	***
Length of Study			***			***
2012/13 (4 years) (ref)				-	-	-
2013/14 (5 years)				2,346.19	103.63	***
2014/15 (6 years)				3,269.22	157.97	***
2015-17 (7+ years)				967.56	158.20	***
Transfer groups			***			***
Direct entry university (ref)	-	-	-	-	-	-
University to university	430[9]	212.30	***	56.46	209.42	NS
University to college	-5,020	176.95	*	-5,361.48	176.64	***
Direct entry college	-9,150	119.17	***	-9,132.72	125.12	***
College to college	-7,480	312.42	***	-8,169.66	305.42	***
College to university	-1,360	504.47	**	-2,501.83	490.92	***
Constant	15,980	51.54		16,013.35	216.2	
R-square	0.14			0.2		
Adjusted R-square	0.14			0.2		

*p ≤ .05   **p ≤ .01   ***p ≤ .001

9. Zero order models were rounded as per Statistics Canada disclosure requirements.

Table 8: Predicted Amount of Canada Student Loan Debt at The End of Study Period by Non-transfer and Transfer Groupings, 2009 Cohort (n=40,770)

Transfer Group	Model 1			Model 2		
	Margins	95% CI		Margins	95% CI	
Direct entry university	15,980.00	15,875.38	16,077.42	16,034.92	15,935.57	16,134.26
University to university	16,410.00	16,007.52	16,814.86	16,091.38	15,693.72	16,489.04
University to college	10,950.00	10,621.24	11,284.82	10,673.44	10,343.22	11,003.66
Direct entry college	6,830.00	6,619.99	7,041.18	6,902.20	6,683.08	7,121.32
College to college	8,500.00	7,891.30	9,099.20	7,865.26	7,277.23	8,453.29
College to university	14,620.00	13,631.89	15,599.07	13,533.09	12,577.55	14,488.63

Figure 8: Predicted Amount of Canada Student Loan Balance at the End of Study, with and without Controls
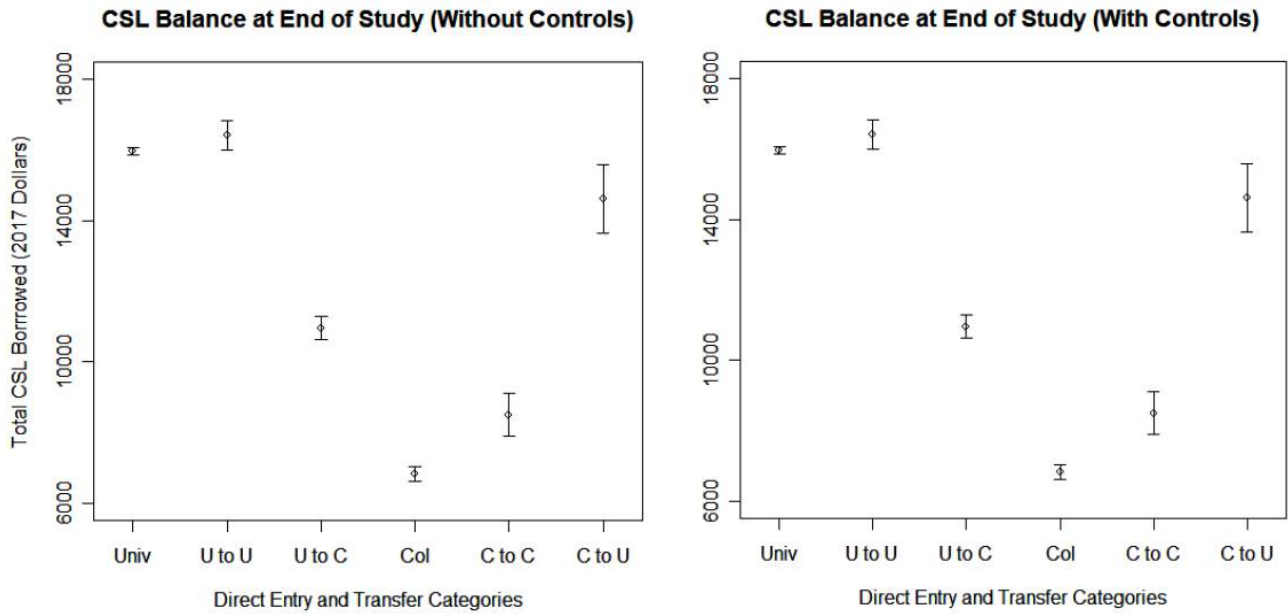
Appendix

Table A1: Logistic Regression Predicting Student Borrowing from the Canada Student Loan Program Among Graduates - 2009 Cohort (n=71,710)

Variables	Model 1			Model 2		
	b	SE(b)	p	b	SE(b)	p
Gender						
Male (ref)				-	-	-
Female				0.259	0.016	***
Age						
17 - 18 years (ref)				-	-	-
19 years				0.134	0.016	***
Country of Birth						
In Canada (ref)				-	-	-
Outside of Canada				-0.275	0.028	***
Field of Study					*n*	
Fine arts (ref)				-	-	-
Humanities				-0.295	0.037	***
Social sciences				-0.182	0.037	***
Business				-0.075	0.037	*
STEM				0.072	0.036	*
Health and related fields				0.107	0.04	**
Other				-0.113	0.042	**
Length of Study						
2012/13 (4 years) (ref)				-	-	-
2013/14 (5 years)				0.4	0.0184	***
2014/15 (6 years)				0.648	0.03	***
2015 -- 17 (7+ years)				0.731	0.042	***
Transfer groups			***			
Direct entry university (ref)						
University to university	0.488	0.044	***	0.317	0.045	***
University to college	0.129	0.037	***	0.009	0.038	NS
Direct entry college	-0.500	0.020	***	-0.413	0.022	***
College to college	0.245	0.075	***	0.085	0.076	NS
College to university	0.205	0.108	NS	-0.114	0.110	NS
Constant	0.003	0.009		-0.286		
Log Likelihood	-49252.59			-48531.15		
LR χ^2	847.60			2290.49		
Prob $> \chi^2$			***			***
$R^2_{McFadden}$	0.009			0.023		

*p ≤ .05   **p ≤ .01   ***p ≤ .001

Table A2: Logistic Regression Predicting Student Borrowing from the Canada Student Loan Program among Non-Graduates - 2009 Cohort ($n=19{,}630$)

Variables	Model 1 b	Model 1 SEb	Model 1 p	Model 2 b	Model 2 SEb	Model 2 p
Gender						
Male (ref)				-	-	-
Female				0.349	0.031	***
Age						
17-18 years (ref)				-	-	-
19 years				0.134	0.031	***
Country of Birth						
In Canada (ref)				-	-	-
Outside of Canada				-0.283	0.055	***
Field of Study						
Fine arts (ref)				-	-	-
Humanities				-0.281	0.066	***
Social sciences				-0.096	0.067	NS
Business				-0.084	0.066	NS
STEM				0.075	0.064	NS
Health and related fields				0.123	0.078	NS
Other				-0.22	0.072	**
Length of Study						
2012/13 (4 years) (ref)				-	-	-
2013/14 (5 years)				0.5	0.049	***
2014/15 (6 years)				0.429	0.06	***
2015 -- 17 (7+ years)				0.635	0.039	***
Transfer groups						
Direct entry university (ref)				-	-	-
University to university	0.542	0.069	***	0.288	0.071	***
University to college	0.281	0.046	***	0.063	0.049	NS
Direct entry college	-0.429	0.034	***	-0.383	0.038	***
College to college	0.047	0.064	NS	-0.133	0.067	*
College to university	0.314	0.112	**	0.047	0.116	NS
Constant	0.028	0.022		-0.275	0.0637	
Log Likelihood	-13408			-13142.54		
LR χ^2	388.68			918.65		
Prob > χ^2	***			***		
$R^2_{McFadden}$	0.014			0.034		

*$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

Table A3: Ordinary Least Squares Regression Predicting Total Amount Borrowed from Canada Student Loan Program Among Graduates - 2009 Cohort (n=32,330)

Variables	Model 1			Model 2		
	b	SEb	p	b	SEb	p
Gender						
Male (ref)				-	-	-
Female				446.45	101.08	***
Age						
17-18 years (ref)				-	-	-
19 years				1098.88	102.00	***
Country of Birth						
Outside of Canada				1214.01	180.81	***
Parental income						
1st quintile (ref)				-	-	-
2nd quintile				765.21	153.41	***
3rd quintile				1677.36	152.83	***
4th quintile				473.74	152.24	**
5th quintile				-4102.93	151.77	***
Field of Study						
Fine arts (ref)				-	-	-
Humanities				-2656.44	233.57	***
Social sciences				-2755.57	230.63	***
Business				-2165.61	229.96	***
STEM				-1633.53	222.88	***
Health and related fields				-1722.96	244.89	***
Other				-1955.01	266.04	***
Length of Study						
2012/13 (4 years) (ref)				-	-	-
2013/14 (5 years)				1553.74	112.49	***
2014/15 (6 years)				2614.51	175.79	***
2015 – 17 (7+ years)				1691.74	242.86	***
Transfer groups						
Direct entry university (ref)	-	-	-	-	-	-
University to university	1270	256.15	***	850.06	249.94	***
University to college	-4850	238.47	***	-5389.1	233.93	***
Direct entry college	-9620	143.46	***	-9923.1	149.32	***
College to college	-6910	482.20	***	-7917.1	466.58	***
College to university	930	702.73	NS	-583.6	679.06	NS
Constant	16670	56.02		17583.03	249.77	
R-square	0.13			0.2		
Adjusted R-square	0.13			0.2		

*p ≤ .05   **p ≤ .01   ***p ≤ .001

Table A4: Ordinary Least Squares Regression Predicting Total Amount Borrowed from the Canada Student Loan Program Among Non-graduates - 2009 Cohort (*n*=8,430)

	Model 1			Model 2		
Variables	**b**	**SE(b)**	*p*	**b**	**SE(b)**	*p*
Gender						
Male (ref)				-	-	-
Female				571.03	168.42	***
Age						
17-18 years (ref)				-	-	-
19 years				200.34	165.07	NS
Country of Birth						
In Canada (ref)				-	-	-
Outside of Canada				266.82	309.44	NS
Field of Study						
Fine arts (ref)				-	-	-
Humanities				-2090.95	360.35	***
Social sciences				-2238.88	362.94	***
Business				-2145.35	360.83	***
STEM				-1396	350.17	***
Health and related fields				-1823.42	414	***
Other				-1936.2	408.79	***
Length of Study						
2012/2013 (4 years) (ref)				-	-	-
2013/14 (5 years)				3970.76	262.06	***
2014/15 (6 years)				4907.56	327.78	***
2015 – 17 (7+ years)				4042.97	205.73	***
Parental income						
1st quintile (ref)				-	-	-
2nd quintile				969.17	231.13	***
3rd quintile				1150.93	237.64	***
4th quintile				509.91	250.54	*
5th quintile				-1598.15	274.57	***
Transfer groups						
University to university (ref)				-	-	-
University to university	1350	251.13	***	-83.14	342.74	***
University to college	-1700	347.26	***	-3014.29	248.95	***
Direct entry college	-5250	205.21	***	-4478.09	215.13	***
College to college	-4060	375.38	***	-4901.88	367.36	***
College to university	-290	648.16	***	-1725.86	629.42	NS
Constant	11630	121.99	NS	10886	382.69	
R-square		0.09			0.16	
Adjusted R-square		0.09			0.16	

*p ≤ .05   **p ≤ .01   ***p ≤ .001

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