A Contemporary Analysis of Student Loans in Canada: Factors Affecting Borrowing and Repayment by Graduates

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Abstract

This thesis seeks to replicate a 1996 C.D. Howe Institute report, *Student Loans in Canada: Past, Present, and Future* by Finnie Ross and Saul Schwartz using the most recent National Graduate Survey. The C.D. Howe report was based on Survey data from the 1980s and 1990s while this thesis examines Survey data of 2005 graduates. The objective is to determine what trends in borrowing and repayment of student loans in Canada exist and how they have changed since the earlier C.D. Howe report. Specifically, this thesis examines four dependent variables: if a student has a loan, loan size, proportion of loan repaid, and difficulty with repayment. This thesis uses cross tabulations and econometric models to reach its conclusions. In the 25 years since the C.D. Howe analysis, our study found that students are, adjusted for inflation, borrowing larger amounts and repaying their loans more slowly. For 2005 graduates, province was a key determinant of all the above dependent variables. In our borrowing models, schooling characteristics such as enrolment in part-time or co-op programs resulted in a lower likelihood of having a student loan, and smaller loan sizes for those who did take on loans.

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1. Introduction

Although education is designated as an area of provincial responsibility in the British North America Act, 1867, the Canadian government has historically played a determinative role in setting the amount of financial support directed towards higher education. Prior to 1995, transfer payments to the provinces were the main method through which federal funds were used to support higher learning in Canada. However, in 1995, the government sharply cut financial transfers to the provinces, including for education. The cut to the provinces in transfer payments was about $14 billion (Shanahan & Jones, 2007, p. 33). At the same time, many provincial governments also reduced their funding for higher education. According to some calculations, per student government funding decreased by about half in the period 1994/95 to 2004/05 (Fisher et. al., 2009, p. 48). By 2009 government funding was providing 55 percent of the operating revenue of colleges and universities, which was down from the 70 percent figure of the mid-1990s (Axelrod et. al., 2012, p. 8).

The loss of significant financial funding from governments left higher education institutions with a huge problem. The government funding was largely used to finance capital expenditures. The loss of these resources meant that universities, in addition to cutting expenditures, also had to look to higher tuition fees to make up some of the difference. For instance, between 1991 and 2006, the average undergraduate tuition in Canada more than doubled in inflation-adjusted terms (Axelrod et. al., 2012, p. 8)

Governments recognized the rise in tuition fees would present a barrier to higher education to many Canadian families. Their answer was to increase accessibility through making government loans and grants available on an expanded scale. The federal government had since 1964 provided direct financial assistance to students through the Canada Student Loans Program. That program was administered through provincial student assistance offices. In 1994 the program was revamped and updated to meet current needs. The Special Opportunity Grant was introduced to help disabled students, poor and part-time students. Female PhD students were also now eligible for the Special Opportunity Grant. The major overall change was that the "new support took the form of direct transfers to individuals who were bearing the cost of higher tuition" (Axelrod et. al., 2012, p. 2). In response, by 2003 more than half of all students turned to government assistance to finance their education - a sharp increase from about one-third of all students in 1993 (Axelrod et. al., 2012, p. 9).

The delivery method of student assistance loans varies by the province. Newfoundland and Labrador, New Brunswick, Ontario and Saskatchewan are working jointly with the federal government. Prior to 2000, student loans were administered by various financial institutions. In 2000, this system was revamped and program administration was consolidated under one body, The National Student Loans Service Centre.

To qualify for a student loan under the Canada Student Loans Program, potential applicants must prove that there is financial need. Governments have set formulas

that determine an individual's direct educations costs (tuition and books), indirect costs (living expenses) as well as financial resources (savings, scholarships and parental incomes) (Finnie, 2001, p. 3). Recipients must prove that they are Canadian citizens, permanent residents of Canada or protected persons and they must reside in one of the provinces or territories prior to their enrolment in a post-secondary program. Full-time students must be enrolled in a minimum of 60 percent of a full course load. The equivalent number for full-time students with permanent disabilities is 40 percent. The numbers differ for part-time students who must carry between 20-59 percent of a full course load (CanLearn, 2013). Applicants must be studying in a degree, diploma or a certificate program at an approved post-secondary institution. There is a lifetime limit on the period of time you can access the Canadian Student Loan Program. This lifetime limit ranges from 340 weeks for full-time students to 520 weeks for students who have permanent disabilities. Governments of Quebec, Northwest Territories and Nunavut administer their own loan programs, based on funding from the federal government. However, their programs are based on criteria similar to that of the Canadian Student Loan Program (CanLearn, 2013).

While student borrowers are in school, the Government of Canada pays the interest on their loans for them (ESDC, 2013, p. 4). However, six months after they complete their education, borrowers are required to start repaying their student debt. The federal government also offers assistance to those who experience problems with loan repayment (ESDC, 2013, p. 4).

Awareness of the changing impact of government assistance on post-secondary education inspired the C.D. Howe Institute, in 1996, to release a report, *Student Loans in Canada: Past, Present and Future*. The report examined borrowing and repayment patterns of post-secondary graduates in 1982, 1986 and 1990. This MA essay provides a contemporary analysis of borrowing and repayment patterns, based on the most recently available Statistics Canada National Graduate Survey (NGS) of 2005 graduates.

The structure of this paper includes five sections. The paper opens with a review of the 1996 C.D. Howe Institute report. This is followed by an overview of the empirical analysis we used to study the 2005 NGS data. The next section provides an explanation of the variables used and section five discusses the cross tabulation analysis. The subsequent section addresses the regression analysis we used to identify student borrowing and repayment patterns. Section seven is the paper's summary conclusion.

2. Review of C.D. Howe Report

The impetus behind the 1996 C.D. Howe Institute report, *Student Loans in Canada: Past, Present and Future* by Ross Finnie and Saul Schwartz, was in large measure the growing importance of the student loan system on the ability of students to access higher education. This is because, as mentioned earlier, there was a decline in direct government financing of post-secondary institutions while tuition rates were increasing.

This trend started in the 1980s but accelerated in the 1990s and onwards. More students turned to the Canada Student Loans Program to finance their education. The C.D. Howe Institute felt that given the rising role of the student loan program in opening doors to students, it was important for the Institute to examine the existing program, "to evaluate the financial aid system in terms of its ability to deliver assistance to those in need in the most efficient manner possible and to consider any need for reform" (Finnie & Schwartz, 1996, p. 3).

Ross Finnie recognized that the importance of the Canada Student Loans Program was twofold: to increase access to post-secondary education for individuals facing financial barriers, and to grow the Canadian economy by ensuring a well-educated labour force. This is especially important because private financial institutions are not prepared to take on the risks associated with lending to students. Finnie states, "...private institutions are reluctant to lend to students because they generally cannot provide sufficient collateral up front, and at the time the loan decision must be made, their capacity to pay back in the post-schooling period is uncertain" (2001, p. 4). Given the importance of government student loans, the authors of the C.D. Howe report felt that the existing Canada Student Loans Program in the 1980s and early 1990s had significant drawbacks. There were criticisms that some students were not given enough financial aid while others were given too much and that excessively high default rates were burdening the government while rigid repayment terms were burdening graduates (Finnie & Schwartz, 1996, p. 6). However the authors noted that significant reforms were being introduced at the time of

the report to standardize the needs assessment procedures, to increase borrowing limits, and increase access to interest-relief programs (Finnie & Schwartz, 1996, p. 7).

The C.D. Howe report studied three cohorts of graduates using Statistics Canada's National Graduates Surveys (NGS): the classes of 1982; 1986; and 1990. The NGS data included about 16,000 university graduates and 8,000 college graduates (Finnie & Schwartz, 1996, p. 19). NGS data are based on interviews conducted with graduates two years after their graduation. These interviews have an 80 to 90 percent response rate (Finnie & Schwartz, 1996, p. 19). The report examined what factors affected who was taking out government student loans; how large these loans were and graduates' ability to repay these loans. These analyses came in two parts: cross tabulations and regression analysis.

The study calculated the incidence of student borrowing; difficulty with repayment; mean amounts owed at graduation; and mean proportion of debt repaid across levels of education and fields of study. All analyses are broken down by gender.

The report uses the following models: probit model for graduating with a loan; a probit model for difficulties with repayment; a two-sided tobit model for proportion repaid; and an OLS model for amount borrowed.

The study's findings were informative. For the 1990 cohort, a quarter to almost half of students graduated with an outstanding student loan. The degree of dependence on loans varied with level of education. The mean amounts borrowed also varied by the level of

education - ranging from $5,500 for college graduates up to $9,000 for university graduates (Finnie & Schwartz, 1996, p. 23).

The report found significant shifts occurred in borrowing over the periods studied. Borrowing by college students increased notably from 1982 to 1986 but then flattened out. In 1986 and 1990, 40 percent of college students relied on loans. By 1990 the average level of borrowing for college students increased to $5,500 while the amount borrowed by undergraduate university students was $8,500 (Finnie & Schwartz, 1996, p. 24). Master's students followed the trend of increased borrowing. The one area where there was a notable exception to the trend was male doctoral students. For this latter group, the proportion of those graduating with debt dropped significantly to 27 percent in 1990 (Finnie & Schwartz, 1996, p. 24). In examining overall trends, there did not appear to be a gender borrowing gap. That is, overall, men and women borrowed similar amounts. The report found that borrowing experiences were fairly similar among the various fields of study (i.e. education, commerce, engineering medicine and math).

The report also considered the distribution of loans by their individual size. The authors found that while most students graduated owing less then $10,000, there were a significant number of individuals who borrowed up to $20,000 or more. This is why the authors note, "that any analysis of student borrowing based on the 'average' student can be very misleading" (Finnie & Schwartz, 1996, p. 28).

The authors also look at the rate of repayment of student loans. Their findings show that for the 1990 cohort, college and undergraduate students had repaid about half of their

loans two years after graduation (Finnie & Schwartz, 1996, p. 40). Graduate students repaid their loans at a higher level (Finnie & Schwartz, 1996, p. 40). However, it is interesting to note that the total share of repayment for the 1990 cohort was lower than for their predecessors (Finnie & Schwartz, 1996, p. 40).

In looking at the distribution of loan repayment by level of education, the study found that one-quarter of college and undergraduate students; one third of Master's students and two-fifths of PhD students had fully repaid their loans two years after graduation. However, at the other end of the spectrum, 35 percent to 45 percent of college and undergraduate students had repaid less than one-third of their debt two years after graduation (Finnie & Schwartz, 1996, p. 40). This is similar to the experience of Master's and PhD students. Across the levels of education, women repaid their loans at either similar or higher rates than men. Similarly, when measuring repayment rates across fields of study, women generally had repaid their loans at similar rates to their male counterparts (Finnie & Schwartz, 1996, p. 43).

The NGS included a question on how difficult students found it to repay their student loans. Between 20 and 30 percent of students who took out loans said that they found repayment difficult two years after graduation. The study concluded that this number represents about 7 percent to 8 percent of the all post-secondary graduates (Finnie & Schwartz, 1996, p. 47). The study found that women expressed a greater difficulty in repaying the loans than their male counterparts. For 1990 graduates, the incidence of repayment problems was similar across the levels of education.

The above cross-tabulation analysis provides only a partial picture of student loan borrowing. To have a more complete understanding of the student loan program and its impact, the C.D. Howe Institute report turns to a multivariate analysis of student borrowing. The independent variables included in the C.D. Howe study were: field of study; age; region; schooling characteristics; and parental education.

Their first two regressions focused on the probability of having a student loan and the size of the loan. With respect to gender, the regression showed that holding all the other variables constant, male graduates were more likely to have borrowed than females, especially in the 1982 and 1986 cohorts. In 1990 this gender difference narrowed (Finnie & Schwartz, 1996, p. 31). The regression analysis also showed that gender differences were less significant when it came to the size of the loan, compared to the gender differences in the probability in having borrowed.

With respect to the field of study, holding all the other variables constant, the C.D. Howe regression analysis shows that borrowing was lower for graduates with degrees in commerce, economics and law; other medical and health; and mathematical and physical sciences (all high-income fields). It was also lower for other social sciences (a low income field). Borrowing was greater for fine arts, humanities, agricultural and biological sciences (all low income fields) and engineering (a high income field). The highest rates of borrowing were for graduates in education and medicine (high income fields) (Finnie & Schwartz, 1996, p. 32). Similar patterns emerged when considering the

average amounts of borrowing. The authors' findings suggested that student loan borrowing is supply-side driven. In other words, whether or not students take on loans, as well as the size of those loans, is primarily determined by eligibility rules. Regardless of expected future incomes, many students borrowed the maximum allowable amounts (Finnie & Schwartz, 1996, p. 32).

The regression analysis also showed that differences existed in borrowing by province. Graduates from Atlantic Canada were the most likely to have borrowed. This was followed by Alberta. Graduates from Quebec were near the average, but their numbers increased over time. Conversely, Ontario was average but decreased to the lowest over time. In terms of the actual size of loans, Atlantic Canada had the largest loans while by 1992 Ontario and Quebec graduates borrowed the lowest average amounts. The analysis also showed that students who moved away to another province for their education did more borrowing (Finnie & Schwartz, 1996, p. 33).

The C.D. Howe regression analysis used parental education as a proxy for socioeconomic background. The results showed that parental education had very little impact on the student loan reliance. The authors concluded that based on their analysis, the student loan program was not effective in directing loans to those who needed it the most (Finnie & Schwartz, 1996, p. 33).

The C.D. Howe report also used regression analysis to examine how various factors impacted repayment. In addition to the above-mentioned independent variables, this

model controlled for amount borrowed, annual earnings and marital and family status. Holding other factors constant, the authors concluded that women generally repaid loans at a quicker rate than men (Finnie & Schwartz, 1996, p. 45). Field of study did not significantly impact repayment. While low-income fields, such as humanities and fine arts, had low repayment rates, high- income fields, such as education, commerce, economics and law, also had low repayment rates (Finnie & Schwartz, 1996, p. 46). The study found that those who took on large loan amounts tended to repay less. As can be expected, higher salaries resulted in higher rates of repayment. Where a graduate lived proved to be an important indicator of repayment. Graduates from low-income provinces, such as Atlantic Canada and Quebec, had low levels of repayment. Graduates from Ontario, Alberta and British Columbia, all high-income provinces, repaid the most. Those who moved to another province to go to school, tended to take longer to repay. However, graduates of part-time programs, exhibited faster repayment rates. Finally, graduates who had children repaid at a slower pace than those who did not (Finnie & Schwartz, 1996, p. 46).

The authors also used a regression to assess the difficulty graduates experienced in repaying their loans. They found that women in the 1990 cohort expressed a higher degree of difficulty than their male cohorts in this area. This was a change from 1986, where women had expressed a lower level of difficulty than men (Finnie & Schwartz, 1996, p. 52). The authors concluded that, holding other factors constant, those graduates from low-income fields had more difficulty in repaying their loans. For female graduates, the effect of individual earnings was particularly strong. Schooling

characteristics, parental education, and family status all generated mixed findings. Age was positively correlated with repayment difficulties (Finnie & Schwartz, 1996, p. 54).

The C.D. Howe report was not able to assess fully the impact of these trends on the administration of the Canada Student Loans Program because their most recently available data was for 1990 graduates. The report points out, for instance, three areas where the student loan program changed significantly in the 1990s: tuition fees increased dramatically; borrowing limits through Canada Student Loans Program increased; and the share of loans relative to grants rose also. For example, in Ontario, university fees rose by 20 percent between the 1995/96 and 1996/97 academic years (Finnie & Schwartz, 1996, p. 3). The report's authors acknowledge that the results for the cohorts they studied will not be reflective of future university students because their findings do not take into account these new shifts: "The experiences of those who have borrowed in [the 1990s] cannot be directly observed in our results" (Finnie & Schwartz, 1996, p. 22).

3. Overview of Empirical Analysis

The findings in this paper are based on Statistics Canada's National Graduate Survey (NGS) data. Statistics Canada collected the data on 2005 post-secondary graduates two years after (2007) they completed their studies. Statistics Canada collected the data through interviews with graduates. The survey of 2005 graduates was the most recently available [1].

[1] The 2013 NGS of graduates from 2010 was only released very recently. It is not comparable to previous Surveys because interviews occurred 3 years after graduation, as opposed to 2 years in all previous surveys.

The NGS database is large, comprising 39,588 graduates (including 12,417 university graduates and 10,793 college graduates) and was designed to represent the underlying population of postsecondary graduates by including a weight variable. The results reported here reflect the weighted samples. The response rate for the survey was approximately 68 percent (National Graduate Survey, 2007).

The NGS looks at graduates from a number of perspectives: graduates' education background; recent work experiences; and their socio-demographic factors. The survey also contains derived variables, such as amount owed at graduation; remaining debt two years post-graduation; and self-declared difficulties with repayment. These variables were derived from interview responses.

One of the main attributes of the NGS is its large sample size and the diversity of questions that it asks. The information collected relative to loans, education, and socio-demographic factors allows researchers to make useful connections between graduates' loan experiences and their backgrounds.

Specifically, our analysis focuses on the following areas:

- if a student had a loan at the time of graduation;
- how large was the student's loan at graduation;
- what share of the student's borrowing was repaid two years post-graduation; and
- if a student expressed difficulty with loan repayment.

There are two main aspects to this essay's analysis. The first is a set of cross-tabulations that look at student borrowing and repayment trends. It examines male and female graduates, relating their borrowing and repayment patterns to their level of education and field of study. Finally, the cross tabulations look at the distribution of loan sizes according to gender and level of education. This information is conveyed in charts and figures contained in the body of the text.

In order to delve further into the factors affecting student borrowing and repayment, this paper includes a multivariate econometric analysis. The analysis examines borrowing and repayment patterns of the bachelor's graduates. The regressions allow us to understand the independent effects of specific factors, including: field of study; age; and province of residence. The regression results are discussed in section six.

This cross-tabulation and regression analysis produced data answering important questions, including: what share of post-secondary students graduated with a government loan; how large were these loans; what proportion of the loans was repaid two years after graduation; what share of graduates identified repayment problems; and what were the factors that affected borrowing and repayment patterns (Finnie & Schwartz, 1996, p. 23).

4. Overview of Variables

We used several multivariate regression models to analyze the effects of a variety of variables on the probability of a student's borrowing under a government student loan program and of his or her making the required (or greater) payments during the two years

after graduation. All data come from Statistics Canada's National Graduates Survey (NGS). The data cover 2005 graduates who were interviewed two years later, in 2007.

Our analysis uses four dependent variables and 13 independent variables. Using these variables, which are defined below, the samples revealed the characteristics reported in Appendix A. The results yielded by our model are discussed in sections five and six.

Dependent Variables

Variable	Regression Label	Description
Having a student loan	*Stuloan*	Individual had an outstanding government student loan at time of graduation.
Amount borrowed	*Amount*	Amount owed to student loan program at time of graduation. Defined only for those with loans (see above).
Proportion repaid	*Proportion*	The proportion of the loan repaid at the time of interview in 2007 (it does not reflect if a graduate is behind, current, or ahead on their payment schedule). This variable is constructed as one minus the amount owed divided by the amount owed at graduation. Defined only for those with loans at time of graduation. Note: In a small number of records, the proportion repaid was <0 or >1. To address this, I gave the variable a lower bound of 0 and upper bound of 1 – this reflects that, for example, if an individual has repaid a negative amount (i.e. owes more now than they did at graduation) they have effectively repaid 0 percent of their loan still.
Difficulty with Repayment	*Difficulty*	Individual reported difficulties with repayment of the student loan. Defined only for those who still had an outstanding loan as of the interview.

Independent Variables

Variable	Regression Label	Description
Field of study[2]	*Field*	Standard aggregated categories from Classification of Instructional Program (CIP). Further detail is provided in Appendix B.
Age	*Age*	Individual's age at time of interview (the interview was conducted two years after graduation)
Province/region	*Prov*	In the borrowing models, the variables refer to the province or region of residence before enrolment in the education program (the program for which the loan would have been issued). In the repayment models, the variables refer to the province or region of residence at the time of interview. The Atlantic provinces are treated as a single region and all other provinces are treated separately. The territories are not included in the analysis because of how few individuals resided there.
Schooling characteristics		
Migration	*Migration*	Individual moved from one province to another to enroll in the education program.
Part-time studies	*Parttime*	Individual was enrolled part time at some point during the program.
Co-op	*Coop*	Individual graduated from a co-op program.
Re-entry	*Reentry*	Individual had worked at least three years full time previous to enrolling in the program.
Parental education	*Mothed, Fathed*	Parental education is used as a proxy for socio-economic background.
No post-secondary		Highest level of education was high school or less.

[2] The categories are sorted in a broad way which made proper analysis difficult. For example, 'health, fitness, parks, and recreation' includes high-income fields such as medicine and dentistry but also low-income fields like fitness studies.

Apprenticeship		Highest level of education was an apprenticeship program.
College		Highest level of education was college.
< Bachelor's		Highest level of education was more than college but less than a bachelor's degree.
Bachelor's		Highest level of education was a bachelor's degree.
Master's		Highest level of education was a master's degree.
Doctorate		Highest level of education was a doctorate.
Marital status	*Maritalstat*	
Married		Individual was currently married.
Common-law		Individual was currently in a common-law relationship.
Separated		Individual was separated.
Divorced		Individual was divorced.
Widowed		Individual was widowed.
Single		Individual was single and never married.
Presence of children	*Children*	Children were present in the household.
Borrowed[3]	*Borrowed*	Individual had a loan of > $1000 at graduation.
Income[4]	*Income*	Individual had an income of > $1000 at time of interview.

[3] This variable is present only in the repayment models (regressions three and four)
[4] This variable is present only in the repayment models (regressions three and four)

5. Cross Tabulations

Extent of Borrowing

The share of students who completed their education with a loan and the average size of the loan for those students who borrowed are presented in Table 1. The results are also represented graphically in Figures 1 and 2 in Appendix C. The data show that slightly less than half of all students had a loan outstanding at graduation. However, the proportion varied with the level of education as did mean amounts borrowed. For example, PhD graduates accumulated almost four times as much debt as graduates from trade programs.

Table 1: Incidence of Student Borrowing and Mean Amounts Owed at Graduation

Level of Education	Gender	Incidence (%)	Mean ($)
Trade	Male	25 percent	5309
	Female	32 percent	6340
College	Male	35 percent	11010
	Female	43 percent	11760
< Bachelor	Male	37 percent	12260
	Female	43 percent	11166
Bachelor	Male	50 percent	18260
	Female	50 percent	19161
> Bachelor	Male	60 percent	13022
	Female	55 percent	16159
Masters	Male	50 percent	19832
	Female	51 percent	19902
Doctorate	Male	44 percent	24156
	Female	53 percent	20556

There does seem to be some evidence to suggest a gender borrowing gap – women across all levels of education seem more likely to take on a student loan. It is important to note

however that it appears men and women borrowed roughly similar amounts. This is interesting because men generally earn more than women (Cool, 2010, p. 1). With more women taking on loans, even similar loan levels are bound to translate into a greater repayment burden for women (as measured by a debt-to-earnings ratio).

Compared to the 1996 C.D. Howe report, we can see borrowing amounts have increased faster than the rate of inflation. If average borrowing had remain unchanged from the 1990 levels used in the C.D. Howe report, then indexed to inflation, we would expect in 2005 that college graduates would borrow a mean amount of $7,815; undergraduate students would borrow $11,895; master's students would borrow $11,700; and PhD students would borrow $11,330. However we can see in Table 1 that the actual borrowing rates have outpaced inflation and are substantially higher.

Some observers might find average loans of $5,000 to $20,000 quite reasonable. It can be viewed that for less than the price of a new car, individuals are able to invest in postsecondary education and reap the advantages of gains in future employment and earnings. However, there has been a concerning trend over time of increasing borrowing as tuition rises. Moreover, these numbers only describe *average* borrowing. We show later, in Table 3, that the concern is for the significant minority of individuals who have accumulated a large amount of debt.

Another way we can examine patterns of borrowing is by fields of study. Table 2 breaks down the incidence of borrowing and mean levels of borrowing for undergraduate

students according to field of study. The results are also illustrated in Figures 3 and 4 in Appendix C.

Table 2: Borrowing by Field of Study, Bachelor's Graduates

Field of Study	Gender	Incidence (%)	Mean ($)
Education	Male	53 percent	20809
	Female	56 percent	20097
Arts	Male	53 percent	18245
	Female	54 percent	19789
Humanities	Male	50 percent	22102
	Female	47 percent	19325
Social Sciences	Male	50 percent	18071
	Female	48 percent	19057
Business	Male	45 percent	14399
	Female	44 percent	16007
Life Sciences	Male	49 percent	18557
	Female	51 percent	17454
Math & Comp Sci	Male	49 percent	17734
	Female	57 percent	19230
Engineering	Male	49 percent	16491
	Female	47 percent	17028
Agriculture	Male	52 percent	18025
	Female	50 percent	16084
Health/Recreation	Male	63 percent	23888
	Female	55 percent	22188
Protective Services	Male	49 percent	15980
	Female	33 percent	18181
Other	Male	38 percent	15694
	Female	43 percent	17606

From the above, while there were some variations, no clear trends emerged connecting fields of study to the incidence of loans, or their average size. The field of 'health, parks, recreation & fitness' clearly had both a higher incidence of borrowing and a higher average loan size. More broadly however, we see that there were high levels of borrowing among certain high-income fields (such as mathematics & computer science)

as well as among low-income fields (such as visual & performing arts). This supports the C.D. Howe report's earlier finding that students will borrow as much as they can, regardless of their expected incomes upon graduation (Finnie & Schwartz, 1996, p. 32). It is unclear that the variation in incidence of borrowing varied among fields of study. This could possibly reflect the differences in program costs of the different fields. Furthermore, the regression results analyzed below in section six reveal that the independent effect of the field of study is not generally significant in determining the likelihood of borrowing or the amount borrowed.

In table 3, we provide a look at the distribution of the amount borrowed, according to level of education.

Table 3: Distribution of Amounts Borrowed (%)

Level of Education	Gender	<5000	5000-9999	1000-1499	1500-19999	20000-24999	25000+
Trade	Male	52	31	7	1	3	7
	Female	47	32	10	3	2	8
College	Male	20	31	21	9	7	13
	Female	17	28	21	11	8	15
< Bachelor's	Male	30	26	13	8	8	15
	Female	24	32		6	5	13
Bachelor's	Male	11	18	17	11	13	30
	Female	12	16	16	12	10	34
> Bachelor's	Male	29	10	14	18	10	17
	Female	12	23	8	19	17	20
Masters	Male	9	17	15	15	14	30
	Female	9	15	19	11	14	31
Doctorate	Male	5	14	15	12	14	40
	Female	6	19	14	14	19	29

Legend: The ranges of amounts borrowed are shown in $

For each gender/education group, a significant number of graduates had accumulated relatively low levels of debt ($10,000 or less). This includes over 80 percent of trade

graduates and roughly 50 percent of college graduates. Slightly fewer than 30 percent of undergraduate students had small loans. This number, as expected, declined further to 20-25 percent, for graduate students.

Nevertheless, many individuals, particularly with a Bachelor's degree or higher, havdloans greater than $20,000. While approximately 30 percent of undergraduate students had loans of less than $10,000, another 40 percent have loans exceeding $20,000. Again, the disparity is even more extreme for graduate students. The distributions of loan amounts highlight the fact that averages can be very misleading when analysing student borrowing.

Repayment Rates

We looked at rates of repayment of student loans. We examined the share of the loan repaid two years post-graduation. The data are shown below in Table 4, and also are represented in Figure 5 in Appendix C.

Table 4: Proportion of Debt Repaid (Mean) Two Years after Graduation			
		All Borrowers	Borrowers with Loan Balance Remaining
	Gender	(%)	
Trade	Male	45	26
	Female	39	26
College	Male	37	23
	Female	33	19
< Bachelor's	Male	41	22
	Female	50	21
Bachelor's	Male	41	22
	Female	41	21
> Bachelor's	Male	46	16
	Female	40	26
Master's	Male	37	17
	Female	42	21
Doctorate	Male	42	20
	Female	46	20

The C.D. Howe report findings found that repayments for the 1990 cohort were higher for graduate level students (Finnie & Schwartz, 1996, p. 40). Our results, however, show that for the 2005 cohort, there was no discernable pattern for repayments – either by level of education or by gender.

It is important to note, however, that the overall levels of repayment are trending downwards over time. The C.D. Howe report noted that, "in all cases, the graduates of 1990 had paid back slightly smaller proportions of their debts than those of 1986" (Finnie & Schwartz, 1996, p. 40). For the 2005 cohort, the repayment rates were even lower. In 1986, PhD graduates with loans had repaid roughly 70 percent of their debt. For the 1990 cohort, this number was just over 60 percent. That number in 2005 was just over 40 percent. This is a concerning and not altogether surprising trend. As tuition rates

increase, and sizes of loans outpace inflation, graduates may find themselves struggling to repay their loans in a timely manner.

Table 5 examines the distribution of debt repayment rates two years post graduation for 2005 graduates. The last column shows the percentage of graduates who have repaid their loans in full.

Table 5: Distribution of Debt Repayment (%)

	Gender	<15%	15-29%	30-44%	45-59%	60-74%	75-99%	100%
Trade	Male	30	18	13	4	6	4	26
	Female	33	17	15	5	8	4	18
College	Male	40	14	13	9	3	3	19
	Female	45	17	9	7	2	3	17
Bachelor's	Male	36	17	11	5	3	3	25
	Female	40	15	8	5	4	4	25
Master's	Male	46	11	9	4	2	3	24
	Female	39	15	7	5	3	4	27
Doctorate	Male	41	13	8	5	4	2	27
	Female	38	12	8	4	4	1	32

Roughly one quarter of graduates have fully repaid their loans two years after graduation. However, it is important to examine the distribution of repayments because when examining mean levels of repayment, this one-quarter can mask a real problem. Our data show a troubling trend. In the C.D. Howe report, for the 1990 cohort, only about 15 percent of graduates had repaid less than 15 percent of their loan (Finnie & Schwartz, 1996, p. 42). For the 2005 cohort, that number has increased to about 40 percent. Across all levels of education, a majority of graduates has repaid less than 30 percent of their loans two years after graduation.

We can also see some gender patterns emerging. At the trade, college, and undergraduate levels, women have repaid a significantly lower amount of debt. However at the Master's and PhD levels, women actually repaid a higher proportion of their debt compared to their male counterparts.

Table 6 reveals the differences in loan repayment rated by field of study for undergraduate students. This is also shown in Figure 6 in Appendix C.

Table 6: Proportion of Debt Repaid (Mean) by Field, Bachelor's Graduates

Field of Study	Gender	(%)
Education	Male	46
	Female	44
Arts	Male	39
	Female	35
Humanities	Male	27
	Female	30
Social Sciences	Male	28
	Female	35
Business	Male	42
	Female	48
Life Sciences	Male	25
	Female	30
Math & Comp Sci	Male	54
	Female	44
Engineering	Male	52
	Female	51
Agriculture	Male	44
	Female	50
Health/Recreation	Male	49
	Female	47
Protective Services	Male	30
	Female	33
Other	Male	26
	Female	39

There is a large variance in how successful graduates were at repaying their debt by field of study. While graduates from physical and life sciences repaid their debt at the lowest levels, math and computer sciences as well as architecture and engineering graduates had repaid the highest proportion. It appears that there may be some link between the proportion of debt repaid, and the earning power of the fields of study. However, as noted earlier, the broad nature of these categories makes it difficult to read too deeply into this trend.

Difficulty with Repayment

The NGS included a question on whether graduates who still held debt two years post-graduation, had problems with loan repayment. Our analysis shows that between 15 and 30 percent of these graduates did, in fact, experience difficulty (Table 7).

Table 7: Incidence of Difficulty in Repaying Loans

	Gender	**(%)**
Trade	Male	15
	Female	24
College	Male	21
	Female	29
> Bachelor's	Male	20
	Female	22
Bachelor's	Male	23
	Female	25
> Bachelor's	Male	14
	Female	13
Master's	Male	22
	Female	18
Doctorate	Male	21
	Female	17

Corresponding to the trend in debt repayment, women appear to have greater difficulty repaying their loans at the trade, college, and undergraduate levels but less difficulty than men at the graduate levels.

Approximately 50 percent of graduates never had a loan. An additional 25 percent of graduates who did have a loan repaid their loan with ease (Table 5). Therefore we can estimate the 15-30 percent of graduates with outstanding loans who reported difficulty with repayment represent only 6-12 percent of all graduates.

It is important to point out, however, that loan repayment would be a bigger issue if all students with loans were considered - not only graduates. The research does not include students who borrowed but failed to complete their studies. This group would be the most vulnerable to experiencing difficulties with loan repayment.

Table 8 examines difficulty with repayment by field of study for Bachelor's graduates.

Table 8: Repayment Difficulties by Field, Bachelor's Graduates		
	Gender	**(%)**
Education	Male	22
	Female	26
Arts	Male	37
	Female	42
Humanities	Male	41
	Female	42
Social Sciences	Male	31
	Female	25
Business	Male	19
	Female	19
Life Sciences	Male	23
	Female	23
Math & Comp Sci	Male	19
	Female	30
Engineering	Male	17
	Female	22
Agriculture	Male	16
	Female	19
Health/Recreation	Male	14
	Female	15
Protective Services	Male	25
	Female	35

Table 8 yields interesting results based on graduates' self-reported difficulties with repayment. It appears that graduates from low-income fields (visual arts, humanities, social sciences, and protective services) reported much greater difficulty than graduates from high-income fields (business, math & computer science, engineering, and health) in repaying their loans. This would lend support to the notion that graduates do not struggle with their debt purely because of the size of their loan debt, but also because of the unemployment or insufficient earnings they face when entering the workforce. This is in line with the C.D. Howe report's earlier findings (Finnie & Schwartz, 1996, p. 50).

Moreover, across almost all fields of study, females experienced greater difficulty in repaying their loans – again possibly because of the pay gap that exists in the workforce.

6. Regression Analysis

Graduating with a Loan: Model & Results

Our first regression examines the factors affecting if students took on a loan or not. A logit model is applied for each gender. The variables are described in section 4. Table 9 below contains the regression results.

The equation was:

$$Stuloan = \beta_0 + \beta_1 Field + \beta_2 Age + \beta_3 Prov + \beta_4 Migration + \beta_5 Parttime + \beta_6 Coop + \beta_7 Reentry + \beta_8 Mothed + \beta_9 Fathed + \beta_{10} Maritalstat + \beta_{11} Children + \varepsilon$$

Table 9: Model I - Graduating with a Loan, Estimation Results

	Male	Female
Intercept	-0.366	**1.107****
	(.499)	(.346)
Field of Study		
Arts	0.384	-0.007
	(0.272)	(.152)
Humanities	0.089	-0.312*
	(0.248)	(.160)
Social Sciences	0.115	-0.275*
	(0.252)	(.145)
Business	-0.152	**-0.451****
	(0.234)	(.154)
Life Sciences	0.115	-0.099
	(0.243)	(.157)
Math & Comp Sci	0.109	0.262

	(0.227)	(.219)
Engineering	0.063	-0.218
	(0.225)	(207)
Agriculture	0.336	-0.136
	(0.252)	(.215)
Health/Recreation	**0.701****	-0.022
	(0.272)	(.141)
Protective Services	-0.217	**-1.103****
	(0.345)	(.227)
Other	-0.248	**-0.851****
	(0.479)	(.294)
Age	0.043	0.011
	(0.014)	(.009)
Province/region		
Ontario	**-0.367****	**-0.914****
	(0.139)	(.112)
Quebec	-0.213	**-0.525****
	(0.156)	(.121)
Manitoba	**-1.023****	**-1.187****
	(0.162)	(.126)
Saskatchewan	**-0.507****	**-0.612****
	(0.157)	(.127)
Alberta	-0.316	**-0.792****
	(0.157)	(.123)
British Columbia	**-0.355****	**-0.548****
	(0.154)	(.120)
Schooling characteristics		
Moved to study	-0.305*	-0.840
	(0.157)	(.136)
Part-time	**-1.205****	**-0.973****
	(0.289)	(.206)
Co-op	-0.265*	-0.153
	(0.143)	(.139)
Re-entry	0.195	-0.033
	(0.147)	(.123)
Parental Education		
Mother: Apprenticeship	-0.170	-0.047
	(0.326)	(.222)
Mother: College/CEGEP	0.098	-0.225*

	(0.145)	(.116)
Mother: University below Bachelor Level	**-0.818****	-0.404
	(0.293)	(.254)
Mother: BA or higher	**-0.385****	-0.179
	(0.138)	(.116)
Father: Apprenticeship	0.305	0.086
	(0.266)	(.209)
Father: College/CEGEP	-0.026	-0.166
	(0.165)	(.129)
Father: University below Bachelor Level	0.053	0.011
	(0.384)	(.295)
Father: BA or Higher	**-.369****	**-0.427****
	(0.132)	(.109)
Marital and Family Status		
Common-Law	-0.145	0.213
	(0.213)	(.152)
Widowed/Separated/Divorced	-0.725*	0.704*
	(0.424)	(.292)
Single, Never Married	-0.046	0.072
	(0.164)	(.119)
No children	-0.171	-0.251
	(0.213)	(.142)
Number of Observations	4384	6506
Note: Logit model (0-1) of graduating with a loan		
*** Significantly different from zero at the .10 confidence level**		
**** Significantly different from zero at the .05 confidence level**		

In examining the factors affecting the likelihood of a student graduating with a loan, field of study does not appear to be a major indicator. Specifically, women studying business & public administration, and personal and protective services were less likely to have graduated with a loan, while men studying health, parks, recreation, & fitness were more likely to have taken out a loan, holding all other factors constant. Given the broad nature of these categories however, these results do not seem particularly meaningful.

One of the most significant determinants, across genders, appears to be the province or region where the graduates lived prior to their enrolment. Graduates from Atlantic Canada are the most likely to have taken out a loan. Graduates from Quebec and British Colombia are the next most likely to have graduated with a loan. Saskatchewan and Alberta are in the middle of the pack, while graduates from Ontario and Manitoba are the least likely to have graduated with a government student loan. These results seem to reflect the distribution of wealth across Canadian provinces. The C.D. Howe report found a similar provincial pattern in their borrowing models and attributed it to differences in provincial funding formulas ((Finnie & Schwartz, 1996, p. 32).

The only schooling characteristic that was significant was part-time studies. For both men and women, being enrolled as a part-time student decreased the odds of having a student loan, holding other factors constant. This would be expected as part-time students often have income from employment they are engaged in concurrently.

Parental education is used as a proxy for socio-economic background. Graduates of both genders whose fathers had bachelor's degrees or higher were less likely to graduate with a student loan, isolating for other factors. Where mothers had a bachelor's degree or higher, there was a similar impact for male graduates. This supports the idea that socio-economic status does influence loan rates.

Marital and family status revealed no significant results. This is unsurprising given that at the time of graduation, the typical graduate was 26 years old and in most cases would not have experienced life events such as marriage, death of a spouse, divorce, or children.

Amount Borrowed: Model & Results

The second regression uses OLS to determine what variables affect the amount graduates borrow, for graduates with a student loan – again regressions are conducted separately for each gender. The results are shown below in Table 10.

The equation is:

$$Amount = \beta_0 + \beta_1 Field + \beta_2 Age + \beta_3 Prov + \beta_4 Migration + \beta_5 Parttime + \beta_6 Coop + \beta_7 Reentry + \beta_8 Mothed + \beta_9 Fathed + \beta_{10} Maritalstat + \beta_{11} Children + \varepsilon$$

Table 10: Model II - Amount Borrowed, Estimation Results

	Male	Female
Intercept	**18044****	**20404****
	(4281)	(3931)
Field of Study		
Arts	-2540	-47.11
	(1819)	(1267)
Humanities	1342	-2656*
	(2101)	(1462)
Social Sciences	-2881	-1348
	(1791)	-1184
Business	-4262**	-2204
	(1621)	(1384)
Life Sciences	-1862	-2343*
	(1809)	(1349)
Math & Comp Sci	-1790	-1446

	(1754)	(1682)
Engineering	-1845	455.5
	(1666)	(1694)
Agriculture	-3078*	**-4056****
	(1843)	(1290)
Health/Recreation	4299*	1045
	(2389)	(1323)
Protective Services	-1670	-3318
	(2441)	(2044)
Other	-561.9	**-8151****
	(4405)	(3753)
Age	**427.7****	**380.9****
	(117.7)	(122.8)
Province/region		
Ontario	**-6106****	**-7748****
	(1299)	(1132)
Quebec	**-13358****	**-17543****
	(1228)	(845.7)
Manitoba	**-10301****	**-12079****
	(1688)	(1149)
Saskatchewan	-3197	**-5180****
	(1447)	(1172)
Alberta	-3606	**-8120****
	(1587)	(1219)
British Columbia	-1466	**-3585****
	(1840)	(1170)
Schooling characteristics		
Moved to study	1275	1792
	(1550)	(1217)
Part-time	**-7670****	**-5929****
	(2651)	(2045)
Co-op	**-2307****	**-708.8****
	(1055)	(1144)
Re-entry	**-2849****	-3461
	(1076)	(1268)
Parental Education		
Mother: Apprenticeship	-2100	1549
	(2118)	(1309)
Mother: College/CEGEP	-495.5	-184.8

	(1259)	(1156)
Mother: University below Bachelor Level	-1847	1554
	(1715)	(1684)
Mother: BA or higher	-1488	-1937*
	(1229)	(1028)
Father: Apprenticeship	-1948	-2001
	(1995)	(1418)
Father: College/CEGEP	208.8	**-2573****
	(1658)	(924.2)
Father: University below Bachelor Level	-2828	436.9
	(2384)	(2283)
Father: BA or Higher	**-2227****	-1296
	(1092)	(1050)
Marital and Family Status		
Common-Law	-302.1	2432*
	(1581)	(1259)
Widowed/Separated/Divorced	-2955	2522
	(3584)	(2119)
Single, Never Married	-1344	1812
	(1390)	(1111)
No children	-390.3	-2119
	(1809)	(1473)
Number of Observations	1909	3045
	0.18	0.21
Note: Ordinary least squares model of amount of loans, estimated for those with loans.		
*** Significantly different from zero at the .10 confidence level**		
**** Significantly different from zero at the .05 confidence level**		

As in the previous regression, field of study is not a major determinant of the amount graduates borrow.

However, in this regression, age is significant for both genders. Age is positively correlated with the amount borrowed. Holding other factors constant, females will borrow an extra $381 for each year they are older, while men will borrow an extra $428.

Similar to the previous regression, province/region is a key determinant. However, a slightly different pattern has appeared. Atlantic Canadian graduates, who were the most likely to have graduated with a loan, also borrow the highest amounts, holding other factors constant.[5] They are followed in descending order by Saskatchewan, Alberta, Ontario, then Manitoba. Interestingly, Quebec graduates have the smallest loans, holding other factors constant, despite being one of the most likely to have graduated with a loan. This is likely because while Quebec is considered a "have-not" province, their post-secondary education is highly subsidized. While students may need financial assistance to cover the cost of their tuition, their tuition levels are relatively low, so only relatively small loan amounts are needed.

Schooling characteristics are also very meaningful in this regression. For both genders, part-time status, holding other factors constant, resulted in smaller loan sizes. This is consistent with the previous regression. Further, enrolment in a co-op program also reduced the loan sizes for both genders, although the magnitude of this decrease was larger for males. Finally, for male graduates, re-entry into a post-secondary program after at least three years in the workforce led to smaller loan sizes, holding all other factors constant.

[5] As mentioned in the previous regression results, this result mirrors the C.D. Howe report's findings.

Parental education yielded less dramatic results. Females whose fathers had a college-level education had smaller loans, as did males whose fathers had a bachelor's degree or higher level of education.

As in the previous regression, marital and family status did not yield any significant results.

Proportion of Loan Repaid: Model & Results

The third regression uses a two-sided tobit model to determine what variables affect the proportion of the loan repaid, for graduates who had a student loan. A tobit-model is used because the dependent variable, proportion of loan repaid, is bounded between 0 and 100. The results are shown below in Table 11.

The equation is:

$$Proportion = \beta_0 + \beta_1 Field + \beta_2 Age + \beta_3 Borrowed + \beta_4 Income + \beta_5 Prov + \beta_6 Migration + \beta_7 Parttime + \beta_8 Coop + \beta_9 Reentry + \beta_{10} Mothed + \beta_{11} Fathed + \beta_{12} Maritalstat + \beta_{13} Children + \varepsilon$$

Table 11: Model III -Proportion Repaid, Estimation Results

	Male	Female
Intercept	0.573	0.054
	(.617)	(0.390)
Field of Study		
Arts	-0.104	**-0.257****

	(.119)	(.086)
Humanities	**-0.373****	-0.334**
	(.120)	(.096)
Social Sciences	-0.299	**-0.229****
	(.124)	(.080)
Business	0	-0.089
	(.106)	(.085)
Life Sciences	**-0.363****	**-0.384****
	(.117)	(.099)
Math & Comp Sci	0.128	-0.099
	(.106)	(.129)
Engineering	0.129	0.073
	(.099)	(.115)
Agriculture	0.016	0.086
	(.101)	(.092)
Health/Recreation	0.02	0.035
	(.121)	(.077)
Protective Services	-0.074	**-0.269****
	(.109)	(.119)
Other	-0.186	0.001
	(.232)	(.180)
Age	0.003	-0.006
	(.007)	(.006)
Amount Borrowed (+$1000)	-0.901*	**-0.676****
	(.518)	(.295)
Annual Earnings (+$1000)	**0.539****	**1.11****
	(.237)	(.172)
Province/region		
Ontario	**0.179****	**0.379****
	(.066)	(.064)
Quebec	-0.114	**0.176****
	(.074)	(.061)
Manitoba	**0.232****	0.129*
	(.096)	(.067)
Saskatchewan	0.035	0.009
	(.066)	(.057)
Alberta	**0.199****	**0.3****
	(.061)	(.059)
British Columbia	0.099	**0.256****
	(.068)	(.060)

Schooling characteristics		
Moved to study	-0.064	-0.015
	(.073)	(.062)
Part-time	0.137	**0.337****
	(.152)	(.129)
Co-op	0.124*	0.136
	(.068)	(.086)
Re-entry	0.031	-0.026
	(.068)	(.064)
Parental Education		
Mother: Apprenticeship	0.073	-0.083
	(.141)	(.098)
Mother: College/CEGEP	0.075	-0.059
	(.072)	(.064)
Mother: University below Bachelor Level	0.034	-0.192
	(.123)	(.155)
Mother: BA or higher	-0.028	0.061
	(.079)	(.066)
Father: Apprenticeship	**0.258****	0.016
	(.113)	(.087)
Father: College/CEGEP	0.008	-0.009
	(.078)	(.071)
Father: University below Bachelor Level	0.072	0.034
	(.165)	(.158)
Father: BA or Higher	0.053	0.026
	(.073)	(.064)
Marital and Family Status		
Common-Law	-0.096	**-0.236****
	(.103)	(.074)
Widowed/Separated/Divorced	-0.188	**-0.306****
	(.215)	(.145)
Single, Never Married	-0.095	**-0.213****
	(.086)	(.063)
No children	0.111	0.123*
	(.092)	(.071)
Number of Observations	1649	2588

Note: Two-sided tobit model of the proportion of the loan repaid at the time of the first interview, two years after graduation.
*** Significantly different from zero at the .10 confidence level**
**** Significantly different from zero at the .05 confidence level**

Female graduates from visual & performing arts, and social science programs repaid a smaller proportion of their loan, as did male graduates studying humanities. These are all considered low-income fields. However graduates of both genders in life sciences (a high-income field) also repaid a smaller proportion of their loan, holding all other factors constant.

As expected, having a student loan of greater than $1000 resulted in a lower proportion repaid, while having an annual income of greater than $1000 resulted in a higher proportion repaid.

In this regression, the province variable reflects the province/region in which graduates reside at the time of the interview two years after graduation, not their location prior to enrolment in their post-secondary program. There is a weaker correlation between province/region and the dependant variable than in our earlier regressions. However, Atlantic graduates, consistent with earlier regressions, repaid the smallest proportion of their loans, holding other factors constant. Male graduates in Manitoba, and female graduates in British Columbia and Quebec are in the middle of the pack. Graduates from Ontario and Alberta repaid the largest proportion of their loans. This may reflect the employment prospects of the respective provinces. These results are in line with the C.D.

Howe report's earlier findings, which their report attributed to provincial income patterns (Finnie & Schwartz, 1996, p. 46)

For female graduates, part-time enrolment resulted in a higher proportion repaid. Parental education for this regression did not yield meaningful results. This suggests that either socioeconomic status is not a significant factor in loan repayment, or perhaps that parental education is not a strong proxy for socioeconomic status.

For this regression, marital and family status does, for female graduates, affect the dependent variable. Unlike in the earlier regressions, this regression is examining an outcome (loan repayment) two years after graduation. By this time, the typical female is 29 years old. It is therefore logical, at this older age, to expect family status to play a larger role. Female graduates who are in a common-law relationship or single, have repaid a smaller proportion of their loans than their married counterparts, holding other factors constant. Widowed, separated, or divorced female graduates have repaid the smallest proportion.

Difficulty with Repayment: Model & Results

The fourth regression uses a logit model to determine what variables affect if graduates experience difficulty with loan repayment, for graduates who had a student loan. The results are shown below in Table 12.

The equation is:

$$Difficulty = \beta_0 + \beta_1 Field + \beta_2 Age + \beta_3 Borrowed + \beta_4 Income + \beta_5 Prov + \beta_6 Migration + \beta_7 Parttime + \beta_8 Coop + \beta_9 Reentry + \beta_{10} Mothed + \beta_{11} Fathed + \beta_{12} Maritalstat + \beta_{13} Children + \varepsilon$$

Table 12: Model IV - Difficulties with Repayment, Estimation Results		
	Male	Female
Intercept	**-4****	-1.75*
	(1.27)	(.943)
Field of Study		
Arts	0.686	**0.986****
	(.446)	(.288)
Humanities	0.76*	0.459
	(.420)	(.303)
Social Sciences	0.212	-0.059
	(.432)	(.272)
Business	-0.183	-0.506*
	(.422)	(.294)
Life Sciences	0.085	0.105
	(488)	(.358)
Math & Comp Sci	0.173	-0.048
	(.391)	(.424)
Engineering	-0.311	-0.122
	(.423)	(.483)
Agriculture	-0.348	-0.392
	(.444)	(.326)
Health/Recreation	-0.649	**-0.835****
	(.513)	(.288)
Protective Services	-0.378	-0.028
	(.472)	(.452)
Age	**0.068****	**0.04****
	(.028)	(.019)
Amount Borrowed (+$1000)	**1.17****	**2.17****
	(.408)	(.435)

Annual Earnings (+$1000)	0.615	**-1.42****
	(.975)	(.583)
Province/region		
Ontario	-0.341	**-0.552****
	(.262)	(.227)
Quebec	**-0.848****	**-1.466****
	(.347)	(.259)
Manitoba	-0.455	-0.446
	(.351)	(.281)
Saskatchewan	-0.555*	-0.392*
	(.302)	(.220)
Alberta	**-0.598****	**-0.684****
	(.267)	(.222)
British Columbia	-0.43	-0.381*
	(.281)	(.204)
Schooling characteristics		
Moved to study	-0.016	0.335
	(.326)	(.244)
Part-time	**-1.37****	-0.606
	(.635)	(.449)
Co-op	**-0.726****	-0.029
	(.332)	(.320)
Re-entry	-0.166	0.369
	(.291)	(.227)
Parental Education		
Mother: Apprenticeship	0.364	0.142
	(.696)	(.384)
Mother: College/CEGEP	-0.194	**-0.523****
	(.342)	(.229)
Mother: University below Bachelor Level	0.803	-0.758*
	(.574)	(.429)
Mother: BA or higher	-0.229	-0.203
	(.311)	(.224)
Father: Apprenticeship	0.703	-0.24
	(.481)	(.283)
Father: College/CEGEP	0.129	0.047
	(.365)	(.262)
Father: University below Bachelor Level	0.229	0.315

	(.655)	(.485)
Father: BA or Higher	-0.229	-0.237
	(.300)	(.220)
Marital and Family Status		
Common-Law	-0.567	0.114
	(.403)	(.284)
Widowed/Separated/Divorced	0.579	0.724*
	-0.988	(.436)
Single, Never Married	0.241	0.385*
	(.311)	(.219)
No children	-0.189	-0.399*
	(.370)	(.236)
Number of Observations	1356	2107
Note: Logit model (0-1) of self-reported difficulties with repayment, estimated for those with outstanding loans as of the interview, two years after graduation.		
*** Significantly different from zero at the .10 confidence level**		
**** Significantly different from zero at the .05 confidence level**		

This regression yields some interesting results. Female graduates from visual & performing arts programs had a greater likelihood of experiencing difficulties repaying their loans, while female graduates from health, parks, recreation & fitness programs had a lower likelihood of experiencing difficulties, holding all other factors constant. Field of study was not a significant factor for male graduates.

For both male and female graduates, age was positively correlated with experiencing difficulties with repayment. This is in line with the results from Regression 2, which showed age was positively correlated with the size of graduate loans.

As expected, having a student loan of greater than $1000 resulted in a greater likelihood of difficulties with repayments, while for female graduates, having an annual income of greater than $1000 resulted in a lower likelihood of difficulties with repayment.

The province/region in which graduates resided at the time of the interview was an important factor. Quebec graduates were the least likely to report difficulties with repayment. Ontario and Alberta were in the middle of the pack. However residing in Manitoba, Saskatchewan, and British Columbia did not yield results significantly different from residing in Atlantic Canada.

For male graduates, part-time status and enrolment in a co-op program both decreased the likelihood of having difficulties with repayment, when other factors were held constant.

Neither parental education or marital/family status had a significant impact on the likelihood of a graduate experiencing difficulty with loan repayment.

7. Conclusion

The 1996 C.D. Howe Report examined Canada student loan data of 1982, 1986, and 1990 post-secondary graduates. By mid-1990s, there were notable changes that impacted how students financed their post-secondary studies. The federal government made significant cuts to transfer payments, including those going to education. This, along with existing recessionary pressures, forced many provinces to cut their financing to colleges and universities (Axelrod, 2011, p. 151). To allow universities to continue to function, many

provinces allowed their post-secondary institutions to raise tuition. Higher tuition led to greater reliance by students across Canada on the Canada Student Loans Program. This essay examines student borrowing and repayment patterns in the 25-year period since the C.D. Howe report's findings.

Our findings are that the situation facing 2005 graduates differed significantly from the earlier cohorts looked at by the C.D. Howe report. For instance, for the 2005 bachelor degree graduates, the average student loan size was far greater than in the earlier periods, far outpacing inflation. In 1990, the average loan size for bachelor's graduates was $8,685. Indexed to inflation, this number would have reached $11,895 in 2005. However, actual average borrowing for 2005 undergraduates was $18,710. There was also a major difference in the rate of student loan repayment. In the earlier period studied by the C.D. Howe, only 15 percent of graduates repaid less than 15 percent of their student loans. For 2005 graduates, almost 40 percent had repaid just 15 percent of their loans or less. This shows that students are taking on larger loans and are having greater difficulty repaying them.

Our paper found a number of other interesting trends with respect to borrowing. The borrowing models show that the province where the student lived prior to their enrolment in post-secondary education was a major determinant of whether or not they had a student loan and the size of the loan. For instance, residents of Atlantic Canada had the highest incidence of borrowing and highest loan amounts. Graduates from Ontario were the least likely to rely on student loans. Quebec graduates exhibited a higher likelihood of

borrowing, but the size of their loans was likely to be smaller. Our borrowing models show that part-time studies are correlated with a lower incidence of borrowing and smaller loan amounts. Other schooling characteristics also impacted the size of students' loans. For instance, enrolment in a co-op program reduced loan sizes for both genders. For men, re-entry into a post-secondary program reduced the loan size. Our model did not indicate that there was a significant result for women.

Our repayment models also yielded a number of interesting results. As was the case with borrowing, the province of residence was a significant factor in the repayment models. Graduates residing in Atlantic Canada repaid the lowest share of their borrowing, while graduates residing and Ontario and Alberta repaid the largest share of their loans. Age was positively correlated with experiencing difficulties with loan repayment. Marital status was a significant factor in determining the proportion of loan repayment by females. Married females repaid a higher proportion of their loans than their single counterparts. Widowed or divorced females repaid the least amount. Parental education did not appear to be a significant factor in our repayment models.

The student financing environment has continued to evolve since the 2005 Survey. Statistics Canada very recently released a Survey of 2010 graduates. This new survey cannot be compared to previous years because the interviews with graduates were conducted three years after graduation, rather than two years before. Nevertheless, the new Survey should offer an updated view of student borrowing and repayment. The Survey for 2010 graduates would be important for further study on this topic –

particularly in evaluating the effects of the 2008 recession on student borrowing. Finally, the Canada Student Loans Program has become an increasingly more important vehicle for Canadians to access post-secondary education. The past two and a half decades have witnessed considerable changes in the student loan program and in the students who access it. It would be helpful to policy makers to have more recent data available to them. This area of research would benefit from more frequent National Graduate Surveys.

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APPENDIX A

Sample Characteristics (Variable Means)		
	Male	**Female**
	(% Unless otherwise indicated)	
% with Loans	42	47
Amount Borrowed ($)	15,433	16,310
% Repaid	40	39
% with Difficulty in Repayment	21	24
Annual Earnings ($)	37,431	31,467
Age (years)	28	29
Province/Region		
Atlantic Canada	7	7
Quebec	34	30
Ontario	35	37
Manitoba	3	3
Saskatchewan	3	3
Alberta	7	9
British Columbia	12	11
Territories	0	0
Schooling Characteristics		
Moved to Study	10	9
Part-time Studies	9	12
Re-entry	35	34
Parental Education		
Mother: No Post-Secondary	48	48
Mother: Apprenticeship	3	4
Mother: College	20	22
Mother: <BA	3	2
Mother: BA	20	17
Mother: Master's	5	5
Mother: Doctorate	1	1
Father: No Post-Secondary	44	47
Father: Apprenticeship	5	5
Father: College	15	16
Father: <BA	2	2
Father: BA	21	20

Father: Master's	8	7
Father: Doctorate	3	3
Marital and Family Status		
Single	63	54
Married	23	26
Common-Law	12	14
Separated	1	2
Divorced	1	3
Widowed	0	0
Presence of Children	19	24

APPENDIX B:

Fields of Study	Description	Income-Level[6]
Education	Education	High-income
Arts	Visual and performing Arts and communications technology	Low-income
Humanities	Humanities • Liberal arts and sciences, general studies • Philosophy and religious studies • History • English language and literature • French language and literature • Aboriginal and foreign language and literature	Low-income
Social Sciences	Social and behavioural sciences and law • Social sciences and international studies, multicultural and diversity studies • Psychology • Ethnic, cultural and gender studies • Journalism • Legal professions and studies	Low-income**
Business	Business, management and public administration	High-income
Life Sciences	Physical and life sciences and technologies	Low-income**
Math & Comp Sci	Mathematics, computer and information sciences • Mathematics and statistics • Computer science • Library science	High-income
Engineering	Architecture, engineering and related technologies • Architecture • Engineering • Construction trades • Mechanic and repair technologies	High-income
Agriculture	Agriculture, natural resources and conservation	Low-income
Health/Recreation	Health, parks, recreation and fitness • Health professions	High-income**

[6] The income status of a field of study is based on the C.D. Howe Report's determination

	• Dental, medical, veterinary programs • Parks, recreation, leisure and fitness studies	
Protective Services	Personal, protective and transportation services • Personal and culinary services • Security and protective services • Military technologies • Transportation and materials moving	Low-income
Other	Other • Interdisciplinary studies • High school diploma and certificate programs • Problem codes	Low-income
Note: ** indicates that the field contains some occupations of a different income level than listed.		

APPENDIX C:

Figure 1

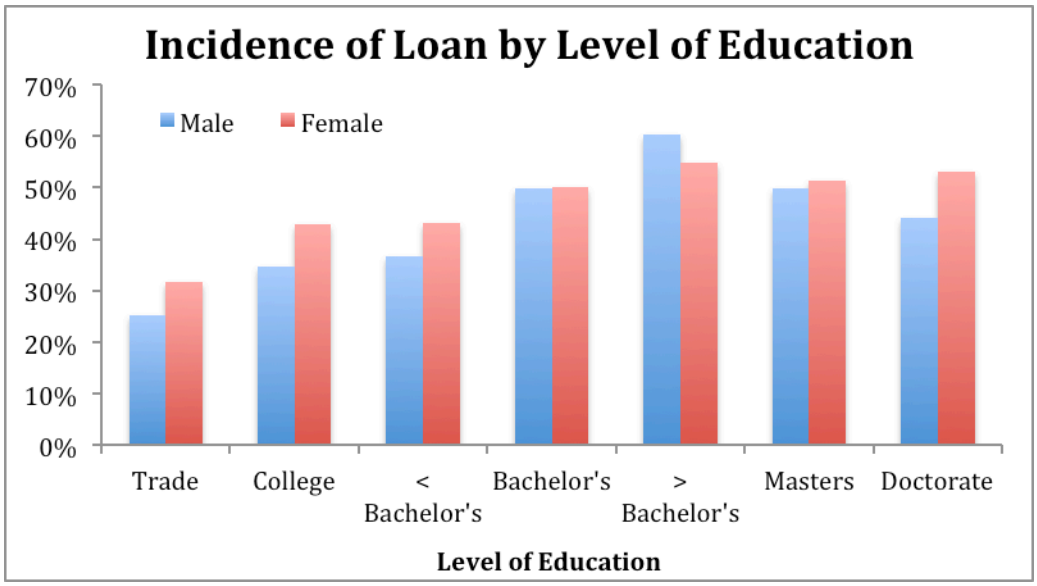


Figure 2

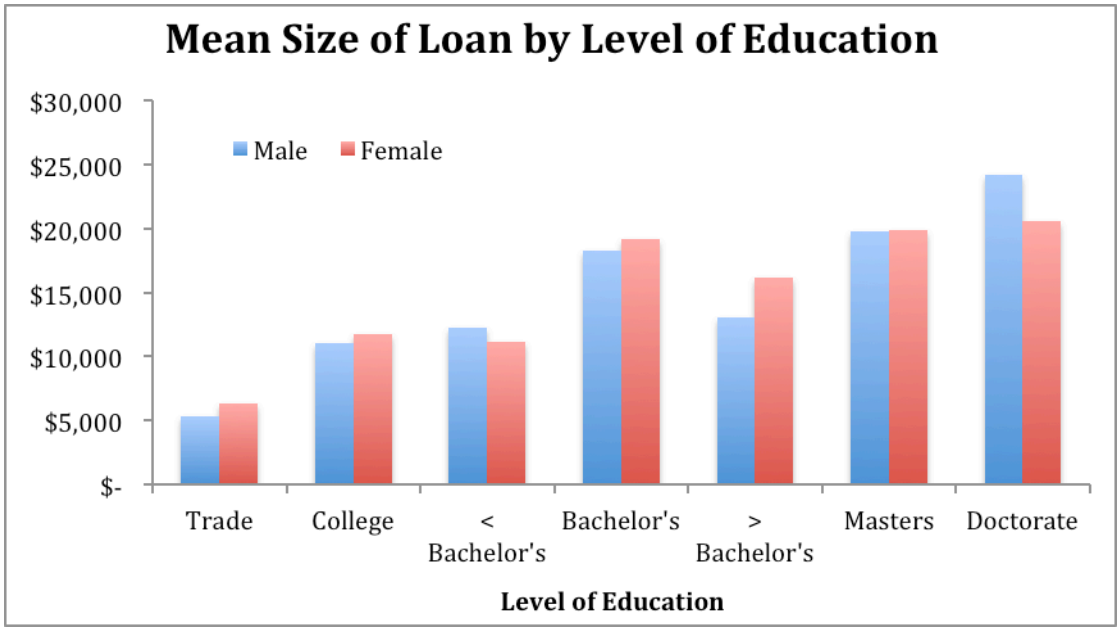
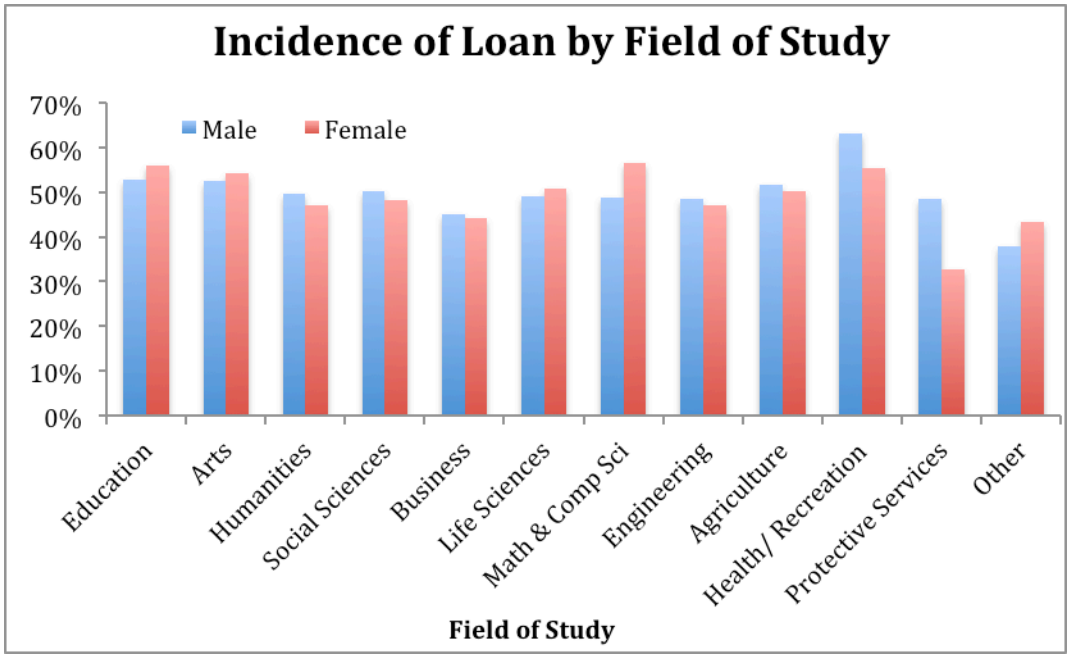


Figure 3



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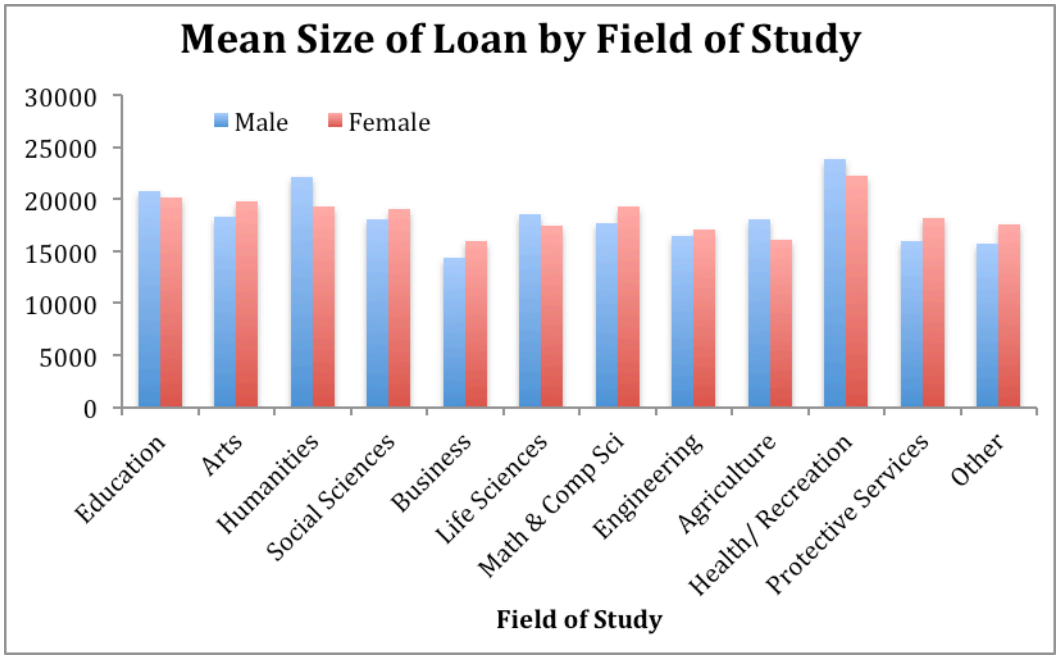


Figure 5

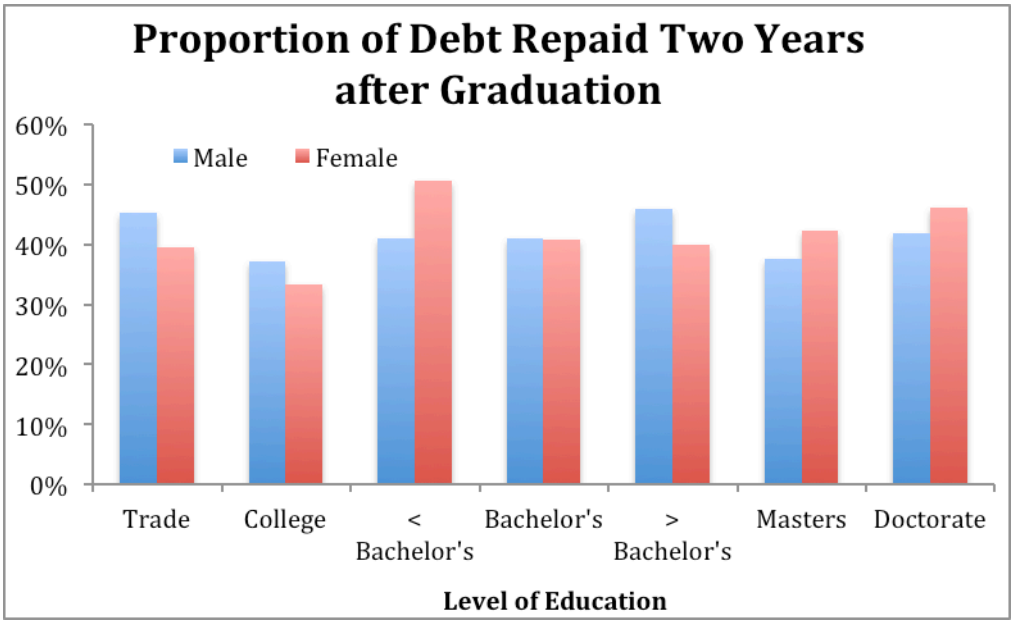


Figure 6

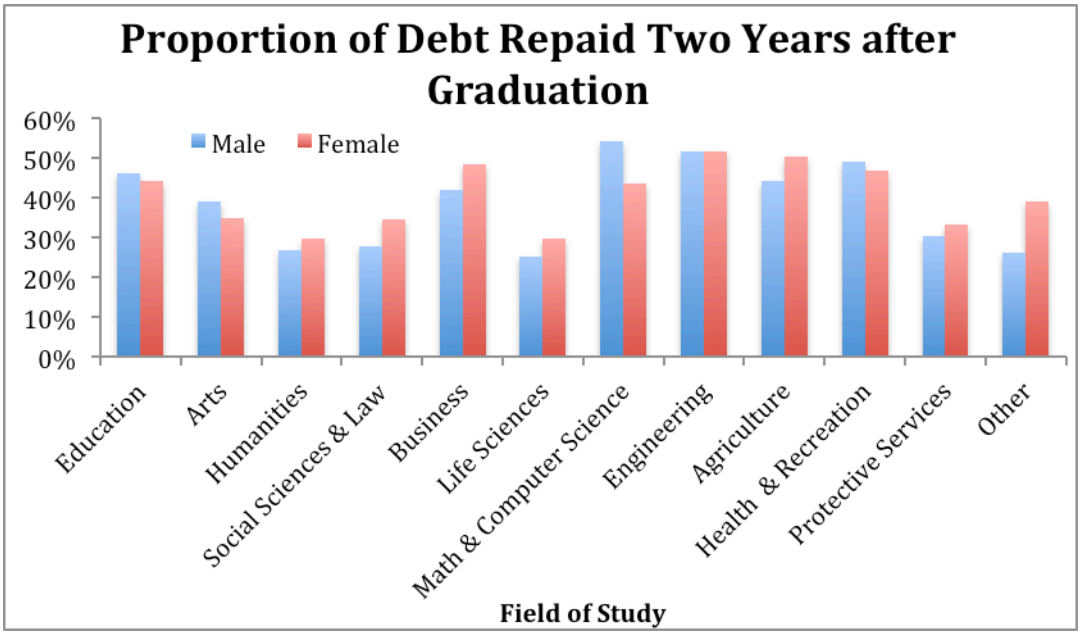
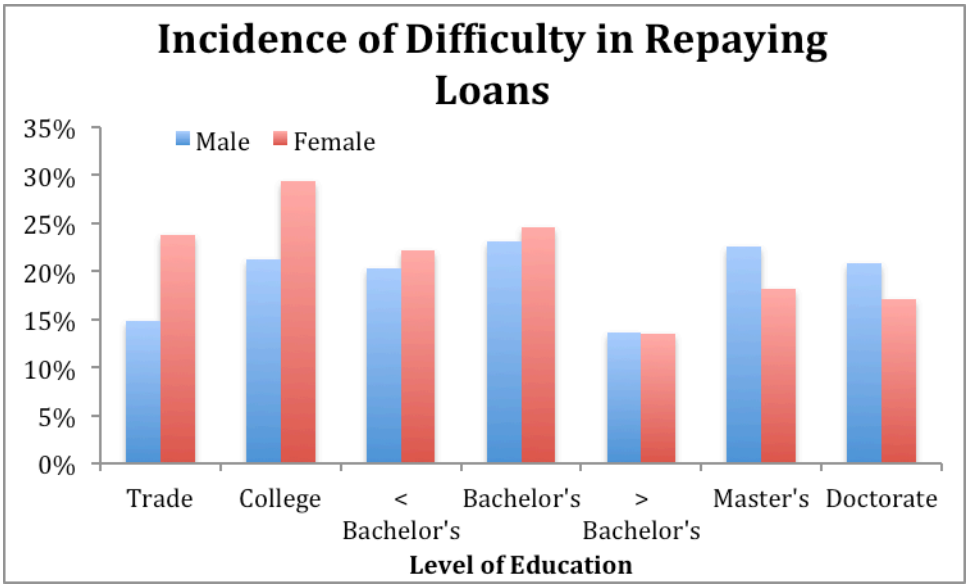


Figure 7


Incidence of Difficulty in Repaying Loans
Male
Female
35%
30%
25%
20%
15%
10%
5%
0%
Trade
College
< Bachelor's
Bachelor's
> Bachelor's
Master's
Doctorate
Level of Education