Should I Stay or Should I Go? Employability in Educational Orientations

By

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ABSTRACT

This study investigates labor outcomes for graduates of Canadian institutions, checking for which orientation has the best likelihood for labor market success. Results show that there is no credential that consistently outdoes the others in the labor market. There is no degree, diploma, or certificate that guarantees the best odds in all the outcomes investigated. While holders of university diplomas/certificates higher than Bachelor's degrees had the best relative income outcomes as well as best odds for being employed years after graduation, trade school diploma/certificate holders had the best odds for finding employment right after graduation. For mismatch odds, Bachelor's degree holders had the lowest odds of being overqualified, but Doctorate graduates had the highest odds of working in job related to their field of study. By sex, men with Bachelor's degrees consistently had the best odds best for finding first and current employment - permanent and otherwise.

DEDICATION

"Whenever you find yourself in a room where there aren't a lot of people who look like you – be it a classroom, or a boardroom , or a courtroom - remember that you have an entire community in that room with you, all of us cheering you on"

- Senator Kamala Harris (2018)

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List of Symbols, Nomenclature or Abbreviations

OECD - Organization for Economic Cooperation and Development

IRR – Internal Rates of Return

NPV – Net Present Value

PSE – Post Secondary Education

NGS – National Graduate Survey

1: Introduction

Human capital theory has long posited higher education as a means through which individuals can improve their marketability, productivity, and overall skill acquisition as they prepare to enter the labor force (Becker, 1994). Studies using this theory have empirical evidence that ties an individual's level of training to their income and other labor outcomes. These studies suggest advanced degrees as the more reliable route to success in the labor market and a higher earning potential. As a result, many individuals choose to invest in their education and training, in hopes of holding the skills and abilities that will position them for success in the job market. However, this success, in whatever metric it is measured, is not guaranteed. Positive outcomes are not often manifested immediately after graduation, neither are they always enjoyed by all groups equally or at all. These differences in outcomes, for one, exist across credential types. In terms of finding employment, a study by Statistics Canada revealed that college graduates had better chances of transitioning into the workforce than Bachelor's graduates (Allen, Harris and Butlin, 2001). Bachelor's graduates reportedly had a harder time finding work right after graduation than their college counterparts, recording lower employment rates at the time of graduation and two years after. This gap only narrowed or closed five years after graduation. There is also the issue of job security after the job has been landed. Holding a permanent job (a job with no set termination date) versus a temporary job (a job with a set termination date) differs across credential types as well (Allen, Harris, and Butlin, 2001; Finnie, 2000). Allen, Harris and Butlin (2001) revealed that while the proportion of all graduates holding permanent jobs increased five years after graduation, community college graduates were still more likely to hold permanent jobs than

Bachelor's degree graduates throughout the study period. Finnie (2000) revealed that Doctorate and Bachelor's graduates had the highest rates of temporary employment while college and Master's degree graduates had the lowest. These findings go to show that the skills and abilities gained while in school do not guarantee a graduate long-term employment or employment at all (Page, 2004; Graham, Shier, and Eisenstat, 2014). There is also no promise that the eventual job found aligns with their qualifications. Misalignments (or mismatches) could be in the form of graduates working in a job that is unrelated to their program of study or working in a job where their skills render them overqualified or underqualified. Mismatches, while more common for some groups, happen to many graduates, across fields and levels of education.

In Canada, the prevalence of mismatches is a cause for concern (Mahboubi, 2019). Frenette (2004) revealed that 30% of Canadian graduates were overqualified for their various jobs. This rate remained steady two and five years after graduation. Master's degree graduates were the most likely to be overqualified in their jobs, while Doctorate graduates were the least likely to be overqualified. Mismatch prevalence also exists outside of Canada. Quintini (2011) revealed that in the Organization for Economic Cooperation and Development (OECD), about 1 in 4 workers are overqualified, and just under 1 in 5 are underqualified. This disconnect between the skill sets possessed by new graduates and those required for the job happens for just about every credential type, across many fields of study (Finnie, 2001; Frank and Walters, 2012).

Compensation also differs by credential type. While a higher education level generally means higher earnings (see Berger & Parkin, 2009; Frenette, 2004 and Allen, Harris, and Butlin, 2001), a lot of Canadian graduates are not paid what they are worth

(Bountrogianni, 2018). The 'hush' culture around earnings further exacerbates this issue because most companies encourage salary secrecy, despite its detriments (Bond, 2018).

The central objective of this study is to reveal labor market outcomes for graduates holding university, college, and trade school degrees, certificates, or diplomas and identify which credential is most advantageous in the labor market. This research is vital for three reasons. First, the majority of literature linking educational attainment to labor outcomes only estimate its impact on earned income. Second, and despite its significance, past research has paid little attention to the labor market outcomes of trade school graduates. Most academic research focuses on outcomes – employability and otherwise - for college and university graduates alone. This means little is known about how trade school graduates fare in the labor market. Last, the existing literature that does include trade school graduates, as well as looks beyond earned income outcomes, is outdated; and therefore, the overall performance of recent graduates in the labor market is unclear.

Using the 2013 cycle of the National Graduate Survey, this study investigates labor market transitions and performance of graduates in the 2009/2010 academic year, revealing differences in how their various credentials fare in the job market. This study differs from others of its kind in that it provides up-to-date information on several labor market outcomes of graduates of all credential types. The outcomes chosen are some of the most common worries of new graduates concerning the labor market. I measure transition-to-work and labor market outcomes for graduates of all credential types across Canada, investigating which group enjoys positive outcomes relative to the others. Positive outcomes are judged using the time to employment after graduation, job

permanence, employment status, and income. I also investigate skill and field mismatches, checking for which group is less likely to be overqualified for a job and working in a job related to their field of study. This analysis is done both for the first job held right out of school and the job held at the time of the interview (4 -5 years after). In other words, first job and current job, thereby measuring the persistence of each outcome by credential type. This is expanded upon later in section 3.

The rest of the thesis is organized as follows. Section 2 provides a detailed review of related literature. Section 3 describes the datasets, variables, theoretical framework, and methodology. Section 4 presents the results. Section 5 discusses the results in the prior section and the limitations of this study. Section 6 concludes the thesis with recommendations for future research.

2: Literature Review

A key concern for majority governments concerning growth and employment is ensuring institutions produce well-rounded students that can easily transition into the labor force. The inability to secure gainful employment can be a burden on the government, incurring both social and economic costs. However, "when schooling is organized and chartered to produce human-capital development, schooling is more likely to result in economic growth" (Ramirez et al., 2006, p. 22).

It is widely reiterated in literature that higher education can lead to improved employment prospects and higher earnings at the individual level, and economic growth at the social level. Using micro-data in the Canadian Census, Vaillancourt and Bordeau-Primeau, (2002) use internal rates of return (IRR) to education from earnings to help

evaluate the value of education in the 1980s and 1990s. They found that in Canada, the highest public and private rates of return to education in 1990 and 1995 were from obtaining a Bachelor's degree. Within the category of Bachelor's degree holders, women had higher private returns than men. Their returns were 19% and 20% in 1990 and 1995 compared to 16% and 17% for men. Most interestingly, the rate of return decreased the more advanced the credential obtained was. The only exception to this was female Ph.D. recipients, who had higher private returns than their Master's degree counterparts in 1995. This study, however, only looks at income outcomes.

Finnie (2000) looks at both income and non-income outcomes using the National Graduate Survey. For income outcomes, returns to the levels of education studies were relative to each other. Earnings were substantially higher at each level of education from college through Master's. PhD holders' earnings varied however, with male PhD holders earning slightly less than their Master's counterparts (except in 1992, where the reverse was the case) and female PhD holders earning higher than their Master's counterparts. Average earnings also grew years after graduation with earning growth rates being higher at the college and Bachelor's level than at the Master's and PhD level. Men had a greater earnings growth than women especially at the college and Bachelor's levels as well. Male and female differences in growth rates were narrower, with medians showing that female graduates had a more evenly distributed earnings growth than men. For non-income outcomes, findings revealed that Ph.D. graduates had the highest rate of temporary employment, followed by Bachelor's graduates. College and Master's degree holders had the lowest rates of temporary employment. The persistence rate of temporary jobs was low however, as the percentage of graduates in temporary jobs fell 15 to 20

percent five years after. Unemployment rates were also reasonably low across all levels of education, but Master's and Ph.D. graduates had relatively high rates. Finnie (2004) uses three cycles of the National Graduates Survey to investigate school-to-work transitions among Canadian post-secondary graduates who completed their programs in 1982, 1986, and 1990. Specifically, outcomes for college, Bachelor's, Master's, and Ph.D. level graduates are investigated. Results showed evidence of 'back-tracking (i.e., graduates with advanced degrees going to back to school to receive 'lesser' degrees/diplomas). It also showed that job satisfaction scores and interprovincial mobility were highest among respondents with graduate degrees. However, of importance to this study was the finding that job-education skill match scores were highest among graduates at the Master's and Ph.D. levels. This thesis investigates skill mismatches as well, but unlike Finnie (2004), the methodology used in this thesis factors in demographic and background variables that are likely to influence labor market outcomes of graduates, including mismatches. Both studies, however, do not include outcomes for trade school graduates.

Frenette (2004) uses the National Graduate Survey to investigate the incidence, persistence, and economic returns to overqualification. Results from the logit model showed that graduates of longer programs (Bachelor's and Ph.D.) were less likely to be overqualified in their jobs than graduates of shorter programs (colleges and Master's) right after graduation and five years after. Those who were overqualified shortly after graduation remained overqualified five years after showing a pattern of persistence in the overqualification outcome. While trade school graduates were not looked at, it can be assumed from overqualification persistence patterns of other credential holders that

overqualification rates could be high among trade school graduates as well. However, this is only an assumption, that is later investigated in this study.

Bourdarbat and Chernoff (2010) use a logistics model to investigate education-job mismatches. Their findings show that a graduate's field of study, level of schooling, some employment characteristics (industry and working full-time), and even high grades can increase their chances of having their job be related to their field of study. While demographics and socioeconomic standing do not affect the graduate's chances of a match, field-specific programs like Education and Health sciences have the highest likelihood of obtaining an education-job match. Post-graduate degrees (Master's and Doctorate) had higher chances of a match than Bachelor's graduates. Unfortunately, only outcomes for Bachelor's degree, Master's degree, and Doctorate holders were investigated.

Boothby and Drewes (2006) compare different education levels, analyzing the trend in returns to education using data from the Canadian Census from 1980 to 2000. Of three orientations- trades' education, college diplomas, and university degrees – trades education revealed the lowest earnings gains, particularly for women and those without a high school diploma. They also found that the earnings premium for those who finished with a college diploma was one-third of that associated with those who finished with a Bachelor's degree for both men and women. University degrees provided the most substantial earning gains. For the results by gender, in the year 2000, women were revealed to benefit more from higher education with an earnings premium (62.1%) 10.9% higher than men's (51.2%) for Bachelor's degree holders, and an earnings premium 0.8% higher than men's for college diploma holders (men: 18.8%; women: 19.6%). Please note

that an earnings premium can be defined as how much more money an individual with a degree can earn relative to an individual without a degree. It is not to be confused with a rate of return. "With the costs of earning a college diploma considerably lower than those associated with a university degree, the difference in rates of return would be smaller and, in principle, could be reversed" (Boothby and Drewes, 2006, p.16). While an advantage of Boothby and Drewes' study is the inclusion of trade school graduates, the data used is not recent.

More studies provide insight into the performance of trade school graduates in the job market. Koptaz and Pilz (2015), for instance, reveal returns to education by occupational groups. Using six middle-class occupations spanning various fields, they reveal that those who obtain a university degree do not enjoy a higher return on investment or higher Net Present Value (NPV) than those who obtain vocational training. Put in context, these findings do not mean that those who obtain degrees do not enjoy higher earnings. It instead shows that when comparing occupations in which a degree is a norm to those that require specific training, the return on investment in education for the former is not exceptionally high. While their work mentions that framework curriculum, work experience, and taxation/social security systems strongly impact the returns on investment, the premise remains the same – vocational training brings about "equally high monetary returns" when compared to tertiary levels of education (Koptaz and Pilz, 2015).

While these studies provide insight into the performance of graduates, each study lacks a key aspect or key aspects – demographic/background controls, recent data, or inclusion of all graduate types – that are important for a wholesome and accurate picture.

3: Data and Methodology

This study uses data from the 2013 cycle of the National Graduates Survey (NGS). The NGS is a national survey that collects information on those who have graduated from Canadian public post-secondary institutions, in the year of graduation and 4 -5 years post-graduation. Questions asked can be used to determine success after graduation in terms of finding employment, the relationship of employment to the field of study, skill match, job and life satisfaction, and qualification requirements. The target population for the 2013 NGS cycle is students who graduated or completed requirements for degrees, certificates, or diplomas from a Canadian public post-secondary institution in the year 2009 or 2010. The survey excludes graduates of private universities post-secondary programs, continuing-education programs, and programs less than three months, as well as persons who live outside of Canada or the United States at the time of the survey, completed programs outside of those in the skilled trades, or completed provincial apprenticeship programs. This dataset is well suited for this analysis because it includes detailed, focused yet dynamic information on graduates over critical periods in their lives, allowing for unique and exciting insights into their lives after graduation.

This thesis seeks to contribute to the existing literature by answering the question of which credential holder enjoys all positive labor market outcomes fresh out of school and at the time of the interview (persistence) relative to the others. Positive outcomes will be defined by those respondents that enjoy a faster transition in terms of time between graduation and their first job, earn a higher income, and are more likely to find a permanent job. Other positive outcomes will be defined through the investigation of

mismatches, checking for which group is less likely to be overqualified for a job they have after graduation and more likely to work in a field related to their program of study. The descriptive analysis will provide information on key explanatory variables (namely the different education levels) and labor market outcomes such as income, permanent status, and mismatch.

3.1: Variable Definition

The sample is restricted to respondents who are Canadian citizens or permanent residents at the point of program registration, living in Canada and are of working age at the time of the interview (25-64). This leaves 23,025 observations (unweighted) in the sample.

Results are shown for the full sample and then stratified by sex. Results are also split into first job outcomes and current job outcomes. Some of the control variables used in investigating first job outcomes also differ from the controls used in investigating current job outcomes. This is expanded upon in section 3.2. Variables are grouped for this study. Provinces are categorized by their regions: Western Provinces, Atlantic Provinces, Quebec, and Ontario (*see appendix table A)*. Job qualification is grouped into "Overqualified" and "Not Overqualified". Overqualification is self-defined, with graduates answering whether they felt/feel underqualified, qualified, or overqualified in the first job or current job. See *appendix table A* for a break-down of categories.

The sample is also restricted to those who graduated with their highest degree in the year 2009 or 2010. This is because a respondent with a higher certification than the one they receive in one of the reference academic years is likely to have an advantage

over respondents who are receiving their highest level of certification in that same academic year.

Table 1: Outcome Variables and Their Definitions

Outcome Variables	Definitions
Mismatch: Overqualified (First and Current Job)	Outcome telling whether the respondent felt their skills/credentials were more advanced than what is/was required by their job.
Mismatch: Relation to Field of Study (First and Current Job)	Outcome showing whether the respondent's program of study is/was related to their job tasks/industry.
Permanent job within six months of graduation	Outcome showing whether respondent was able to find a job without a set termination date at the time of hire within six months of graduating.
Current job permanence	Outcome showing whether the respondent is currently working in a job that has no set termination date.
Time to first job post-graduation	Number of months between respondent's graduation and their first job. Excludes respondents who were already employed before graduation.
Employment	Outcome stating whether the respondent is employed (full or part-time)
Income	Salary/Wages earned in Canadian Dollars

Source: National Graduate Survey, 2013.

3.2 Descriptive Statistics and Methodology

The empirical methodology used for this survey will follow the general specification below:

$$LMO_{it} = \alpha + \beta_1 Educ_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

where LMO_{it} refers to the various Labor Market Outcomes for individual i in time t. $Educ_{it}$ is the variable of interest defining the graduate credentials. Credentials studied include: Community College Certificate/Diploma, University Diploma Below a Bachelor's degree, Trade School Certificate or Diploma, University Diploma Above a Bachelor's degree, Bachelor's Degree, Master's Degree and Doctorates. X_{it} includes individual controls for age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region

of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only). Concerning the age at graduation control, once the sample was limited to those of working age, the youngest age in the sample was 20 years. This means that those respondents were between 25 and 26 at the time of the interview, which ran from April 2013 to September 2013. Also, note that marital status could only be controlled for at the time of the interview because the 2013 cycle of the NGS does not have a variable defining a respondent's marital status at the time of graduation.

The labor market outcomes being measured are: Time between graduation and first employment, qualification mismatch (overqualified/not overqualified), the relation of a job to the program of study, income, current employment status, permanent job within six months of graduation, and current job permanence status. Where not specified, outcomes are investigated for both first and current jobs.

Three separate methodologies are used in this study. The methodology used depends on the outcome being investigated. First, dichotomous outcomes (binary dependent variables) - current employment status (employed/unemployed), qualification mismatch (overqualified/not overqualified), the relation of a job to the program of study (related/not related), and job permanence (permanent/not permanent) – are measured using a logistic regression model. Second, a survival analysis is used to investigate time between graduation and first employment, and, last, for current income outcomes, a log-level model is used, with the log form of the current income variable used as the dependent variable in an ordinary least square regression. Robust standard errors are reported for each methodology.

A logistic model is often used in modeling outcomes for a binary/dichotomous dependent variable. Results are interpreted as odds whereby an odds ratio less than one means the condition or event is less likely to occur for the reference group. An odds ratio higher than one means the condition or event is more likely to occur for the reference group, and an odds ratio equal to one means the odds of a condition or event happening to the reference group and base group are the same.

A survival analysis is used in measuring time to an event. Responses are regarded as survival times or event times. A Cox regression, or proportional hazard model for survival time, provides insight into the effect of explanatory variables on the time it takes the event of interest to occur. Coefficients in this regression are measures of how the hazard changes with changes in the independent variable. For this study, the 'event' is finding a job, and the 'time' is the number of months it takes to find a job. A positive coefficient tells how much more likely the event will happen, and a negative one tells how much less likely the event will happen.

Log-level regressions are a convenient way of investigating the percentage increase or decrease a one-unit change in an independent variable affects the dependent variable. Coefficients are exponentiated, subtracted from one, and multiplied by 100 in order to get the percentage change (Ford, 2018).

Descriptive statistics for the labor market outcomes measured in this thesis are shown in Table 2 below:

Table 2: Means and Standard Deviations for Labor Market Outcomes

Variable	Community College	University Diploma below a Bachelor's degree	Trade School	University Diploma above a Bachelor's degree	Bachelor's Degree	Master's Degree	Doctorate
Time to first job (months)	10.412 *(0.052)*	16.352 *(0.161)*	7.424 *(0.079)*	13.766 *(0.232)*	12.245 *(0.038)*	11.677 *(0.088)*	10.071 *(0.199)*
Overqualified							
First Job	0.494 *(0.001)*	0.528 *(0.005)*	0.513 *(0.004)*	0.702 *(0.007)*	0.289 *(0.001)*	0.529 *(0.003)*	0.338 *(0.008)*
Current Job	0.479 *(0.002)*	0.469 *(0.004)*	0.476 *(0.003)*	0.595 *(0.006)*	0.285 *(0.001)*	0.481 *(0.003)*	0.317 *(0.007)*
Related to field of study First Job	0.691 *(0.002)*	0.593 *(0.004)*	0.748 *(0.003)*	0.736 *(0.005)*	0.636 *(0.001)*	0.741 *(0.002)*	0.793 *(0.006)*
Current Job	0.667 *(0.002)*	0.686 *(0.004)*	0.618 *(0.003)*	0.728 *(0.006)*	0.632 *(0.001)*	0.715 *(0.002)*	0.745 *(0.006)*
Permanent Job within six months of graduation	0.414 *(0.002)*	0.383 *(0.004)*	0.504 *(0.003)*	0.369 *(0.006)*	0.362 *(0.001)*	0.394 *(0.003)*	0.275 *(0.006)*
Current Job Permanent	0.690 *(0.002)*	0.670 *(0.004)*	0.671 *(0.003)*	0.645 *(0.006)*	0.636 *(0.001)*	0.658 *(0.003)*	0.490 *(0.007)*
Current Income (> $50,000)	0.487 *(0.002)*	0.569 *(0.004)*	0.461 *(0.003)*	0.704 *(0.006)*	0.523 *(0.001)*	0.747 *(0.002)*	0.727 *(0.006)*
Employed	0.855 *(0.001)*	0.890 *(0.004)*	0.844 *(0.002)*	0.891 *(0.004)*	0.864 *(0.001)*	0.854 *(0.002)*	0.915 *(0.004)*

Source: National Graduate Survey, 2013. Dichotomous variables include: Related to field of study, Permanent, Overqualified, and Employed. Weighted using weight variable provided in the 2013 National Graduates Survey

Concerning the number of months to first job, it should be noted that this variable does not account for graduates who, for whatever reason, were not seeking employment after graduation. That said, there is an average of 16 months between graduation and first employment for graduates with diplomas below a Bachelor's degree. This is the most extended amount of time across all credentials. Trade school graduates have the smallest gap (7 months). Table 2 also reveals that over time, the average number of graduates reporting working in a field related to their program of study reduces. The most significant difference in averages between first and current job happens for Master's degree holders. Doctorate holders report the highest average for both first and current job (79.3% and 74.5%). Diploma above Bachelor's degree holder reports the lowest average for the first job related to field of study outcome (59.3%) and trade school certificate/diploma holder report the lowest for current job outcomes (61.8%). Over 50% of trade school graduates reported having a permanent job within six months of

graduation compared to 27.5% of Doctorate holders. The lower average among the more advanced credentials should be noticed as well. A report by Statistics Canada revealed that the number of temporary/contract workers has jumped in recent years. In 2018, 13.3% of all employees were temporary, up from 11.8% in 1998 (Statistics Canada, 2019). Most people in these fixed-term jobs are in the professional workforce, and their share is highest in the agriculture (27%), information culture and recreation (26%), and education (26%) sectors (Bourbeau and Saunders, 2019). This explains why just 27.5% of Doctorate holders report a permanent job within six months of graduation because a higher percentage of Ph.D. holders go on to careers in education. The same trend is seen for current job outcomes as well, although a higher percentage report permanent jobs after some time.

The lowest proportion of graduates earning above CAD $50,000 is found among trade school graduates. The highest proportion is found among graduate degree holders. For trade school graduates, it should, however, be noted that it is common practice for trades workers to receive payment in cash ('off the books'), so this figure might not paint the most accurate picture. Over 80% of graduates across all credentials reported being currently employed, the highest proportion being among Doctorate holders (91.5%).

So far, Doctorate holders seem to be doing the best. Aside from the low proportion of permanent job outcomes, these graduates are consistently in the top two of credentials enjoying positive labor market outcomes.

Table B in the appendix provides descriptive statistics for the variables of interest by the control variables. Variables of interest for this project are the various educational orientations.

4: Empirical Results

This section explains, in detail, the results of this study. It answers the question of which educational orientation enjoys each positive labor market outcome relative to Bachelor's degree holders. Regression results are shown for the overall sample and by sex for the variable of interest: graduate credentials. Full regression tables, complete with controls, are available in the appendix. The outcomes investigated are: odds of being overqualified in first and current job, odds of respondents having their first and current job related to their field of study, odds of respondents having their first and current job be permanent, 'risk' of finding a permanent job within six months of graduation, odds of being currently employed, and current income outcomes by orientation.

4.1: Mismatch: Odds of being Overqualified by Educational Orientation

Table 3: Odds of being Overqualified in First Job by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	2.490* *(0.136)*	2.802* *(0.233)*	2.298* *(0.167)*
University Certificate or Diploma below Bachelor's degree	3.388* *(0.378)*	2.951* *(0.518)*	3.660* *(0.526)*
Trade School Certificate or diploma	2.564* *(0.238)*	2.845* *(0.387)*	2.365* *(0.304)*
University Certificate or Diploma above Bachelor's degree	9.232* *(1.507)*	8.454* *(0.231)*	9.738* *(1.990)*
Master's Degree	2.886* *(0.147)*	3.027* *(0.244)*	2.775* *(0.183)*
Doctorate Degree	1.609* *(0.118)*	1.527* *(0.171)*	1.632* *(0.159)*
N	15090	8865	6620

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Respondents who answered "Not Applicable" are left out of the results Coefficients are reported as odds ratios. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Table 4: Odds of being Overqualified in Current Job by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	2.208* *(0.094)*	2.517* *(0.166)*	2.064* *(0.117)*
University Certificate or Diploma below Bachelor's degree	2.700* *(0.234)*	2.500* *(0.342)*	2.835* *(0.316)*
Trade School Certificate or Diploma	2.078* *(0.154)*	2.166* *(0.234)*	2.064* *(0.214)*
University Certificate or Diploma above Bachelor's degree	6.507* *(0.827)*	5.896* *(1.270)*	6.842* *(1.076)*
Master's Degree	2.377* *(0.097)*	2.503* *(0.161)*	2.317* *(0.123)*
Doctorate Degree	1.373* *(0.084)*	1.314* *(0.122)*	1.412* *(0.116)*
N	23025	9505	13520

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Respondents who answered "Not Applicable" are left out of the results Coefficients are reported as odds ratios. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Tables 3 and 4 present the results of a logistic regression with a binary dependent variable stating whether (or not) a respondent was overqualified for their first and current job post-graduation. Table 3 reports a smaller sample size than Table 4 because the variable defining respondent's feeling of overqualification existed solely for current job

outcomes. Therefore, results in this table were limited to those who were still in the first job post-graduation at the time of the interview. For the full sample, each educational orientation - except for those who graduated with a diploma considered higher than that of a Bachelor's degree - is approximately 2 to 3 times more likely to feel overqualified than a Bachelor's degree holder. The odds of respondents holding diplomas higher than a Bachelor's degree to be overqualified is 7 to 9 times more. All odds ratios reported are significant at the 10% level. The same runs true when the sample is separated by sex. Odds ratios are higher for women who graduated with diplomas above or below Bachelor's degrees as well as for women with Doctorates. For men, odds ratios are higher for those that graduated with a community college diploma, trade school diploma and a Master's degree. It should be noted also that odds ratios are lesser in the respondent's current job than in their first job across all orientations and for both sexes, indicating that graduates find jobs that better fit their level of education as time passes.

Because all odds are higher than that of a Bachelor's degree holder, Bachelor's degree holders – overall and by sex – are the group least likely to be overqualified in their first and current jobs.

4.2: Mismatch: Odds of Job being Related to Field of Study by Educational Orientation

Table 5: Odds of First Job being Related to Field of Study by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	1.018 *(0.044)*	0.832* *(0.055)*	1.166* *(0.067)*
University Certificate or Diploma below Bachelor's degree	0.826* *(0.074)*	0.843 *(0.120)*	0.833 *(0.096)*
Trade School Certificate or Diploma	1.166* *(0.094)*	1.036 *(0.122)*	1.278* *(0.145)*
University Certificate or Diploma above Bachelor's degree	1.288* *(0.165)*	1.180 *(0.253)*	1.385* *(0.222)*
Master's Degree	1.459* *(0.063)*	1.336* *(0.091)*	1.588* *(0.089)*
Doctorate Degree	2.600* *(0.189)*	2.415* *(0.266)*	2.812* *(0.275)*
N	23025	9505	13520

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Respondents who answered "Not Applicable" are left out of the results. Coefficients are reported as odds ratios. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Table 6: Odds of Current Job being Related to Field of Study by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	0.748* *(0.033)*	0.693* *(0.047)*	0.798* *(0.047)*
University Certificate or Diploma below Bachelor's degree	0.838* *(0.078)*	1.030 *(0.150)*	0.747* *(0.089)*
Trade School Certificate or Diploma	0.511* *(0.039)*	0.476* *(0.054)*	0.551* *(0.058)*
University Certificate or Diploma above Bachelor's degree	1.288* *(0.170)*	1.270 *(0.275)*	1.325* *(0.222)*
Master's Degree	1.270* *(0.055)*	1.190* *(0.082)*	1.359* *(0.077)*
Doctorate Degree	1.634* *(0.111)*	1.837* *(0.193)*	1.543* *(0.139)*
N	23025	9505	13520

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Coefficients are reported as odds ratios. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Tables 5 and 6 report the odds of respondents first and current job being related to their field of study in school. Leaving out Community College certificate or diploma holders and its statistically insignificant odds ratio, the odds of having one's first job out of school be related to their field of study - relative to a Bachelor's degree holder - increases as the graduate's program becomes more technical. A trade school certificate or diploma holder is 16% more likely than a Bachelor's degree holder to have his/her first job out of school be related to their field. University certificate or diploma holders above the Bachelor's degree (29%), Master's degree holders (46%), and Doctorate degree holders (2.6 times), are all more likely as well. It is, however, 17% less likely for university certificate or diploma holders below the Bachelor's degree to have their first job post-graduation be related to their field of study. For men, the increasing trend repeats itself, but this time community college certificate or diploma holders are included. Majority of the results are however statistically insignificant at the 10% level. For women, the odds ratio pattern of the full sample repeats itself, with the exception of the significant result for community college certificate or diploma holders. Comparing the two sexes, while female community college certificate or diploma holders are 17% more likely to have a job related to their field compared to female Bachelor's degree holders, their male counterparts are 17% less likely. In fact, for educational levels that have statistically significant odds ratios in both sexes, women are more likely than men to have their first job out of school be related to their field of study- 34% more likely for female community college certificate or diploma holders, 25% more likely for female Master's degree holders, and 19% more likely for female Doctorate degree holders.

In the respondent's current job, the full sample results reveal that holders of degrees considered below a Bachelor's degree – community college certificate or diploma (25%), university certificate or diploma less than Bachelor's degree (16%), and trade school certificate or diploma (49%) – are less likely than Bachelor's degree holders to have their current job be related to their field of study. This is a change from their first job outcome results in the same orientations. However, those with degrees considered higher than a Bachelor's are – like with the first jobs -more likely to have their current jobs be related to their field of study relative to Bachelor's degree holders. While university certificate or diploma holders (29%) show the same odds of their first and current job being related to their field of study, Master's degree and Doctorate holders show relatively lesser odds. Female graduates are also less likely than their Bachelor's degree counterpart to work in an industry related to their program of study as time passes. Results for men however, vary. Male Doctorate, community college and trade school graduates were less likely, while other were more likely.

4.3: Odds of Holding a Permanent Job by Educational Orientation

This section provides results on the job permanence status of graduates. The variable defining job permanence investigates whether a graduate's first job out of graduation or current job has a set termination date. Jobs without a set termination date at the time of hire are considered permanent.

Table 7: Odds of finding a permanent job within six months of graduation by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	1.029 *(0.043)*	0.954 *(0.062)*	1.089 *(0.061)*
University Certificate or Diploma below Bachelor's degree	0.899 *(0.080)*	0.979 *(0.139)*	0.881 *(0.101)*
Trade School Certificate or Diploma	1.368* *(0.101)*	1.179 *(0.128)*	1.609* *(0.164)*
University Certificate or Diploma above Bachelor's degree	1.044 *(0.123)*	1.149 *(0.236)*	1.004 *(0.145)*
Master's Degree	1.025 *(0.041)*	0.887* *(0.057)*	1.139* *(0.058)*
Doctorate Degree	0.759* *(0.047)*	0.757* *(0.071)*	0.772* *(0.065)*
N	23025	9505	13520

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Coefficients are reported as odds ratios. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

When considering the odds of each respondent in the educational orientations having their first job out of school be a permanent job relative to Bachelor's degree holders, very few of the results are statistically significant. That said, full sample results show that trade school certificate or diploma holders are 36% (61% for women) more likely than a Bachelor's degree holder to have their first job out of school be permanent. Doctorate degree holders are 24% less likely than Bachelor's degree holders to have their first job post-graduation be permanent. Comparing the results in table 8 by sex, women with graduate degrees are more likely than their male counterparts to have their first job after graduation be permanent. This result is, of course, relative to Bachelor's degree holders in each respective sex.

Table 8: Odds of Current Job being Permanent by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	0.850* *(0.038)*	0.842* *(0.060)*	0.879 *(0.051)*
University Certificate or Diploma below Bachelor's degree	1.258* *(0.123)*	1.207 *(0.188)*	1.334 *(0.168)*
Trade School Certificate or Diploma	0.839* *(0.065)*	0.683* *(0.078)*	1.030* *(0.110)*
University Certificate or Diploma above Bachelor's degree	1.324* *(0.167)*	1.076 *(0.231)*	1.491 *(0.233)*
Master's Degree	0.953 *(0.039)*	0.844* *(0.057)*	1.041* *(0.055)*
Doctorate Degree	0.542* *(0.033)*	0.489* *(0.046)*	0.588 *(0.047)*
N	**23025**	**9505**	**13520**

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Coefficients are reported as odds ratios. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

For the full sample results that are statistically significant results in both first and current job outcomes, odds of getting a permanent job decline with time. Table 4.6 reveals that community college (15%), trade school (16%), Master's (6%), and Doctorate (46%) graduates are all less likely than a Bachelor's degree graduate to have their current job be permanent. These results are the same but to a lesser degree for men. Female Master's degree holders, however, are 4% more likely than a female Bachelor's degree holder to hold a permanent job in the survey interview year.

4.4: Employment by Educational Orientation

This section reveals results for two types of employment outcomes: Time between graduation and first job after graduation (survival analysis) and odds of being currently employed.

Table 9: Time to finding a job after graduation by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	1.223* *(0.028)*	1.231* *(0.041)*	1.225* *(0.039)*
University Certificate or Diploma below Bachelor's degree	0.900* *(0.044)*	0.898 *(0.067)*	0.908 *(0.061)*
Trade School Certificate or Diploma	1.405* *(0.061)*	1.398* *(0.090)*	1.453* *(0.085)*
University Certificate or Diploma above Bachelor's degree	0.930 *(0.061)*	1.084 *(0.105)*	0.854* *(0.071)*
Master's Degree	1.010 *(0.023)*	0.947 *(0.034)*	1.040 *(0.031)*
Doctorate Degree	1.128* *(0.038)*	1.081 *(0.057)*	1.127* *(0.051)*
N	**15135**	**6425**	**8715**

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who, at the time of the interview, were Canadian citizens or permanent residents and between the ages of 25 and 64. Results reported are hazard ratios from a survival analysis cox regression. 'Failures' are the respondents that found eventually found a job. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Results from the survival analysis reveal that the 'risk' of finding a job after graduation are higher for community college (22%), trade school (41%), and Doctorate degree (13%) graduates than they are for Bachelor's degree graduates. However, graduates holding university certificates or diplomas below Bachelor's degrees are 10% less likely than Bachelor's degree graduates to find a job. Men with community college and trades certificates or diplomas have a 23% and 40% higher chance of finding work than men with Bachelor's degrees. Women with community college certificates and diploma, Master's degrees and trade school certificates and diploma were 23%, 4% and 45% more likely to find a job than fellow female Bachelor's degree graduates.

Table 10: Odds of being Currently Employed by Educational Orientation

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	0.678* *(0.040)*	0.719* *(0.067)*	0.681* *(0.052)*
University Certificate or Diploma below Bachelor's degree	0.890 *(0.116)*	1.028 *(0.222)*	0.850 *(0.139)*
Trade School Certificate or Diploma	0.461* *(0.046)*	0.424* *(0.065)*	0.498* *(0.068)*
University Certificate or Diploma above Bachelor's degree	1.529* *(0.315)*	1.446 *(0.515)*	1.568* *(0.398)*
Master's Degree	0.873* *(0.050)*	0.764* *(0.070)*	0.962 *(0.072)*
Doctorate Degree	1.208* *(0.112)*	1.153 *(0.169)*	1.271* *(0.155)*
N	**23025**	**9505**	**13520**

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Coefficients are reported as odds ratios. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Table 10 reveals odds ratios for current employment by educational orientation. For the overall sample, all orientations that are considered 'less than' a Bachelor's degree have a lower likelihood of being employed relative to a Bachelor's degree holder. Limiting to statistically significant results, community college and trade school certificate or diploma holders have a lesser chance - 32% and 54%- than Bachelor's degree graduates of being employed at the time of the interview which is 3 to 4 years post-graduation. Looking at degrees considered above a Bachelor's degree, a university certificate or diploma holder and Doctorate degree holder are 53% and 21% more likely than a Bachelor's degree holder to be currently employed. A Master's degree holder, however, is 13% less likely (24% for men in the same orientation). Both male and female community college and trade school certificate or diploma holders have a lesser chance than Bachelor's graduates of being currently employed. Female community college graduates are approximately 4% less likely to be currently employed than men in the same orientation, but their trade school counterparts are 8% more likely than men in the same orientation. Women who graduated with Doctorates and university diplomas

considered above Bachelor's degree in the reference academic year are 27% and 57% more likely to be currently employed than their Bachelor's degree counterparts.

4.5: Current Income by Educational Orientation

Table 11: Effect of Educational Orientation on Current Income outcomes, coefficients.

Educational Orientation	Overall	Sex	
		Male	Female
Community College Certificate or Diploma	-0.949* *(0.107)*	-1.204* *(0.158)*	-0.807* *(0.145)*
University Certificate or Diploma below Bachelor's degree	0.130 *(0.210)*	0.136 *(0.327)*	0.111 *(0.274)*
Trade School Certificate or Diploma	-1.706* *(0.199)*	-1.640* *(0.277)*	-1.814* *(0.288)*
University Certificate or Diploma above Bachelor's degree	1.230* *(0.235)*	1.036* *(0.373)*	1.365* *(0.303)*
Master's Degree	1.141* *(0.087)*	0.967* *(0.132)*	1.260* *(0.115)*
Doctorate Degree	1.155* *(0.113)*	0.911* *(0.165)*	1.317* *(0.156)*
N	**23025**	**9505**	**13520**

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Dependent variable is the log of current income as reported by respondents. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Table 12: Effect of Educational Orientation on Current Income outcomes, percentages.

Educational Orientation	Overall (%)	Sex	
		Male (%)	Female (%)
Community College Certificate or Diploma	-61.287*	-70.001*	-55.381*
University Certificate or Diploma below Bachelor's degree	12.190	12.716	10.506
Trade School Certificate or Diploma	-81.910*	-80.602*	-83.700*
University Certificate or Diploma above Bachelor's degree	70.700*	64.510*	74.462*
Master's Degree	68.050*	61.978*	71.635*
Doctorate Degree	68.490*	59.788*	73.206*
N	**23025**	**9505**	**13520**

Notes: In accordance with requirements by the Research Data Center sample sizes have been rounded to the nearest 5. For the full sample, a dummy for males is included. The sample includes respondents who at the time of the interview were Canadian citizens or permanent residents and between the ages of 25 and 64. Dependent variable is the log of current income as reported by respondents. Robust standard errors are reported beneath coefficients in italics and parenthesis. Base group are Bachelor's degree holders. Control variables include age at graduation (age 20 and up & first job outcomes only), age at interview (current job outcomes only), sex, marital status (current job outcomes only), debt at graduation (first job outcomes only) debt at the time of interview (current job outcomes only), ethnicity, education since graduation (current job outcomes only) field of study, work experience, education since graduation (current job outcomes only), region of institution (first job outcomes only), and region of residence at the time of interview (current job outcome only).Asterisks indicate significance at the 10% level.

Income outcomes are as one might expect. Looking at statistically significant results alone, those who graduated with degrees, certificates or diplomas higher than a

Bachelor's degree experience higher earnings, and those below experience lower earnings. This is true for the overall sample and both sexes. For instance, trade school graduates earn 82% less than Bachelor's degree graduates. This can be compared to the 61% earnings decrease that community college certificate or diploma holders earn relative to the same group. Master's and Doctorate degree holders earn about 68% more, while those with university certificates or diplomas above Bachelor's degrees earn about 71% more. Between the sexes, female community college graduates earn 55% less compared to 70% decrease among men. The gap in earnings between men that graduate with university certificates or diplomas above Bachelor's degrees, Master's degrees and Doctorate degrees and men that graduate with Bachelor's degrees is not as wide as it is for women in those same categories. Men in those groups experience 65%, 62% and 60% higher earnings than Bachelor's degree holders compared to 74%, 72% and 73% for women in the same groups.

5: Discussion

The objective of this study is to reveal and compare labor market outcomes for graduates holding post-secondary certificates, diplomas and degrees. The outcomes studied are the most common questions students ask before they apply to or enroll in any educational program. This sort of research is increasingly important in an era where new policies are needed to help upcoming generations prepare for the needs and requirements of an ever-evolving labor market. An evaluation of the performance of prior cohorts - at the time of graduation and years after - helps guide interventions, determining which groups efforts should be focused on, and when these efforts should be put in place.

A common concern among graduates is having to work in a job that they feel overqualified for. Feelings of overqualification can come either from their educational qualification(s) being more than is required for the position or their salary being below the average earned in their respective fields or degree type. A C.D Howe Institute study revealed that 13% of Canadian workers suffer from a skills mismatch, with workers that have higher educational attainments being more likely to be over-skilled (Mahboubi, 2019). Results from this study partially corroborate these results. Of the orientations, those that graduated with university certificates or diplomas above a Bachelor's degree had the highest odds of feeling overqualified in their first and current jobs relative to Bachelor's degree graduates. However, those that graduated with Bachelor's degrees had the smallest odds. That said, over time, these odds reduce across all orientations which leads one to believe both male and female respondents were able to find better suited roles or jobs as they became more comfortable with being in labor market. An important thing to note about mismatches is that they also vary by field of study. Arts and Humanities as well as Social and Behavioral Sciences graduates are more likely to be overqualified than graduates from the majority of Science, Technology, Engineering and Mathematics (STEM) programs (Statistics Canada, 2017). The appendix of this thesis contains mismatch results by field of study.

Another concern among graduates is finding a job that is related to their field of study. While this varies by program, – a Statistics Canada study revealed students in nursing, engineering, computer science and education were more likely than others to work in their field- there is still a considerable amount of graduates that choose industries unrelated to their program of study once they graduate (Statistics Canada, 2017). This

study, however, only speaks for Bachelor's degree graduates. Results from this thesis show that while some graduates choose to work outside of their fields of study, the likelihood to do so reduces as they advance their education. Women are also more likely than men to work in a field related to their field of study. However, when comparing first job and current job odds, the chances of working in a field related to one's field of study drops for women and the overall sample but were varied for men.

Overall, the percentage of employees with permanent jobs have been on decline in Canada (Morissette, 2018). Looking at the numbers by sex, however, the percentage of women with permanent jobs does not demonstrate the same downward trend seen among men (Morissette, 2018). Results from this study reflect that as well. Women with graduate degrees in this study were more likely than men in the same groups to hold a permanent job.

Employment and income outcomes are as one might expect. Orientations considered below a Bachelor's degree were less likely than those with a Bachelor's degree to be currently employed (see also Statistics Canada Table 14-10-0019-01). There were no noticeable trends in the results on current employment outcomes by sex. Income outcomes showed that orientations below a Bachelor's degree were more likely to earn less than Bachelor's degree graduates. It is, however, interesting to note once more that the gap in earnings between men that graduate with university certificates or diplomas above Bachelor's degrees, Master's degrees and Doctorate degrees and men that graduate with Bachelor's degrees is not as wide as it is for women in those same categories.

Table 13: Ranking of Credentials by their performance in labor market outcomes: Overall Sample

Variable	Community College	University Diploma below a Bachelor's degree	Trade School	University Diploma above a Bachelor's degree	Bachelor's Degree	Master's Degree	Doctorate
Time to first job (shortest time)	2nd*	7th*	1st*	6th	5th	4th*	3rd*
Overqualified (least likely)							
First Job	3rd*	6th	4th*	7th*	1st*	5th*	2nd*
Current Job	4th*	6th*	3rd*	7th*	1st*	5th	2nd*
Related to field of study (most likely)							
First Job	5th	7th*	4th*	3rd*	6th	2nd*	1st*
Current Job	6th*	5th*	7th*	3rd*	4th*	2nd*	1st*
Permanent Job within six months of graduation (most likely)	3rd	6th	1st*	2nd	5th	4th	7th*
Current Job Permanent (most likely)	5th*	2nd*	6th*	1st*	3rd	4th	7th*
Currently Employed (most likely)	6th*	4th	7th*	1st*	3rd	5th*	2nd*
Current Income (largest % increase)	6th*	4th	7th*	1st*	5th	3rd*	2nd*

Source: National Graduate Survey, 2013. Asterisks indicate significance of result at the 10% level. Results by sex available in appendix. Bachelor's degree graduates are a reference group.

Looking at the results displayed above, there is no credential that consistently outdoes the others in the labor market. There is no degree, diploma or certificate that guarantees the best odds in all outcomes of the labor market. In this thesis , a credential (university diploma above Bachelor's degree) has the best odds in at most three outcomes relative to other degrees in the overall sample. Keeping that in mind, a potential graduate would have to pick their most preferred (feared) post-graduate outcome and work toward getting the credential that gives them the best (least) likelihood of achieving that outcome.

If a potential graduate's biggest fear post-graduation is a skill or field mismatch, they should aim toward getting a Bachelor's degree. Bachelor's degree holders are the least likely to feel overqualified in their jobs. If the fear is a job-field of study mismatch, they should aim for a Doctorate. Majority Doctorate holders choose careers within

educational services working in research and/or as professors (Desjardins and King, 2011). These positions often have a strict requirement of a Doctorate in a specific field, so it is therefore harder to be mismatched in them. Also, the large investment required by a doctoral education is enough to motivate its holder to find a job within the field and convince employers in the field about the dedication of the candidate to the field enough to hire them.

For students concerned with finding permanent employment soon (within six months) after graduation, trade school might be the route to take. However, if that graduate is male, they might want to stick with a Bachelor's degree. The regression outcome of finding a permanent job within six months of graduation showed that for the overall sample and female graduates, holding a trade school credential gave the highest odds of finding work within six months of graduation. For male graduates, however, it was a Bachelor's degree. For those worried about getting better odds of being employed, permanently or otherwise, a few years after graduation, getting a diploma or certificate above a Bachelor's degree might be a good idea. Male graduates, however, only need their Bachelor's degree while women need a university diploma or certificate above a Bachelor's to stay employed (this becomes a Master's degree if the woman's preferred employment type is permanent employment).

If a student's main concern is just finding a job – permanent or otherwise – they should look no further than a trade school diploma or certificate program. Time to job outcomes revealed that trade school graduates had the best odds of finding a job after graduation. This was true for the overall sample and across both sexes.

If income is a major concern for a student, an advanced degree is a good idea. Each credential above a Bachelor's degree showed an increase in earnings. Most interestingly, however, is the fact that the student might not have to look as far as (or spend as much on) a Master's or Doctorate degree. Result show that graduates with a university diploma above a Bachelor's degree have the highest increase in earnings for the overall sample and across both sexes.

While there is a lot of value to credentials, there are other factors that give the graduate a leg up in the job market as far as the outcomes investigated are concerned. Tables C to T in the appendix reveal full regression results for each outcome studied. Factors like having some education since graduation, work experience, and being married all improve chances of getting a positive outcome in the labor market as well. Even though these factors vary by outcome, they prove that while credentials get its holder a 'foot in the door' through their positive performance in some of the outcomes studied, success in the labor market can go beyond the credential.

6: Conclusion

Concerning mismatches, training opportunities and labor market policies that encourage flexibility and mobility, skills development is one avenue to curb mismatches. These become more important when we acknowledge sectorial advancements in society, and Canadian regions' ongoing battle with the issue of aging populations. Research that provides insight to how recent graduates are performing in the job market is useful for policy experts in establishing the necessary interventions. Determining which educational orientations experience positive outcomes relative to others helps narrow down the nature of this help, and results from this thesis guide that. There are three limitation to this

study. First, it does not provide outcomes by province or region. Further research should be done on labor market outcomes by province or region. It would be far more specific, shedding light on where provincial policy makers need to direct their efforts for graduates. Second, there is a self-selection problem that happens with this type of research. People that choose to do Ph.D. might not be the same people that choose to go to trade school. Using the income outcome as an example, degree or not some people might be positioned to earn more than others. This can either be due to certain personality characteristics or demographics/background variables that position them to do better regardless of a degree.

References

Allen, M., Harris, S., & Butlin, G. (2001). Finding Their Way: A Profile of Young Canadian Graduates. Cat. No. 81-595-MIE2003003. Ottawa: Statistic Canada.

Becker, G. S. (1994). Human Capital. *The University of Chicago Press*, 15–28. doi: 10.7208/chicago/9780226041223.001.0001

Berger, J. & Parkin, A. (2009, November 1). The Value of a Degree: Education, Employment and Earnings in Canada: chapter 1 of Price of knowledge. Retrieved February 16, 2020, from http://hdl.handle.net/1974/5899

Bond, C. (2018, July 30). There's A Great Reason You Should Talk About Salary With Your Co-Workers. Retrieved February 16, 2020, from https://www.huffingtonpost.ca/entry/why-should-share-salary-with-coworkers_n_5b5b8bdfe4b0b15aba98f053

Boothby, D. & Drewes, T. (2006). Postsecondary Education in Canada: Returns to University, College and Trades Education. *Canadian Public Policy. 32. 1-22. 10.2307/3552240.*

Boudarbat, B., & Chernoff, V. (2010). The Determinants of Education-Job Match Among Canadian University Graduates. *SSRN Electronic Journal*. doi: 10.2139/ssrn.1611764

Bountrogianni, M. (2018, May 17). Overeducated and underpaid? How to address mal-employment. Retrieved February 16, 2020, from https://www.theglobeandmail.com/report-on-business/careers/leadership-lab/overeducated-and-underpaid-how-to-address-mal-employment/article31462984/

Bourbeau, E., & Saunders, D. (2019, May 14). Temporary employment in Canada, 2018. Retrieved February 22, 2020, from https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019034-eng.htm

Desjardins, L., & King, D. (2011). Expectations and Labour Market Outcomes of Doctoral Graduates from Canadian Universities. Retrieved February 27, 2020, from http://odesi1.scholarsportal.info/documentation/PHIRN/SED/81-595-2011089-eng.pdf

Finnie, R. (2000). From School to Work: The Evolution of Early Labour Market Outcomes of Canadian Postsecondary Graduates. *Canadian Public Policy 26: 197 – 224.*

Finnie, R. (2001). Fields of Plenty, Fields of Lean: The Early Labour Market Outcomes

of Canadian University Graduates by Discipline. *Canadian Journal of Higher Education 31 (1): 141 – 76.*

Finnie, R. (2004). The school-to-work transition of Canadian post-secondary graduates: a dynamic analysis. *Journal of Higher Education Policy and Management*, *26*(1), 35–58. doi: 10.1080/1360080042000182528

Frank, K. & Walters, D. (2012). Exploring the Alignment between Postsecondary Education Programs and Labour Market Outcomes. *Canadian Journal of Higher Education 42 (3): 93 – 115.*

Ford, C. (2018) University of Virginia Library Research Data Services Sciences. Retrieved February 4, 2020, from https://data.library.virginia.edu/interpreting-log-transformations-in-a-linear-model/

Frenette, M. (2004). The Overqualified Canadian Graduate: The Role of the Academic Program in the Incidence, Persistence, and Economic Returns to Overqualification. *Economics of Education Review*, *23*(1), 29–45.

Graham, J., Shier, M., & Eisenstat, M. (2014, June 30). Misalignment between Post-Secondary Education Demand and Labour Market Supply: Preliminary Insight from Young Adults on the Evolving School to Work Transition. Retrieved February 16, 2020, from https://eric.ed.gov/?id=EJ1037738

Koptaz, S., & Pilz, M. (2015). The Academic Takes it All? A Comparison of Returns to Investment in Education between Graduates and Apprentices in Canada. *International Journal for Research in Vocational Education and Training (IJRVET), 2*(4), 308–325. doi: DOI: 10.13152/IJRVET.2.4.4

Mahboubi, P. (2019). Bad Fits: The Causes, Extent and Costs of Job Skills Mismatch in Canada. *SSRN Electronic Journal*, (552).

Morissette, R. (2018, November 30). Changing Characteristics of Canadian Jobs, 1981 to 2018. Retrieved February 3, 2020, from https://www150.statcan.gc.ca/n1/pub/11-626-x/11-626-x2018086-eng.htm

Page, L. (2014, May 19). How to deal with employability anxiety. Retrieved February 16, 2020, from https://www.theguardian.com/education/2014/may/19/employment-anxiety-students-job-worry

Quintini, G. (2011), "Right for the Job: Over-Qualified or Under-Skilled?", *OECD Social, Employment and Migration Working Papers*, No. 120, OECD Publishing, Paris, https://doi.org/10.1787/5kg59fcz3tkd-en.

Ramirez, F. O., Xiaowei, L., Evan, S., Meyer, J. W., 2006. Student achievement and national economic growth. *American Journal of Education, 113*.

Statistics Canada. (2017). Are young Bachelor's degree holders finding jobs that match their studies? Retrieved February 3, 2020, from https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016025/98-200-x2016025-eng.cfm doi: 10.2139/ssrn.3457523

Statistics Canada. (2019, May 14). Temporary employment in Canada. Retrieved February 22, 2020, from https://www150.statcan.gc.ca/n1/daily-quotidien/190514/dq190514b-eng.htm

Statistics Canada. Table 14-10-0019-01. Labour force characteristics by educational attainment, monthly, unadjusted for seasonality

Vaillancourt, F. & Bourdeau-Primeau, S. (2002). Returns to University Education in Canada Using New Estimates of Program Costs, in Renovating the Ivory Tower, ed. D. Laidler. *Toronto: C.D. Howe Institute*

Appendix

TABLE A: Variable List and their recoding using the NGS 2013 Cycle

Variable	Original Categories	Grouped Categories
Province	Alberta British Columbia Manitoba Saskatchewan	Western Provinces
	New Brunswick Newfoundland Prince Edward Island Nova Scotia	Atlantic Provinces
	Quebec	Quebec
	Ontario	Ontario
Overqualification	No education required/needed	Not overqualified
	Respondent has less than Respondent has same as required	
	Respondent has more than required	Over-qualified

TABLE B: Means and Standard Deviations for Control and Explanatory Variables

Variable	Community College	University Diploma below a Bachelor's degree	Trade School	University Diploma above a Bachelor's degree	Bachelor's Degree	Master's Degree	Doctorate
Age at graduation (years)	29.512	31.706	32.610	30.796	25.445	32.014	33.971
	(0.034)	*(0.083)*	*(0.069)*	*(0.109)*	*(0.014)*	*(0.045)*	*(0.111)*
Age at interview (years)	32.102	35.144	35.963	34.335	29.102	35.692	38.698
	(0.339)	*(0.083)*	*(0.068)*	*(0.108)*	*(0.014)*	*(0.045)*	*(0.051)*
Male	0.429	0.354	0.583	0.315	0.390	0.372	0.445
	(0.002)	*(0.004)*	*(0.003)*	*(0.006)*	*(0.001)*	*(0.003)*	*(0.112)*
Married	0.485	0.543	0.575	0.572	0.407	0.664	0.770
	(0.002)	*(0.004)*	*(0.003)*	*(0.006)*	*(0.001)*	*(0.002)*	*(0.006)*
White	0.761	0.799	0.896	0.766	0.764	0.747	0.776
	(0.002)	*(0.003)*	*(0.002)*	*(0.005)*	*(0.001)*	*(0.002)*	*(0.006)*
Field of Study							
Education	0.028	0.040	0	0.128	0.107	0.123	0.062
	(0.001)	*(0.002)*	*(omitted)*	*(0.004)*	*(0.001)*	*(0.002)*	*(0.003)*
Arts/Humanities	0.155	0.238	0.016	0.287	0.373	0.221	0.252
	(0.001)	*(0.004)*	*(0.001)*	*(0.006)*	*(0.001)*	*(0.002)*	*(0.006)*
Business	0.270	0.441	0.209	0.323	0.194	0.274	0.021
	(0.002)	*(0.004)*	*(0.003)*	*(0.006)*	*(0.001)*	*(0.002)*	*(0.002)*
Health	0.280	0.185	0.398	0.215	0.220	0.207	0.480
	(0.002)	*(0.003)*	*(0.003)*	*(0.005)*	*(0.001)*	*(0.002)*	*(0.007)*
STEM	0.231	0.060	0.347	0.034	0.087	0.133	0.153
	(0.002)	*(0.002)*	*(0.003)*	*(0.002)*	*(0.001)*	*(0.002)*	*(0.005)*
Agriculture	0.036	0.036	0.032	*0.012*	0.019	0.042	0.032
	(0.001)	*(0.002)*	*(0.001)*	*(0.001)*	*(0.000)*	*(0.001)*	*(0.003)*
Debt at graduation (> $10,000)	0.722	0.699	0.710	0.712	0.762	0.744	0.798
	(0.002)	*(0.004)*	*(0.003)*	*(0.006)*	*(0.001)*	*(0.002)*	*(0.006)*
Debt at Interview (> $10,000)	0.642	0.619	0.684	0.597	0.654	0.603	0.620
	(0.002)	*(0.004)*	*(0.003)*	*(0.006)*	*(0.001)*	*(0.003)*	*(0.007)*
Region of Institution							
ON	0.427	0.084	0	0.351	0.422	0.413	0.321
	(0.002)	*(0.002)*	*(omitted)*	*(0.006)*	*(0.001)*	*(0.003)*	*(0.007)*
QC	0.206	0.582	1	0.456	0.211	0.298	0.405
	(0.001)	*(0.004)*	*(0)*	*(0.006)*	*(0.001)*	*(0.002)*	*(0.007)*
AC	0.067	0.032	..	0.031	0.082	0.071	0.041
	(0.001)	*(0.002)*	..	*(0.002)*	*(0.001)*	*(0.001)*	*(0.003)*
WP/T	0.299	0.302	..	0.161	0.285	0.218	0.233
	(0.002)	*(0.004)*	..	*(0.005)*	*(0.001)*	*(0.002)*	*(0.006)*
Region of residence							
ON	0.437	0.103	0.003	0.373	0.426	0.405	0.320
	(0.002)	*(0.003)*	*(0.000)*	*(0.006)*	*(0.001)*	*(0.003)*	*(0.007)*
QC	0.204	0.583	0.996	0.421	0.210	0.295	0.392
	(0.001)	*(0.004)*	*(0.000)*	*(0.006)*	*(0.001)*	*(0.002)*	*(0.007)*
AC	0.065	0.030	0.001	0.029	0.070	0.063	0.051
	(0.001)	*(0.001)*	*(0.000)*	*(0.002)*	*(0.001)*	*(0.001)*	*(0.003)*
WP/T	0.293	0.294	0.284	..	0.177	0.236	0.237
	(0.001)	*(0.002)*	*(0.004)*	..	*(0.005)*	*(0.002)*	*(0.006)*
Work Experience	0.551	0.684	0.781	0.464	0.244	0.520	0.390
	(0.002)	*(0.004)*	*(0.003)*	*(0.006)*	*(0.001)*	*(0.003)*	*(0.007)*
Education since graduation	0.307	0.515	0.156	0.411	0.495	0.290	0.169
	(0.002)	*(0.004)*	*(0.002)*	*(0.006)*	*(0.001)*	*(0.002)*	*(0.005)*
N	4120	610	1240	330	8205	4920	1810

Source: National Graduates Survey, 2013. Notes: 'Not applicable' category excluded from results. Due to the small sample size for Trade School graduates in some categories, results are omitted. Debt variables are dichotomous in this table, measured as greater than $10,000. Region acronyms are Ontario (ON), Quebec (QC), Atlantic Canada (AC), and Western Provinces/Territories (WP/T). Work experiences is dichotomous, measured as greater than 3 years. Weighted using weight variable provided in the 2013 National Graduates Survey

TABLE C: Odds of being Overqualified in First Job: Overall Sample

Overqualified	Odds Ratio	Robust Std. Err
Graduate Credential		
Community College	2.490*	0.136
Diploma below Bachelor's	3.388*	0.378
Trade School	2.564*	0.238
Diploma Above Bachelor's	9.232*	1.507
Master's	2.886*	0.147
Doctorate	1.609*	0.118
Not applicable	3.131*	0.228
Age at Graduation Interval		
31-40	1.128*	0.056
41-50	1.135*	0.070
>50	0.947	0.080
Male	1.238*	0.047
Debt at Graduation		
Less than $5000	1.078	0.096
$5000 to less than $10,000	0.879	0.073
$10,000 to less than $25,000	0.906	0.061
$25,000 or more	0.832*	0.055
No response	0.990	0.055
Ethnicity		
Black	1.028	0.123
Asian: Korean, Japanese, Chinese	1.071	0.088
Hispanic/Latin American	0.953	0.160
South Asian/Filipino	1.165	0.112
Arab/West Asian	0.741*	0.088
Southeast Asian	1.106	0.183
Other/No response	1.032	0.077
Field of Study		
STEM	0.884*	0.059
Arts & Humanities	1.125*	0.070
Business & Pub. Admin	0.965	0.066
Health Care & Wellness	0.818*	0.050
Agriculture	0.939	0.087

Work Experience		
More than 3 years	1.305*	0.055
No response	0.986	0.180
Region of Institution		
Quebec	0.981	0.060
Atlantic Provinces	0.890*	0.053
Western Provinces/Territories	0.932	0.050

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE D: Odds of being Overqualified in First Job: By Sex

Female

Overqualified	Odds Ratio	Robust Std. Err
Graduate Credential		
Community College	2.298*	0.167
Diploma below Bachelor's	3.660*	0.526
Trade School	2.365*	0.304
Diploma Above Bachelor's	9.738*	1.990
Master's	2.775*	0.183
Doctorate	1.632*	0.159
Not applicable	2.938*	0.277
Age at Graduation Interval		
31-40	1.084	0.070
41-50	1.138*	0.089
>50	1.041	0.107
Debt at Graduation		
Less than $5000	1.095	0.125
$5000 to less than $10,000	0.967	0.103
$10,000 to less than $25,000	0.944	0.081
$25,000 or more	0.870	0.074
no response	1.045	0.072
Ethnicity		
Black	0.999	0.158
Asian: Korean, Japanese, Chinese	1.197	0.135
Hispanic/Latin American	1.088	0.246
South Asian/Filipino	1.332*	0.177
Arab/West Asian	0.688*	0.121
Southeast Asian	1.137	0.290
Other/No response	1.051	0.098
Field of Study		
STEM	0.911	0.089
Arts & Humanities	1.112	0.080
Business & Pub. Admin	0.953	0.079
Health Care & Wellness	0.746*	0.053
Agriculture	1.022	0.125
Work Experience		

More than 3 years	1.259*	0.070
No Response	1.058	0.233
Region of Institution		
Quebec	1.007	0.082
Atlantic Provinces	0.895	0.071
Western Provinces/Territories	0.872*	0.062

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, No debt, White, Education, Less than 3 years, Ontario.

Male

Overqualified	Odds Ratio	Robust Std. Err
Graduate Credential		
Community College	2.802*	0.233
Diploma below Bachelor's	2.951*	0.518
Trade School	2.845*	0.387
Diploma Above Bachelor's	8.454*	2.309
Master's	3.027*	0.244
Doctorate	1.527*	0.171
Not applicable	3.408*	0.397
Age at Graduation Interval		
31-40	1.214*	0.096
41-50	1.163	0.117
>50	0.803	0.118
Debt at Graduation		
Less than $5000	1.034	0.149
$5000 to less than $10,000	0.752*	0.101
$10,000 to less than $25,000	0.837	0.091
$25,000 or more	0.774*	0.083
No response	0.906	0.085
Ethnicity		
Black	1.085	0.199
Asian: Korean, Japanese, Chinese	0.932	0.113
Hispanic/Latin American	0.792	0.196
South Asian/Filipino	0.986	0.138
Arab/West Asian	0.795	0.131
Southeast Asian	1.081	0.236
Other/No response	1.008	0.127
Field of Study		
STEM	0.949	0.110

Arts & Humanities	1.196	0.148
Business & Pub. Admin	1.039	0.132
Health Care & Wellness	1.030	0.125
Agriculture	0.909	0.139
Work Experience		
More than 3 years	1.383*	0.091
No Response	0.848	0.281
Region of Institution		
Quebec	0.933	0.088
Atlantic Provinces	0.883	0.082
Western Provinces/Territories	1.030	0.083

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, No debt, White, Education, Less than 3 years, Ontario.

TABLE E: Odds of being Overqualified in Current Job: Overall Sample

Overqualified	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	2.208*	0.094
Diploma below Bachelor's	2.700*	0.234
Trade School	2.078*	0.154
Diploma Above Bachelor's	6.507*	0.827
Master's	2.377*	0.097
Doctorate	1.373*	0.084
Not applicable	2.641*	0.155
Current Age Interval		
36-45	1.043	0.044
46-55	1.090*	0.057
56-65	0.836	0.067
Male	1.229*	0.037
Marital Status		
Married	0.915*	0.027
No Response	1.236	0.455
Debt at Interview		
Less than $5000	1.099	0.075
$5000 to less than $10,000	0.989	0.064
$10,000 to less than $25,000	0.952	0.049
$25,000 or more	0.865	0.045
no response	1.006	0.036
Ethnicity		
Black	0.979	0.098
Asian: Korean, Japanese, Chinese	1.056	0.071
Hispanic/Latin American	1.053	0.138
South Asian/Filipino	1.132	0.087
Arab/West Asian	0.729*	0.072
Southeast Asian	1.080	0.146
Other/No response	0.996	0.060
Education since graduation		
Yes	0.769*	0.025
No Response	1.303	1.009

Field of Study		
STEM	0.927	0.053
Arts & Humanities	1.207*	0.062
Business & Pub. Admin	1.026	0.059
Health Care & Wellness	0.892*	0.046
Agriculture	0.956	0.071
Work Experience		
More than 3 years	1.236*	0.041
No Response	1.232	0.171
Region of residence at interview		
Quebec	1.081	0.052
Atlantic Provinces	1.017	0.048
Western Provinces/Territories	1.073*	0.043

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE F: Odds of being Overqualified in Current Job: By Sex

Female

Overqualified	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	2.064*	0.117
Diploma below Bachelor's	2.835*	0.316
Trade School	2.064*	0.214
Diploma Above Bachelor's	6.842*	1.076
Master's	2.317*	0.123
Doctorate	1.412*	0.116
Not applicable	2.477*	0.190
Age at Interview interval		
36-45	1.021	0.057
46-55	1.187*	0.079
56-65	0.887	0.088
Marital Status		
Married	0.854*	0.033
No Response	0.753	0.398
Debt at Interview		
Less than $5000	1.292*	0.114
$5000 to less than $10,000	1.088	0.091
$10,000 to less than $25,000	0.983	0.067
$25,000 or more	0.982	0.067
no response	1.053	0.049
Ethnicity		
Black	0.940	0.124
Asian: Korean, Japanese, Chinese	1.097	0.102
Hispanic/Latin American	1.103	0.194
South Asian/Filipino	1.185	0.128
Arab/West Asian	0.659*	0.097
Southeast Asian	0.978	0.206
Other/No response	0.951	0.072
Education since graduation		
Yes	0.858*	0.036
No Response	2.226	2.261

Field of Study		
STEM	0.990	0.081
Arts & Humanities	1.171	0.070
Business & Pub. Admin	1.010	0.070
Health Care & Wellness	0.826	0.050
Agriculture	1.021	0.099
Work Experience		
More than 3 years	1.219*	0.054
No Response	1.130	0.196
Region of residence at interview		
Quebec	1.074	0.067
Atlantic Provinces	0.965	0.060
Western Provinces/Territories	0.990	0.053

Male

Overqualified	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	2.517*	0.166
Diploma below Bachelor's	2.500*	0.342
Trade School	2.166*	0.234
Diploma Above Bachelor's	5.896*	1.270
Master's	2.503*	0.161
Doctorate	1.314*	0.122
Not applicable	2.981*	0.280
Age at Interview Interval		
36-45	1.061	0.071
46-55	0.941	0.081
56-65	0.752*	0.104
Marital Status		
Married	1.020	0.049
No Response	2.346	1.341
Debt at Interview		
Less than $5000	0.871	0.093
$5000 to less than $10,000	0.852	0.086
$10,000 to less than $25,000	0.903	0.072
$25,000 or more	0.718*	0.060

No response	0.943	0.053
Ethnicity		
Black	1.045	0.162
Asian: Korean, Japanese, Chinese	1.015	0.101
Hispanic/Latin American	0.992	0.191
South Asian/Filipino	1.086	0.122
Arab/West Asia	0.817	0.111
Southeast Asian	1.194	0.212
Other/No response	1.084	0.108
Education since graduation		
Yes	0.651*	0.033
No Response	0.457	0.684
Field of Study		
STEM	0.921	0.091
Arts & Humanities	1.287*	0.132
Business & Pub. Admin	1.078	0.116
Health Care & Wellness	1.037	0.107
Agriculture	0.895	0.111
Work Experience		
More than 3 years	1.260*	0.066
No response	1.482	0.353
Region of residence at interview		
Quebec	1.095	0.081
Atlantic Provinces	1.091	0.082
Western Provinces/Territories	1.208*	0.074

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, No debt, White, Education, Less than 3 years, Ontario.

TABLE G: Odds of Having First Job be Related to Field of Study: Overall Sample

First Job Related to Field of Study	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	1.018	0.044
Diploma below Bachelor's	0.826*	0.074
Trade School	1.166*	0.094
Diploma Above Bachelor's	1.288*	0.165
Master's	1.459*	0.063
Doctorate	2.600*	0.189
Not applicable	1.025	0.062
Age at graduation interval		
31-40	1.134*	0.052
41-50	0.987	0.056
>50	0.668*	0.050
Male	0.823*	0.026
Debt at Graduation		
Less than $5000	1.404*	0.106
$5000 to less than $10,000	1.285*	0.089
$10,000 to less than $25,000	1.352*	0.076
$25,000 or more	1.404*	0.077
No response	1.340*	0.063
Ethnicity		
Black	0.798*	0.082
Asian: Korean, Japanese, Chinese	0.870*	0.063
Hispanic/Latin American	0.691*	0.091
South Asian/Filipino	0.855*	0.070
Arab/West Asian	0.687*	0.068
Southeast Asian	0.992	0.145
Other/No response	0.913	0.057
Field of Study		
STEM	0.977	0.064
Arts & Humanities	0.406*	0.023
Business & Pub. Admin	0.780*	0.051
Health Care & Wellness	0.783*	0.047
Agriculture	0.712*	0.058

Work Experience		
More than 3 years	1.107*	*0.040
No Response	0.689*	0.097
Region of Institution		
Quebec	1.247*	0.066
Atlantic Provinces	1.219*	0.061
Western Provinces/Territories	1.202*	0.054

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE H: Odds of Having First Job be Related to Field of Study: By Sex

Female

First Job Related to Field of Study	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	1.166*	0.067
Diploma below Bachelor's	0.833	0.096
Trade School	1.278*	0.145
Diploma Above Bachelor's	1.385*	0.222
Master's	1.588*	0.089
Doctorate	2.812*	0.275
Not applicable	1.066	0.084
Age at graduation interval		
31-40	1.131*	0.069
41-50	0.977	0.072
>50	0.672*	0.063
Debt at graduation		
Less than $5000	1.554*	0.154
$5000 to less than $10,000	1.259*	0.110
$10,000 to less than $25,000	1.390*	0.100
$25,000 or more	1.444*	0.101
no response	1.443*	0.086
Ethnicity		
Black	0.855	0.116
Asian: Korean, Japanese, Chinese	0.797*	0.078
Hispanic/Latin American	0.708*	0.127
South Asian/Filipino	0.887	0.100
Arab/West Asia	0.620*	0.086
Southeast Asian	0.767	0.156
Other/No response	0.942	0.074
Field of Study		
STEM	0.737*	0.068
Arts & Humanities	0.423*	0.029
Business & Pub. Admin	0.792*	0.063
Health Care & Wellness	0.830*	0.058
Agriculture	0.619*	0.065
Work Experience		

More than 3 years	1.109*	0.053
No Response	0.845	0.152
Region of institution		
Quebec	1.298*	0.090
Atlantic Provinces	1.336*	0.087
Western Provinces/Territories	1.279*	0.075

Male

First Job Related to Field of Study	Odds Ratio	Std. Err
Graduate Credentials		
Community College	0.832*	0.055
Diploma below Bachelor's	0.843	0.121
Trade School	1.036	0.122
Diploma Above Bachelor's	1.180	0.253
Master's	1.336*	0.091
Doctorate	2.415*	0.266
Not applicable	1.009	0.098
Age at graduation interval		
31-40	1.112	0.078
41-50	0.966	0.088
>50	0.627*	0.079
Debt at graduation		
Less than $5000	1.196	0.141
$5000 to less than $10,000	1.307*	0.146
$10,000 to less than $25,000	1.277*	0.116
$25,000 or more	1.320*	0.118
no response	1.188*	0.092
Ethnicity		
Black	0.707*	0.114
Asian: Korean, Japanese, Chinese	0.961	0.103
Hispanic/Latin American	0.682*	0.132
South Asian/Filipino	0.807*	0.097
Arab/West Asian	0.750*	0.107
Southeast Asian	1.279	0.271
Other/No response	0.859	0.088
Field of Study		

STEM	1.063	0.121
Arts & Humanities	0.364*	0.041
Business & Pub. Admin	0.740*	0.089
Health Care & Wellness	0.701*	0.081
Agriculture	0.824	0.113
Work Experience		
More than 3 years	1.110*	0.062
No Response	0.487*	0.115
Region of Institution		
Quebec	1.171*	0.097
Atlantic Provinces	1.077	0.084
Western Provinces/Territories	1.090	0.075

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, No debt, White, Education, Less than 3 years, Ontario.

TABLE I: Odds of Having Current Job be Related to Field of Study: Overall Sample

Current Job Related to Field of Study	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	0.748*	0.033
Diploma below Bachelor's	0.838*	0.078
Trade School	0.511*	0.039
Diploma Above Bachelor's	1.288*	0.170
Master's	1.270*	0.055
Doctorate	1.634*	0.111
Not applicable	0.727*	0.045
Age at interview interval		
36-45	0.956	0.045
46-55	0.894*	0.052
56-65	0.457*	0.038
Male	0.812*	0.026
Marital Status		
Married	1.295*	0.040
No Response	0.675	0.274
Debt at interview		
Less than $5000	0.777*	0.056
$5000 to less than $10,000	0.877*	0.061
$10,000 to less than $25,000	0.755*	0.040
$25,000 or more	0.615*	0.032
no response	0.798*	0.031
Ethnicity		
Black	0.926	0.096
Asian: Korean, Japanese, Chinese	0.731*	0.051
Hispanic/Latin American	0.842	0.113
South Asian/Filipino	0.836*	0.069
Arab/West Asian	0.562*	0.056
Southeast Asian	0.822	0.114
Other/No response	0.861*	0.054
Education since graduation		

Yes	0.542*	0.017
No Response	0.289	0.222
Field of Study		
STEM	1.015	0.068
Arts & Humanities	0.424*	0.025
Business & Pub. Admin	0.928	0.063
Health Care & Wellness	0.744*	0.045
Agriculture	0.522*	0.042
Work Experience		
More than 3 years	1.178*	0.043
No Response	0.748*	0.108
Region of interview		
Quebec	1.242*	0.062
Atlantic Provinces	1.317*	0.065
Western Provinces/Territories	1.332*	0.055

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE J: Odds of Having Current Job be Related to Field of Study: By Sex

Female

Current Job Related to Field of Study	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	0.798*	0.047
Diploma below Bachelor's	0.747*	0.089
Trade School	0.551*	0.058
Diploma Above Bachelor's	1.325*	0.222
Master's	1.359*	0.077
Doctorate	1.543*	0.139
Not applicable	0.716*	0.057
Age at interview interval		
36-45	0.987	0.061
46-55	1.071	0.082
56-65	0.504	0.052
Marital Status		
Married	1.115*	0.045
No Response	0.959	0.514
Debt at Interview		
Less than $5000	0.821*	0.077
$5000 to less than $10,000	0.891	0.081
$10,000 to less than $25,000	0.750*	0.052
$25,000 or more	0.599*	0.040
no response	0.803*	0.041
Ethnicity		
Black	1.088	0.152
Asian: Korean, Japanese, Chinese	0.667*	0.063
Hispanic/Latin American	0.890	0.164
South Asian/Filipino	0.749*	0.083
Arab/West Asian	0.590*	0.082
Southeast Asian	0.690*	0.135
Other/No response	0.879	0.070
Education since graduation		
Yes	0.566*	0.024
No Response	0.764	0.754

Field of Study		
STEM	0.805*	0.075
Arts & Humanities	0.442*	0.031
Business & Pub. Admin	0.910	0.075
Health Care & Wellness	0.789*	0.056
Agriculture	0.473*	0.049
Work Experience		
More than 3 years	1.239*	0.059
No Response	0.801	0.145
Region of residence at interview		
Quebec	1.286*	0.083
Atlantic Provinces	1.519*	0.098
Western Provinces/Territories	1.389*	0.076
Male		
Current Job Related to Field of Study	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	0.693*	0.047
Diploma below Bachelor's	1.030	0.150
Trade School	0.476*	0.054
Diploma Above Bachelor's	1.270	0.275
Master's	1.190*	0.082
Doctorate	1.837*	0.193
Not applicable	0.797*	0.079
Age at interview interval		
36-45	0.857*	0.064
46-55	0.623*	0.058
56-65	0.341*	0.050
Marital Status		
Married	1.663*	0.084
No Response	0.499	0.314
Debt at interview		
Less than $5000	0.717*	0.081
$5000 to less than $10,000	0.870	0.094
$10,000 to less than $25,000	0.765*	0.064

$25,000 or more	0.638*		0.053
no response	0.800*		0.049
Ethnicity			
Black	0.712*		0.112
Asian: Korean, Japanese, Chinese	0.814*		0.085
Hispanic/Latin American	0.792		0.157
South Asian/Filipino	0.930		0.114
Arab/West Asia	0.529*		0.076
Southeast Asian	1.006		0.202
Other/No response	0.815*		0.086
Education since graduation			
Yes	0.507*		0.026
No Response	1.000	(empty)	
Field of study			
STEM	1.064		0.126
Arts & Humanities	0.378*		0.045
Business & Pub. Admin	0.935		0.118
Health Care & Wellness	0.651*		0.078
Agriculture	0.569*		0.080
Work experience			
More than 3 years	1.088		0.061
No Response	0.673		0.162
Region of residence at interview			
Quebec	1.189*		0.093
Atlantic Provinces	1.071		0.082
Western Provinces/Territories	1.251*		0.080

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, No debt, White, Education, Less than 3 years, Ontario.

TABLE K: Odds of Holding A Permanent Job Within Six Months of Graduation: Overall Sample

Permanent Job Within Six Months of Graduation	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	1.029	0.043
Diploma below Bachelor's	0.899	0.080
Trade School	1.368*	0.101
Diploma Above Bachelor's	1.044	0.123
Master's	1.025	0.041
Doctorate	0.759*	0.047
Not applicable	1.144*	0.068
Age at graduation interval		
31-40	1.083*	0.044
41-50	1.134*	0.058
>50	0.800*	0.058
Male	0.964	0.028
Debt at graduation		
Less than $5000	1.162*	0.082
$5000 to less than $10,000	1.052	0.068
$10,000 to less than $25,000	1.128*	0.059
$25,000 or more	1.092*	0.056
No response	1.082*	0.048
Ethnicity		
Black	0.856	0.086
Asian: Korean, Japanese, Chinese	0.801*	0.055
Hispanic/Latin American	0.980	0.127
South Asian/Filipino	0.873*	0.069
Arab/West Asia	0.532*	0.055
Southeast Asian	0.778*	0.108
Other/No response	0.806*	0.048
Field of study		
STEM	1.129*	0.064
Arts & Humanities	0.605*	0.031
Business & Pub. Admin	0.946	0.054
Health Care & Wellness	0.867*	0.044

Agriculture	0.642*	0.048
Work experience		
More than 3 years	1.352*	0.045
No Response	0.889	0.129
Region of institution		
Quebec	1.011	0.051
Atlantic Provinces	1.201*	0.057
Western Provinces/Territories	1.259*	0.054

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE L: Odds of Holding A Permanent Job Within Six Months of Graduation: By Sex

Permanent Job Within Six Months of Graduation	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	1.089	0.061
Diploma below Bachelor's	0.881	0.101
Trade School	1.609*	0.164
Diploma Above Bachelor's	1.004	0.145
Master's	1.139*	0.058
Doctorate	0.772*	0.065
Not applicable	1.204*	0.092
Age at graduation interval		
31-40	1.074	0.058
41-50	1.126*	0.074
>50	0.832*	0.074
Debt at graduation		
Less than $5000	1.216*	0.111
$5000 to less than $10,000	1.079	0.089
$10,000 to less than $25,000	1.143*	0.078
$25,000 or more	1.156*	0.076
No response	1.133*	0.064
Ethnicity		
Black	0.875	0.114
Asian: Korean, Japanese, Chinese	0.755*	0.072
Hispanic/Latin American	0.958	0.171
South Asian/Filipino	0.967	0.106
Arab/West Asian	0.469*	0.074
Southeast Asian	0.790	0.163
Other/No response	0.847*	0.063
Field of Study		
STEM	0.958	0.078
Arts & Humanities	0.663*	0.039
Business & Pub. Admin	0.950	0.066
Health Care & Wellness	0.986	0.059
Agriculture	0.629*	0.062

Work Experience		
More than 3 years	1.375*	0.061
No Response	0.996	0.177
Region of institution		
Quebec	1.106	0.074
Atlantic Provinces	1.315*	0.082
Western Provinces/Territories	1.334*	0.076
Male		
Permanent Job Within Six Months of Graduation	Odds Ratio	Robust Std. Err
Graduate Credential		
Community College	0.954	0.062
Diploma below Bachelor's	0.979	0.139
Trade School	1.179	0.128
Diploma Above Bachelor's	1.149	0.236
Master's	0.887*	0.057
Doctorate	0.757*	0.071
Not applicable	1.094	0.102
Age at graduation interval		
31-40	1.081	0.070
41-50	1.127	0.094
>50	0.705*	0.090
Debt at graduation		
Less than $5000	1.073	0.121
$5000 to less than $10,000	1.009	0.106
$10,000 to less than $25,000	1.107	0.093
$25,000 or more	1.006	0.084
No response	1.012	0.073
Ethnicity		
Black	0.814	0.128
Asian: Korean, Japanese, Chinese	0.851	0.084
Hispanic/Latin American	1.007	0.191
South Asian/Filipino	0.781*	0.090
Arab/West Asian	0.586*	0.083
Southeast Asian	0.773	0.144
Other/No response	0.747*	0.075

Field of study		
STEM	1.012	0.099
Arts & Humanities	0.463*	0.047
Business & Pub. Admin	0.848	0.089
Health Care & Wellness	0.620*	0.062
Agriculture	0.580*	0.071
Work Experience		
More than 3 years	1.328*	0.069
No Response	0.719	0.181
Region of institution		
Quebec	0.899	0.070
Atlantic Provinces	1.056	0.077
Western Provinces/Territories	1.158*	0.075

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, No debt, White, Education, Less than 3 years, Ontario.

TABLE M: Odds of Current Job being Permanent Job: Overall Sample

Current Job Permanent	Odds Ratio	Robust Std. Err
Graduate Credentials		
Community College	0.850	0.038
Diploma below Bachelor's	1.258	0.123
Trade School	0.839	0.065
Diploma Above Bachelor's	1.324	0.167
Master's	0.953	0.039
Doctorate	0.542	0.033
Not applicable	0.830	0.051
Age at interview interval		
36-45	0.885	0.041
46-55	0.916	0.053
56-65	0.452	0.037
Male	1.031	0.032
Marital Status		
Married	1.254	0.038
No Response	0.757	0.301
Debt at Interview		
Less than $5000	0.932	0.068
$5000 to less than $10,000	0.855	0.057
$10,000 to less than $25,000	0.734	0.038
$25,000 or more	0.538	0.027
No response	0.809	0.031
Ethnicity		
Black	1.217	0.131
Asian: Korean, Japanese, Chinese	0.725	0.049
Hispanic/Latin American	1.181	0.161
South Asian/Filipino	0.921	0.075
Arab/West Asia	0.593	0.057
Southeast Asian	0.832	0.114
Other/No response	0.854	0.054
Education since graduation		
Yes	0.450	0.014
No Response	0.470	0.336

Field of Study		
STEM	1.827	0.113
Arts & Humanities	0.977	0.053
Business & Pub. Admin	1.764	0.112
Health Care & Wellness	1.255	0.069
Agriculture	0.957	0.073
Work Experience		
More than 3 years	1.325	0.047
No Response	0.767	0.110
Region of institution		
Quebec	0.853	0.041
Atlantic Provinces	1.086	0.051
Western Provinces/Territories	1.332	0.054

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE N: Odds of Current Job being Permanent Job: Sex

Female

Current Job Permanent	Odds Ratio	Robust Std. Err
Graduate Credential		
Community College	0.879	0.051
Diploma below Bachelor's	1.334	0.168
Trade School	1.030	0.110
Diploma Above Bachelor's	1.491	0.233
Master's	1.041	0.055
Doctorate	0.588	0.047
Not applicable	0.854	0.066
Age at interview interval		
36-45	0.869	0.051
46-55	1.018	0.074
56-65	0.490	0.049
Marital Status		
Married	1.104	0.043
No Response	0.461	0.256
Debt at interview		
Less than $5000	1.082	0.100
$5000 to less than $10,000	0.898	0.078
$10,000 to less than $25,000	0.819	0.055
$25,000 or more	0.582	0.038
No response	0.867	0.042
Ethnicity		
Black	1.330	0.186
Asian: Korean, Japanese, Chinese	0.686	0.063
Hispanic/Latin American	1.299	0.241
South Asian/Filipino	0.925	0.102
Arab/West Asia	0.567	0.078
Southeast Asian	0.709	0.141
Other/No response	0.842	0.065
Education since graduation		
Yes	0.500	0.020
No Response	0.750	0.751

Field of study		
STEM	1.685	0.147
Arts & Humanities	0.988	0.062
Business & Pub. Admin	1.626	0.123
Health Care & Wellness	1.323	0.084
Agriculture	0.868	0.084
Work Experience		
More than 3 years	1.381	0.064
No Response	0.781	0.137
Region of interview		
Quebec	0.830	0.051
Atlantic Provinces	1.147	0.070
Western Provinces/Territories	1.305	0.069

Male

Current Job Permanent	Odds Ratio	Robust Std. Err
Graduate Credential		
Community College	0.842	0.060
Diploma below Bachelor's	1.207	0.188
Trade School	0.683	0.078
Diploma Above Bachelor's	1.076	0.231
Master's	0.844	0.057
Doctorate	0.489	0.046
Not applicable	0.839	0.086
Age at interview interval		
36-45	0.869	0.000
46-55	0.712	0.069
56-65	0.350	0.050
Marital Status		
Married	1.580	0.080
No Response	1.765	1.256
Debt at interview		
Less than $5000	0.733	0.086
$5000 to less than $10,000	0.790	0.085
$10,000 to less than $25,000	0.621	0.052
$25,000 or more	0.479	0.040

No response	0.734	0.046
Ethnicity		
Black	1.044	0.171
Asian: Korean, Japanese, Chinese	0.787	0.081
Hispanic/Latin American	1.047	0.206
South Asian/Filipino	0.930	0.113
Arab/West Asia	0.618	0.086
Southeast Asian	0.993	0.194
Other/No response	0.891	0.098
Education since graduation		
Yes	0.381	0.019
No Response	0.185	0.180
Field of study		
STEM	1.764	0.197
Arts & Humanities	0.907	0.102
Business & Pub. Admin	1.929	0.235
Health Care & Wellness	1.081	0.122
Agriculture	1.016	0.136
Work Experience		
More than 3 years	1.237	0.070
No Response	0.738	0.185
Region of interview		
Quebec	0.901	0.069
Atlantic Provinces	0.989	0.075
Western Provinces/Territories	1.376	0.087

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, No debt, White, Education, Less than 3 years, Ontario.

TABLE O: Time to finding a job after graduation: Overall Sample

Time to finding a job after graduation	Hazard Ratio	Robust Std. Err
Graduate credentials		
Community College	1.223*	0.028
Diploma below Bachelor's	0.900*	0.044
Trade School	1.405*	0.061
Diploma Above Bachelor's	0.930	0.061
Master's	1.010	0.023
Doctorate	1.128*	0.038
Not applicable	1.304*	0.044
Age at graduation intervals		
31-40	0.927*	0.022
41-50	0.902*	0.028
>50	0.830*	0.038
Male	0.962*	0.016
Debt at graduation		
Less than $5000	1.148*	0.048
$5000 to less than $10,000	1.224*	0.048
$10,000 to less than $25,000	1.231*	0.039
$25,000 or more	1.302*	0.040
No response	1.152*	0.031
Ethnicity		
Black	0.911*	*0.048
Asian: Korean, Japanese, Chinese	0.881*	0.031
Hispanic/Latin American	0.869*	0.062
South Asian/Filipino	0.943	0.039
Arab/West Asia	0.877*	0.043
Southeast Asian	0.801*	0.055
Other/No response	0.884*	0.030
Field of study		
STEM	1.014	0.034
Arts & Humanities	0.803*	0.024
Business & Pub. Admin	0.889*	0.030
Health Care & Wellness	0.979	0.031

Agriculture	1.008	0.045
Work experience		
More than 3 years	0.960*	0.018
No Response	0.916	0.081
Region of institution		
Quebec	1.101*	0.029
Atlantic Provinces	1.137*	0.028
Western Provinces/Territories	1.052*	0.024

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE P: Time to finding a job after graduation: By Sex

Female

Time to finding a job after graduation	Haz. Ratio	Robust Std. Err
Graduate Credentials		
Community College	1.225*	0.039
Diploma below Bachelor's	0.908	0.061
Trade School	1.453*	0.085
Diploma Above Bachelor's	0.854*	0.071
Master's	1.040	0.031
Doctorate	1.127*	0.051
Not applicable	1.361*	0.057
Age at graduation interval		
31-40	0.882*	0.028
41-50	0.884*	0.036
>50	0.777*	0.046
Debt at graduation		
Less than $5000	1.174*	0.066
$5000 to less than $10,000	1.294*	0.065
$10,000 to less than $25,000	1.265*	0.052
$25,000 or more	1.349*	0.054
No response	1.215*	0.043
Ethnicity		
Black	0.889*	0.060
Asian: Korean, Japanese, Chinese	0.891*	0.042
Hispanic/Latin American	0.844*	0.071
South Asian/Filipino	0.981	0.054
Arab/West Asia	0.862*	0.060
Southeast Asian	0.782*	0.075
Other/No response	0.904*	0.039
Field of study		
STEM	0.975	0.044
Arts & Humanities	0.809*	0.028
Business & Pub. Admin	0.894*	0.037
Health Care & Wellness	0.992	0.036
Agriculture	1.017	0.057

Work Experience		
More than 3 years	0.976	0.025
No Response	1.030	0.117
Region of institution		
Quebec	1.137*	0.039
Atlantic Provinces	1.169*	0.038
Western Provinces/Territories	1.042	0.030
Male		

Time to finding a job after graduation	Haz. Ratio	Robust Std. Err
Graduate credentials		
Community College	1.231*	0.041
Diploma below Bachelor's	0.898	0.067
Trade School	1.398*	0.090
Diploma Above Bachelor's	1.084	0.105
Master's	0.947	0.034
Doctorate	1.081	0.057
Not applicable	1.209*	0.068
Age at graduation interval		
31-40	0.964	0.036
41-50	0.901*	0.044
>50	0.899	0.063
Debt at graduation		
Less than $5000	1.092	0.070
$5000 to less than $10,000	1.117*	0.069
$10,000 to less than $25,000	1.164*	0.057
$25,000 or more	1.219*	0.059
No response	1.050	0.046
Ethnicity		
Black	0.946	0.079
Asian: Korean, Japanese, Chinese	0.879*	0.047
Hispanic/Latin American	0.896	0.103
South Asian/Filipino	0.902	0.057
Arab/West Asia	0.890*	0.062
Southeast Asian	0.828*	0.082
Other/No response	0.867*	0.046

Field of study		
STEM	1.034	0.064
Arts & Humanities	0.808*	0.052
Business & Pub. Admin	0.892*	0.060
Health Care & Wellness	0.969	0.063
Agriculture	1.015	0.079
Work experience		
More than 3 years	0.923*	0.027
No Response	0.774*	0.103
Region of institution		
Quebec	1.039	0.042
Atlantic Provinces	1.083*	0.043
Western Provinces/Territories	1.049	0.037

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 20-30, No debt, White, Education, Less than 3 years, Ontario.

TABLE Q: Odds of being currently employed: Overall Sample

Odds of being currently employees	Odds Ratio	Robust Std. Err
Graduate credential		
Community College	0.678*	0.040
Diploma below Bachelor's	0.890	0.116
Trade School	0.461*	0.046
Diploma Above Bachelor's	1.529*	0.315
Master's	0.873*	0.050
Doctorate	1.208*	0.112
Not applicable	0.715*	0.058
Age at interview interval		
36-45	0.841*	0.055
46-55	0.747*	0.061
56-65	0.311*	0.032
Male	0.986	0.042
Married		
Married	1.254*	0.053
No Response	0.761	0.378
Debt at interview		
Less than $5000	0.788*	0.080
$5000 to less than $10,000	0.866	0.083
$10,000 to less than $25,000	0.690*	0.050
$25,000 or more	0.521*	0.035
No response	0.734*	0.041
Ethnicity		
Black	0.866	0.116
Asian: Korean, Japanese, Chinese	0.613*	0.052
Hispanic/Latin American	0.977	0.176
South Asian/Filipino	0.815*	0.086
Arab/West Asia	0.424*	0.047
Southeast Asian	0.767	0.129
Other/No response	0.731*	0.058

Education since graduation		
Yes	0.380*	0.016
No Response	0.928	1.065
Field of study		
STEM	1.287*	0.114
Arts & Humanities	1.085	0.087
Business & Pub. Admin	1.480*	0.136
Health Care & Wellness	0.991	0.078
Agriculture	0.892	0.095
Work experience		
More than 3 years	1.568*	0.080
No Response	0.896	0.161
Region of residence at interview		
Quebec	1.335*	0.086
Atlantic Provinces	1.368*	0.086
Western Provinces/Territories	1.651*	0.088

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE R: Odds of being currently employed: By Sex

Odds of being currently employed	Odds Ratio	Robust Std. Err
Graduate credentials		
Community College	0.681*	0.052
Diploma below Bachelor's	0.850	0.139
Trade School	0.498*	0.068
Diploma Above Bachelor's	1.568*	0.398
Master's	0.962	0.072
Doctorate	1.271*	0.155
Not applicable	0.733*	0.074
Age at interview interval		
36-45	0.867*	0.073
46-55	0.933	0.099
56-65	0.338*	0.043
Marital Status		
Married	1.010	0.054
No Response	0.489	0.262
Debt at interview		
Less than $5000	0.873	0.115
$5000 to less than $10,000	1.039	0.133
$10,000 to less than $25,000	0.737*	0.069
$25,000 or more	0.540*	0.047
No response	0.751*	0.053
Ethnicity		
Black	0.958	0.175
Asian: Korean, Japanese, Chinese	0.573*	0.065
Hispanic/Latin American	0.873	0.198
South Asian/Filipino	0.716*	0.099
Arab/West Asia	0.401*	0.060
Southeast Asian	0.589*	0.131
Other/No response	0.717*	0.070
Education since graduation		
Yes	0.452*	0.024
No Response	0.613	0.798

Field of study		
STEM	1.258*	0.152
Arts & Humanities	1.117	0.100
Business & Pub. Admin	1.342*	0.143
Health Care & Wellness	1.106	0.099
Agriculture	0.837	0.110
Work experience		
More than 3 years	1.671*	0.111
No Response	0.867	0.187
Region of interview		
Quebec	1.302*	0.107
Atlantic Provinces	1.506*	0.124
Western Provinces/Territories	1.600*	0.111

Male

Odds of being currently employed	Odds Ratio	Robust Std. Err
Graduate credential		
Community College	0.719*	0.067
Diploma below Bachelor's	1.028	0.222
Trade School	0.424*	0.065
Diploma Above Bachelor's	1.446	0.515
Master's	0.764*	0.070
Doctorate	1.153	0.169
Not applicable	0.740*	0.103
Age at interview interval		
36-45	0.748*	0.081
46-55	0.471*	0.061
56-65	0.231*	0.042
Marital status		
Married	1.865*	0.132
No Response	1.864	2.049
Debt at interview		
Less than $5000	0.680*	0.111
$5000 to less than $10,000	0.689*	0.103

$10,000 to less than $25,000	0.631*	0.074
$25,000 or more	0.496*	0.055
No response	0.731*	0.068
Ethnicity		
Black	0.725	0.142
Asian: Korean, Japanese, Chinese	0.681*	0.089
Hispanic/Latin American	1.179	0.349
South Asian/Filipino	0.993	0.164
Arab/West Asia	0.463*	0.079
Southeast Asian	1.082	0.284
Other/No response	0.763*	0.104
Education since graduation		
Yes	0.289*	0.019
No Response	1.000 (empty)	
Field of study		
STEM	1.062	0.187
Arts & Humanities	0.922	0.163
Business & Pub. Admin	1.570*	0.301
Health Care & Wellness	0.728*	0.127
Agriculture	0.840	0.171
Work experience		
More than 3 years	1.404*	0.112
No Response	0.954	0.313
Region of residence at interview		
Quebec	1.430*	0.151
Atlantic Provinces	1.164	0.115
Western Provinces/Territories	1.740*	0.147

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, No debt, White, Education, Less than 3 years, Ontario.

TABLE S: Current Income: Overall Sample

Log of current income	Coef.	Robust Std. Err.
Graduate credential		
Community College	-0.949*	0.107
Diploma below Bachelor's	0.130	0.210
Trade School	-1.706*	0.199
Diploma Above Bachelor's	1.230*	0.235
Master's	1.141*	0.087
Doctorate	1.155*	0.113
Not applicable	-0.258*	0.141
Age at interview interval		
36-45	0.839*	0.099
46-55	1.400*	0.121
56-65	1.803*	0.179
Male	0.343*	0.068
Marital Status		
Married	0.180*	0.069
No Response	2.243*	0.609
Debt at interview		
Less than $5000	-0.301*	0.160
$5000 to less than $10,000	-0.634*	0.148
$10,000 to less than $25,000	-0.683*	0.117
$25,000 or more	-0.638*	0.117
No response	0.043	0.079
Ethnicity		
Black	0.063	0.240
Asian: Korean, Japanese, Chinese	0.087	0.149
Hispanic/Latin American	-0.197	0.308
South Asian/Filipino	0.158	0.180
Arab/West Asia	0.101	0.224
Southeast Asian	0.383	0.311
Other/No response	0.075	0.143
Education since graduation		

Yes	0.350*	0.074
No Response	-1.707	1.894
Field of study		
STEM	-1.301*	0.121
Arts & Humanities	-1.377*	0.109
Business & Pub. Admin	-0.784*	0.118
Health Care & Wellness	-1.159*	0.112
Agriculture	-1.336*	0.167
Work experience		
More than 3 years	0.509*	0.080
No Response	0.985*	0.350
Region of interview		
Quebec	0.169	0.106
Atlantic Provinces	-0.107	0.105
Western Provinces/Territories	-0.129	0.087

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, Female, No debt, White, Education, Less than 3 years, Ontario.

TABLE T: Current Income: By Sex

Log of current income	Coef.	Robust Std. Err.
Graduate credential		
Community College	-0.807*	0.145
Diploma below Bachelor's	0.111	0.274
Trade School	-1.814*	0.288
Diploma Above Bachelor's	1.365*	0.303
Master's	1.260*	0.115
Doctorate	1.317*	0.156
Not applicable	-0.038	0.184
Age at interview interval		
36-45	0.970*	0.131
46-55	1.472*	0.156
56-65	1.889*	0.224
Marital status		
Married	0.284	0.091
No Response	3.237	0.708
Debt at interview interval		
Less than $5000	-0.462*	0.211
$5000 to less than $10,000	-0.617*	0.196
$10,000 to less than $25,000	-0.681*	0.158
$25,000 or more	-0.733*	0.156
No response	0.077	0.106
Ethnicity		
Black	0.128	0.323
Asian: Korean, Japanese, Chinese	0.418*	0.213
Hispanic/Latin American	0.561	0.419
South Asian/Filipino	0.402	0.262
Arab/West Asia	0.129	0.339
Southeast Asian	1.000*	0.436
Other/No response	0.088	0.183
Education since graduation		
Yes	0.378*	0.098

No Response	-2.243	2.504
Field of study		
STEM	-1.405*	0.183
Arts & Humanities	-1.449*	0.130
Business & Pub. Admin	-0.903*	0.149
Health Care & Wellness	-1.289*	0.134
Agriculture	-1.437*	0.222
Work Experience		
More than 3 years	0.568*	0.107
No Response	1.318*	0.430
Region of residence at interview		
Quebec	0.318*	0.142
Atlantic Provinces	-0.015	0.138
Western Provinces/Territories	-0.028	0.118
Male		

Log of current income	Coef.	Robust Std. Err.
Graduate credential		
Community College	-1.204*	0.158
Diploma below Bachelor's	0.136	0.327
Trade School	-1.640*	0.277
Diploma Above Bachelor's	1.036*	0.373
Master's	0.967*	0.132
Doctorate	0.911*	0.165
Not applicable	-0.607*	0.220
Age at interview interval		
36-45	0.680*	0.150
46-55	1.344*	0.192
56-65	1.707*	0.303
Marital status		
Married	0.078	0.107
No Response	0.958	0.981
Debt at interview		

Less than $5000	-0.015	0.244
$5000 to less than $10,000	-0.606*	0.225
$10,000 to less than $25,000	-0.648*	0.175
$25,000 or more	-0.430*	0.178
No response	-0.005	0.119
Ethnicity		
Black	0.005	0.353
Asian: Korean, Japanese, Chinese	-0.292	0.207
Hispanic/Latin American	-1.013*	0.441
South Asian/Filipino	-0.121	0.246
Arab/West Asia	0.087	0.298
Southeast Asian	-0.197	0.435
Other/No response	0.071	0.230
Education since graduation		
Yes	0.316*	0.113
No Response	-0.597	2.902
Field of study		
STEM	-0.991*	0.195
Arts & Humanities	-1.133*	0.206
Business & Pub. Admin	-0.470*	0.203
Health Care & Wellness	-0.768*	0.206
Agriculture	-1.011*	0.268
Work experience		
More than 3 years	0.432*	0.120
No Response	0.337	0.605
Region of residence at interview		
Quebec	-0.045	0.159
Atlantic Provinces	-0.195	0.161
Western Provinces/Territories	-0.264*	0.128

Source: National Graduate Survey, 2013. Base categories include: Bachelor's degree, age 25-35, No debt, White, Education, Less than 3 years, Ontario.

TABLE U: Ranking of Credentials by their performance in labor market outcomes: Male

Variable	Community College	University Diploma below a Bachelor's degree	Trade School	University Diploma above a Bachelor's degree	Bachelor's Degree	Master's Degree	Doctorate
Time to first job (months)	2nd*	7th	1st*	3rd	5th	6th	4th
Overqualified (least likely to be)							
First Job	3rd*	5th*	4th*	7th*	1st*	6th*	2nd*
Current Job	6th*	4th*	3rd*	7th*	1st*	5th*	2nd*
Related to field of study							
First Job	7th*	6th	4th	3rd	5th	2nd*	1st*
Current Job	5th*	6th	7th*	2nd	4th	3rd*	1st*
Permanent Job within six months of graduation**	5th	4th	1st	2nd	3rd	6th*	7th*
Current Job Permanent	5th*	1st	6th*	2nd	3rd	4th*	7th*
Currently Employed	6th*	3rd	7th*	1st	4th	5th*	2nd
Current Income	7th*	4th	6th*	1st*	5th	2nd*	3rd*

Source: National Graduate Survey, 2013. Single asterisks indicate significance of result at the 10% level. Bachelor's degree graduates are a reference group.

TABLE V: Ranking of Credentials by their performance in labor market outcomes: Female

Variable	Community College	University Diploma below a Bachelor's degree	Trade School	University Diploma above a Bachelor's degree	Bachelor's degree	Master's Degree	Doctorate
Time to first job (months)	2nd*	7th	1st*	4th*	5th	6th	3rd*
Overqualified (least likely to be)							
First Job	3rd*	6th*	4th*	7th*	1st*	5th*	2nd*
Current Job	3rd*	6th*	4th*	7th*	1st*	5th*	2nd*
Related to field of study							
First Job	5th*	7th	4th*	3rd*	6th	2nd*	1st*
Current Job	5th*	6th*	7th*	3rd*	4th*	2nd*	1st*
Permanent Job within six months of graduation	3rd	6th	1st*	4th	5th	2nd*	7th*
Current Job Permanent	6th	2nd	4th*	1st	5th	3rd*	7th
Currently Employed	6th*	5th	7th*	1st*	3rd	4th	2nd*
Current Income	6th*	4th	7th*	1st*	5th	3rd*	2nd*

Source: National Graduate Survey, 2013. Asterisks indicate significance of result at the 10% level. Bachelor's degree graduates are a reference group.

Curriculum Vitae

Candidate's full name

Eton Boco

Universities attended (with dates and degrees obtained)

BSc Economics, Towson University 2013 – 2016

Publications

- Boco, E., & Emery, J. (2019). Is Education a Good Measure of Low Skill? *Atlantic Canada Economic Review*, *1*(1). Retrieved from http://www.acer-reca.ca/

Conference Presentations

- "**Is Education a Good Measure of Low Skill?"** Paper presentation at the annual Atlantic Canada Economics Association (ACEA) Conference, October 2018.