

STUDENT BACKGROUND, TIME-TO-DEGREE, AND GRADUATE OUTCOMES

Methodology and Statistical Tables

October 2017



STUDENT BACKGROUND, TIME-TO-DEGREE, AND GRADUATE OUTCOMES

Methodology and Statistical Tables

Data Sources

Analysis was conducted using a data file linking graduates' responses from two Maritime university graduate surveys (Classes of 2007 and 2012, each surveyed two years after graduation) with the graduates' corresponding student records from the Postsecondary Student Information System (PSIS) which contains Maritime university student administrative data. Linkage of survey responses to administrative student records was done only for those survey respondents who provided their consent for the linkage. 95% of survey respondents agreed to the data linkage.

The data file contained a total sample of 3,063 first degree holders (bachelor's graduates who enrolled in their degree on a full-time basis and were 19 years of age or less in December 31st of their first year enrolled).

Why was a data linkage needed?

The postsecondary student information system (PSIS) contains information on the courses and programs taken by individual students at Maritime universities, and enables the study of student pathways through to degree completion. The time-to-degree measure is one such important indicator of student pathways, and work has been done to determine what factors affect it, such as switching institutions and fields, gender and geographic origin, all information available within PSIS:

<http://www.mphec.ca/research/maritimeuniversitystatistics/timetodegree.aspx>

The impact of graduates' socioeconomic status on their educational pathway, and the impact in turn of that pathway on outcomes like employment, further study and educational debt, however, are questions that can only be answered by linking the pathways information from PSIS to the graduate survey data.

Graduate Survey data sources:

The **Class of 2007** survey, offered in English and French, was conducted by telephone between October 18, 2009 and January 8, 2010 by Ipsos Reid. In total, 3,372 completed the survey out of a total population of 16,213 graduates of all levels; this study included the subsample of first degree holders who gave consent for the data linkage (n = 1,436).

The **Class of 2012** survey of the Class of 2012 was conducted by Advanis Inc. between September 30 and December 1, 2014. The survey was offered in two modes, telephone and online and in both English and French. The total sample contained 2,895 survey respondents from a larger population of 10,615 bachelor's graduates; this study included the subsample of first degree holders who gave consent for the data linkage (n = 1,627)

Definitions

Source: PSIS

Time to Degree: The number of elapsed years between the cohort year and graduation year. Those who did not complete an undergraduate degree within eight years are excluded from the TTD calculation. For more information see:

http://www.mphec.ca/media/136339/TTD_Tables_Methodology_2016.pdf.

Source: Graduate Surveys

Parents' Educational Attainment: Graduates were assigned one of two categories based on the level of education attained by their parents as reported in the survey: first generation (neither parent had completed a university degree) or university-educated parent(s) (at least one parent of the pair had completed a bachelor's degree). Excluded from analysis are those graduates who did not know or declined to report the highest level of education of either parent.

Working Full-Time While Studying: Graduates who reported ever working full-time (over 30 hours a week and excluding work placements as part of their program or co-op terms) during their studies.

Top Two Sources of Funding: Graduates were asked to report their two main sources of funding for their first undergraduate degree. Graduates were assigned one of two categories based on whether or not they cited their parents as one of the two main sources.

Borrowed to finance first degree: (limited to Class of 2007 graduates - detailed borrowing information was not collected in the Class of 2012 survey) Graduates who reported that they borrowed money from one of four possible sources (government, banks/financial institutions, family, other) to finance the 2007 degree.

Amount borrowed for the first degree: (limited to Class of 2007 graduates - detailed borrowing information was not collected in the Class of 2012 survey) Among borrowers, total median amount borrowed from all sources combined to finance the 2007 degree.

Pursued Further Education: Graduates who reported that they had enrolled in an education program leading towards a diploma, certificate or degree since graduating from the first degree.

Employment Outcomes: A series of employment outcomes was created based on information reported by graduates about their employment in the reference week (graduates were asked to think about 'last week' at the time they were surveyed)

Working Full Time: Graduates employed in the reference week who were working 30 hours or more per week.

Job related to studies/program skills used: Graduates who reported either that their job was somewhat or closely related to their field of study and/or that they were using the skills they learned in their program to some or a great extent.

Earnings (median): Annual earnings calculated on self - reported wage information recorded on the basis of the respondent's choice (weekly, bi-weekly, monthly, annually etc.). Analysis based on earnings expressed in 2014 dollars.

Table 1 illustrates the profile of graduates in the PSIS-GO linked data file.

Table 1: Profile of the PSIS-GO linked data file (n=3,063)

Percentage of Graduates				
Gender	Women (67%)	Men (33%)		
Language spoken most often at Home	English (88%)	French (10%)	Other (2%)	
Residence 12 months prior to enrolling in first degree	Maritimes (75%)	Outside Maritimes (25%)		
Province of Graduation	Nova Scotia (59%)	New Brunswick (34%)	Prince Edward Island (7%)	
Discipline of first degree	Humanities, Arts & Social Sciences (41%)	Applied Arts, Sciences & Professional (25%)	Physical & Life Sciences and Math (18%)	Commerce & Administration (16%)
Time to degree	Within 4 Years (63%)	5 years or more (37%)		
Parents' educational attainment	At least one University Educated Parent (55%)	First Generation University Graduate (45%)		
Parents identified as one of top two sources of funding	No (54%)	Yes (46%)		
Worked full-time during studies	No (83%)	Yes (17%)		
Pursued Further Study	Yes (61%)	No (39%)		
Borrowed to finance first degree	Yes (60%)	No (40%)		
Among those graduates who were working in the reference week:				
Working Full-Time	Yes (84%)	No (16%)		
Permanent job	Yes (67%)	No (33%)		
Job Requires University / management	Yes (53%)	No (47%)		
Job Related to Degree	No (60%)	Yes (40%)		

Structural equation modelling (path analysis) methodology to determine the factors that Influence Time to Degree & Borrowing:

To examine what variables predict Time to Degree, a structural equation model (path analysis) was conducted using AMOS (version 24) software. A path analysis is a multivariate statistical technique that allows for the examination of multiple regression models within one larger model. Path analysis estimates the significance of each regression model, but also estimates the goodness of fit for the overall picture. Path analysis is useful for determining if a conceptual model articulates, describes, and “fits” the data well.

A path model was drawn linking parental education attainment, parental funding (were parents one of top two sources of funding), working status during study period, time to degree, and borrowing. Gender and discipline were control variables in this model, such as effects of these variables were taken into account. Overall, the path model was statistically significant, and had good fit ($\chi^2(5) = 5.82, p = .33, TLI = .997, CFI = .999, RMSEA = .007$). This model accounted for 5% of the variance in borrowing ($Adjusted R^2 = .05$), and 10% of the variance in Time to Degree ($Adjusted R^2 = .10$). All pathways shown in the below figure are significant at the $\alpha = .001$ level, and numbers indicate the standardized regression weights.

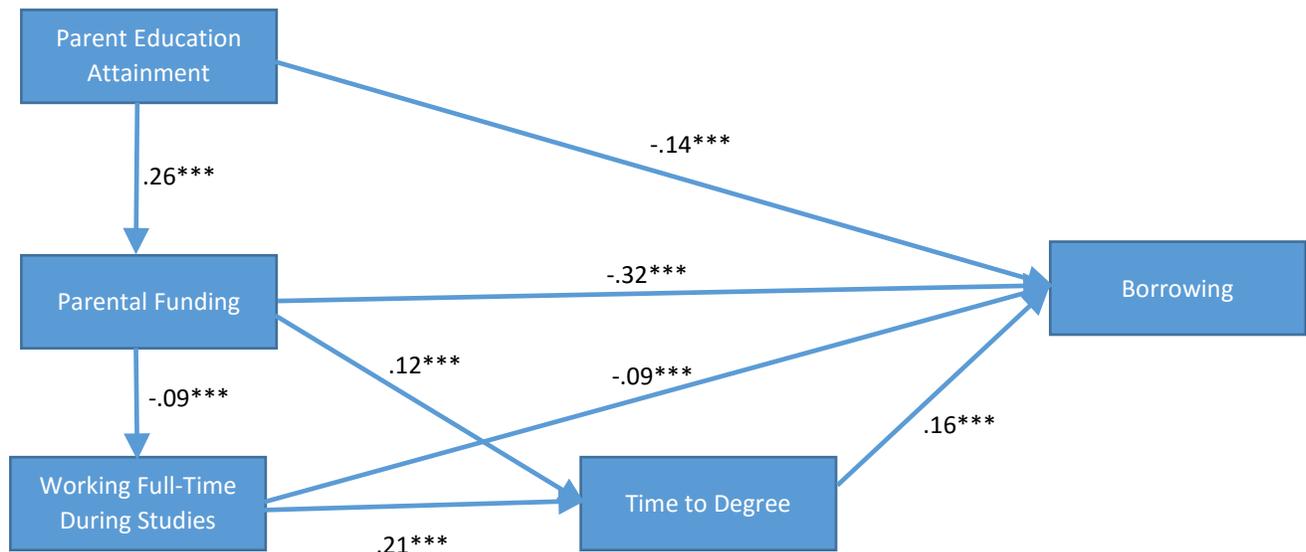


Figure 1. Predictors of Time to Degree & Borrowing

Overall, Figure 1 indicates that parental education attainment influences parental funding, which impacts working full-time during studies and time to degree. These factors also impact borrowing for the first undergraduate degree. To better illustrate this finding in concrete terms, Table 2 provides percentages of graduates who match each categorical option for the above variables, along with their median borrowing. The percentages of group are listed in the left column, with the smallest group representing 1% or 30 graduates each.

Table 3 represents a modified version of Table 2, with working full-time during studies being omitted to allow for larger group sizes in the prediction of borrowing. In Table 3, the smallest group represents 4% of graduates or 129 graduates in total.

How does Time to Degree impact Graduate Outcomes?

To investigate how Time to Degree was associated with graduate outcomes, specific cross-tabulations and analyses were conducted using SPSS (23.0) with ordinal/categorical data being tested for differences using Chi-Square and notable differences detected using adjusted standardized residuals. Ratio and continuous data main effects were tested using one-way ANOVA (SPSS 23.0) and t-tests. Differences between groups were tested using the Student-Neuman-Keuls test. Finally effect sizes as reported by partial η^2 were assessed, and effect sizes below 5% ($\eta^2 = 0.05$) were considered to be minor and non-pragmatically significant.

- Pursuing further education was found to significantly vary by Time to Degree ($\chi^2 (8) = 148.33, p < .001, \text{partial } \eta^2 = 0.05$) and Discipline ($\chi^2 (6) = 302.23, p < .001, \text{partial } \eta^2 = 0.08$).
- No significant differences were found for working full-time ($\chi^2 (4) = 6.45, p = .17, \eta^2 = 0.004$), positions related to degree ($\chi^2 (4) = 9.48, p = .051, \eta^2 = 0.005$), and positions requiring university ($\chi^2 (4) = 1.34, p = .86, \eta^2 = 0.001$).
- Annual income was found to vary significantly with time-to-degree ($F (4) = 7.66, p < .001$), the effect size was very small ($\text{partial } \eta^2 = 0.018$), accounting for less than 2% of the variance in income.

Table 2: Student Pathways Predicting Time to Degree

Group (% of Sample)	Parental Educational Attainment	Top two sources of funding	Working Full- Time During Studies	Time to Degree
1 (21%)	University Educated Parents: 55%	Includes Parents: 58%	No: 88%	Finish in 4 years: 74%
2 (7%)				Finish in 5 or more years: 26%
3 (2%)			Yes: 12%	Finished in 4 years: 51%
4 (2%)				Finish in 5 or more years: 49%
5 (12%)		Excludes Parents: 42%	No: 80%	Finished in 4 years: 62%
6 (7%)				Finished in 5 or more years: 38%
7 (2%)			Yes: 20%	Finished in 4 years: 35%
8 (3%)				Finished in 5 or more years: 65%
9 (9%)	Parents not university- educated: 45%	Includes Parents: 31%	No: 86%	Finished in 4 years: 73%
10 (3%)				Finished in 5 or more years: 28%
11 (1%)			Yes: 14%	Finished in 4 years: 48%
12 (1%)				Finished in 5 years: 52%
13 (15%)		Excludes Parents: 69%	No: 80%	Finished in 4 years: 62%
14 (9%)				Finished in 5 years: 38%
15 (2%)			Yes: 20%	Finished in 4 years: 39%
16 (4%)				Finished in 5 years: 61%

Table 3: Student Pathways Predicting Borrowing

Group (% of Sample)	Parental Education Attainment	Top two sources of funding	Time to Degree	% with Borrower Status	Median Borrowing
1 (23%)	University Educated Parents: 55%	Includes Parents: 58%	Finish in 4 years: 72%	32%	\$25,052
2 (9%)			Finish in 5 or more years: 28%	44%	\$29,219
5 (14%)		Excludes Parents: 42%	Finished in 4 years: 57%	65%	\$28,390
6 (10%)			Finished in 5 or more years: 43%	73%	\$31,438
9 (9%)	First Generation Students: 45%	Includes Parents: 31%	Finished in 4 years: 69%	45%	\$37,684
10 (4%)			Finished in 5 or more years: 31%	57%	\$22,317
13 (18%)		Excludes Parents: 69%	Finished in 4 years: 58%	82%	\$34,467
14 (13%)			Finished in 5 or more years: 42%	89%	\$38,112