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Article abstract

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TRAINING AND EMPLOYMENT OF CLASSIC AND SEMI-PROFESSIONS: INTENSIFYING VERSUS ACCOMMODATING LOGICS

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Abstract

Over a half century ago, researchers found that so-called classic professions attract socially advantaged recruits with better labour market outcomes; however, as semi professions become increasingly institutionalized, and classic professional programs expand, differences between these two groups may be less pronounced. Using Statistics Canada's 2018 National Graduate Survey, we compare inputs and outcomes of four classic professions (law, pharmacy, medicine, and dentistry) and three semi-professions (teaching, social work, and nursing). Bivariate statistics show semi-professions have more non-traditional graduates who invest less in training. Multiple linear regression models also show that after controlling for demographics, classic professions have stronger education-job matches and higher earnings three years after graduation. We interpret these findings as being consistent with our theory of intensifying logic, where classic professions have tight training-job connections, and accommodating logic which suggests semi-professions have looser labour market connections. We end by discussing directions for future research on the classic and semi-professions.

Keywords: professions, institutional logics, school-to-work transitions, education-job match, returns to degrees

Résumé

Des recherches menées il y a plus de cinquante ans ont montré que les professions dites « classiques » attiraient les candidats favorisés sur le plan social tout en offrant de meilleurs résultats sur le marché de l'emploi. Néanmoins, à mesure que les « semi-professions » s'institutionnalisent et que les programmes professionnels classiques se développent, les différences entre ces deux catégories peuvent sembler moins marquées. En nous fondant sur l'Enquête nationale auprès des diplômés (END) de 2018 réalisée par Statistique Canada, nous avons comparé les formations académiques et les résultats sur le marché du travail de quatre professions « classiques » (droit, pharmacie, médecine et art dentaire) et de trois « semi-professions » (enseignement, travail social et soins infirmiers). Les statistiques bivariées montrent que les diplômés « non traditionnels » sont davantage représentés parmi les semi-professions et qu'ils investissent moins dans leur formation. Les modèles de régression linéaire multiple, tenant compte des aspects démographiques, montrent que les domaines d'études et les emplois pourvus concordent davantage au sein des professions classiques, avec des niveaux de rémunération supérieurs trois ans après l'obtention du diplôme. Ces résultats s'inscrivent dans notre théorie des logiques « d'intensification » où les liens sont étroits entre la formation et l'emploi, et « d'accommodement » où les semi-professions ont des liens plus lâches avec le marché du travail. Enfin, nous concluons en discutant des orientations futures de la recherche ayant trait aux professions classiques et aux semi-professions.

Mots-clés : les professions, logiques institutionnelles, transitions école-travail, adéquation études-emploi, revient aux degrés

Introduction

Student demand for professional fields of study in higher education has grown over time (Brint, 2001; Deželan et al., 2014). Medical doctors, dentists, pharmacists, lawyers, nurses, social workers, and teachers are among the most common professional occupations. In universities, programs for these professions enjoy high student demand and generate considerable competition for admissions. Indeed, enrolments across an array of professional programs have been major growth areas for colleges and universities, representing a shift away from traditional liberal arts as the backbone of enrolments (Brint et al., 2005). Since the 1970s, programs for occupational and professional fields have experienced increased enrolment, while liberal arts and science programs are on the decline (Brint et al., 2005, p. 159). As a result, an increasingly greater share of post-secondary credentials are from professional degree programs (Brint, 2002, p. 232).

While professions in aggregate tend to recruit better-prepared students and enjoy stronger labour market returns than do generalist fields of study, professions themselves vary considerably in both recruitment and outcomes. The sociology of professions has long contrasted classic versus semi-professions. Classic professions are comprised of archetypal occupations in medicine, dentistry, pharmacy, and law (Larson, 1977). Semi-professions are comprised of relatively newer occupations like teaching, nursing, and social work (for a classic statement, see Etzioni, 1969). Both types of professions set their training within universities, have their credentials recognized, and have strong state involvement in their delivery of core services. But studies from previous decades show that semi-professions tend to recruit less-prepared students and have weaker graduate labour market outcomes (Brante, 2013; Keller, 2006). However, since the theory of semi-professions was devised over 50 years ago, several shifts in the relative institutional standings of classic and semi-professions have emerged, as elaborated in the next section, and those shifts provide plausible reasons for expecting either small or large gaps between their inputs and outputs.

This study compares inputs and outcomes among graduates from four classic professions to those from three semi-professions in Canada. Our national setting, we argue, allows us to avoid conflating differences among professions that might reflect differences in other aspects of higher education, described further in a later section. Using recent Canadian data, we hypothesize that graduates of classic professional programs (law, pharmacy, medicine, and dentistry) will have continued to invest more heavily in their training and enjoyed stronger economic returns. Importantly, we further hypothesize that, in multiple linear regression models, those superior outcomes will not be strongly mediated by a graduate's demographic and attitudinal traits. This latter hypothesis is based on our theory that conceives classic professions as exhibiting an *intensifying logic* that not only recruits advantaged students, but also provides them with firm shelters once they enter profession-specific labour markets. We also hypothesize that graduates of semi-professional programs (education, social work, and nursing) will, in contrast, exhibit an *accommodating logic* that generates both weaker investments and labour market outcomes.

We aim to contribute to two sociological literatures. For the sociology of professions, we revisit distinctions between classic and semi-professions with an updated and systematic empirical comparison that uses representative Canadian data. For the sociology of education, we offer a novel and holistic field theory that aims to grasp dynamics that differentially connect university programs to professional jurisdictions.

Literature Review

Classic Versus Semi-Professions

The classic professions have been long characterized as enjoying intricate and esoteric knowledge bases, exclusive training programs in universities, lengthier periods of training, greater degrees of task autonomy, and strong barriers to entry for both their training (i.e., more selective and exclusive programs in universities) and practice (i.e., more strongly and widely enforced licensures; see Evetts & Dingwall, 2002). Semi-professions, in contrast, have been characterized as having less intricate and esoteric knowledge bases, less exclusive programs in universities, shorter durations of training, limited task autonomy (i.e., their practice largely governed by bureaucrats), and only partial monopolies on practice (i.e., when private schools need not hire certified teachers;

though each of these variables vary across national contexts—see Adams, 2015).

Classic professions also vary considerably in the investments they demand of their prospective students. Medicine, dentistry, pharmacy, and law each use standardized test scores in their admissions. In Canada, the Medical College Admission Test (MCAT) is required for admission to most medical schools, while the Dental Admission Test (DAT) is used for most dentistry programs. Most pharmacy programs use the Pharmacy College Admission Test (PCAT) for admission and the Law School Admission Test (LSAT) is a standard requirement for admission to most law schools.[1] These rigorous standardized tests typically last four to five hours; however, the MCAT can take up to seven and a half hours to complete. In contrast, semi-professions like teaching, social work, and nursing do not have their own standardized admissions tests.

Tuition fees also tend to be higher for classic professions. While all Canadian provinces, for instance, regulate fees charged by public universities and colleges, since the late 1990s most have partially deregulated fees in classic professional programs, leading to steep rises in medicine, dentistry, pharmacy, and law, while fees in almost all other university fields, including the semi-professions, have remained constant in real dollars (Frenette, 2005). In 2019–20, fees in medicine, dentistry, pharmacy, and law were two to three times higher than those of nursing, social work, and teaching (Statistics Canada, 2020). Students also need much higher grades to enter classic professional programs; Canada's major universities require at least an 85% average for medicine, dentistry, pharmacy, and law. Conversely, required grade averages at the same universities for teaching, nursing, and social work are each in the mid-B or 75% range. Additionally, teachers' colleges typically accommodate part-time students, while medicine, dentistry, pharmacy, and law strongly demand that their students study full-time.

Impact of Institutionalization: Widening or Shrinking Gaps?

Since ideas about semi-professions (e.g., Etzioni, 1969) were first advanced over a half century ago, several shifts have occurred among different professions. First, the semi-professions themselves are now far more institutionalized. As one example, in the 1970s, social work was a relatively new profession, without unique credentials and with only a just-emerging jurisdiction for practice that was tied to the then-expanding welfare state (Healy, 2008). Teaching and nursing were more established occupations in the 1960s and 1970s but were then undergoing a process of professionalization that raised their societal standing, bringing better pay and working conditions. Whereas many teachers once lacked post-secondary credentials, norms established in the 1960s and 1970s made bachelor's degrees and teacher certifications more or less mandatory; today many teachers possess master's degrees (Ingersoll & Perda, 2008).

Nursing credentials and designations were also created and implemented in hospitals and in private practice (DeSilets, 2007). Such processes of professionalization have long been recognized as a strategy undertaken by occupations in order to raise their societal standing. The institutionalization of credentials is a key part of this strategy, since they are the basis of claims to jurisdictional authority over a task area, a process that tends to raise average salaries and wages (Wilensky, 1964). All of the semi-professions have been strongly institutionalized over the past half-century, situating their training in universities, forming occupational associations and unions, creating graduate programs, and attempting to develop their research and knowledge bases in those programs. But it is unclear whether these processes have enabled them to catch up to the classic professions.

Second, demographic advantages once held by classic professions may have eroded over time. For instance, Table 1 shows that the classic professions are now majority female (almost 60%) and have disproportionately low numbers of immigrants and minorities. If one adheres to theories of labour market discrimination, one might hypothesize that these demographic shifts could erode labour market outcomes among classic professions.

Third, classic professions like law and medicine have been subject to destabilizing external shocks in recent decades. Well-known theorists like Eliot Freidson (2001) wrote 20 years ago of state- and market-driven processes aimed at controlling costs and argued that they were serving to undermine the authority and status of doctors and lawyers. Those processes have likely intensified over the interim 20 years, though their actual impacts on classic professions have been debated (e.g., Calnan, 2015).

These three forces from the past 50 years, including greater institutionalization of the semi-professions, shifting demographic compositions of the classic professions, and processes aimed at reducing costs of lawyers and doctors, may have altered the relative standings of classic versus semi-professions. On the one hand, they may have plausibly reduced gaps in recruitment and labour market outcomes. The establishment of recognized credentials can attract ambitious students who are willing to invest in a profession if it has labour market shelters that reduce competition and if its credentials are not subject themselves to overproduction and inflation (Collins, 2002). Research shows that any occupation that engages in labour market closure in the form of licensing, educational credentialing, or the formation of professional unions tends to enjoy boosted wages, independent of the complexity of their knowledge base (Weeden, 2002). Thus, the institutionalization of the semi-professions over the past few decades may have raised their graduates' outcomes and reduced longstanding gaps between themselves and the classic professions. While it may be unrealistic to expect similar rates of pay between all professions, it is plausible that differences in their inputs and education-job matches may no longer differ significantly.

On the other hand, it is also plausible that significantly large gaps remain. Over recent decades, as university enrolments expanded, the semi-professions have greatly increased their numbers. In Canada, the number of universities and colleges offering training in the semi-professions has grown immensely. Today, Canada has 43 schools of social work, 133 nursing programs, and 65 faculties that offer teacher training; however, the classic professions have remained relatively exclusive. There are only 17 medical schools, 16 faculties of law, and 10 schools of dentistry. These contrasting levels of exclusivity may have important implications for recruitment and for labour market outcomes. If semi-professions expanded without clear growth in labour market demand for their credentials, their greater number of graduates, particularly from less elite institutions, may serve to deflate both investments and outcomes among their graduates. This decreased investment may also trigger processes of credential inflation that can depress wages. Moreover, broader conditions for semi-professional work may have soured. The past 30 years have witnessed a contraction of welfare state provisions, some of which have had the impact of lessening pay and opportunities in fields like nursing, social work, and teaching (Ingersoll, 2003; Švarc, 2016), while others have eroded classic professional exercises of control and autonomy (Calnan, 2015; Freidson, 2001).

Thus, the issue of whether classic and semi-professions are converging or diverging on their inputs and outputs hinges on a key issue: their degree of regulation in their training and labour markets. To further explore this issue, we next sketch a holistic theory about professions, degrees of regulation, training inputs and investments, and labour market outcomes.

Interpenetration Theory and the Professions

Our theoretical framework centres on school-society connections, a topic in the sociology of education that is foundational yet has been underplayed in recent decades. *Interpenetration theory* (Davies & Mehta, 2018) is premised on the notion that the expansion of formal education over the past century has served to generally tighten connections between schooling and other societal fields, such as family, leisure realms, and job markets. The term *interpenetration* aims to capture reciprocal processes by which schooling and other social fields mutually shape each other. When fields interpenetrate, boundaries and borders between them weaken and become more porous, and new practices, culture, and forms of organization flow between them. In the case of formal education, an increasingly thick web of school-society connections emerges. However, the quality and quantity of those connections can vary across different sub-fields. For instance, professions are typically seen to be exemplars of tight connections between schooling content and workplace tasks, as expressed in the strong vocational specificity of professional university credentials (Abbott, 2005). Our emphasis, however, is varying connections, highlighting that interpenetration is driven by two very distinct processes that differ by the direction of their resource dependencies and how information flows between fields (Fligstein & McAdam, 2012).

We adapt and apply the term *logic* to refer to self-reinforcing social mechanisms that can bridge two sets of processes: those that recruit and train people in university-based programs, and those that regulate professional labour markets and generate economic outcomes. Our argument is that classic and semi-professions continue to be organized by different logics and that those logics continue to generate different outcomes through a process of cumulative advantage (in which an existing advantage generates further advantages; see DiPrete

& Eirich, 2006). In this framework, logics are conceived not as measured and singular variables, but as inferred and latent bundles of social mechanisms that generate observed patterns of associations among measured variables (i.e., Hedström & Bearman, 2009; Thornton et al., 2012).

Two such logics may reinforce distinctions between classic professions and semi-professions. An intensifying logic is triggered when an initially favourable labour market position tends to reinforce further cycles of exclusivity and distinction. An accommodating logic is triggered when an occupation adapts itself to less advantaged populations of practitioners and clients. The first process tightens connections between schooling and other fields through an intensifying logic. This logic is triggered when actors greatly desire access to schooling programs and credentials. If competition for that access rises, actors will adapt their practices in ways that align with schooling dictates. Those adaptations become driving forces that leverage change in other social fields, such as family life. Through this intensifying logic, family life is re-made in the image of what schooling dictates.

The second process emerges through an opposite logic in which other social forces encourage educational actors to change their own institutional practices and structures. The accommodating logic occurs as schooling expands in ways that brings new populations into the orbit of formal education but does so by encouraging schooling institutions to become more responsive to the characteristics of those new populations. This usually occurs among lower status sectors of education. Since institutions in such sectors need resources like fee-paying students, their student populations tend to leverage organizational changes aimed at accommodating those populations and securing their enrolment. For instance, many public colleges and universities have strategically altered their offerings to suit the needs of non-traditional students, which has been the largest growing segment in higher education in recent decades (Stevens & Kirst, 2015). Those non-elite institutions have created satellite campuses, night, weekend, and summer offerings, and online delivery, all aimed to attract populations of non-traditional students.

We hypothesize that these logics have maintained differences between classic and semi-professions over the past half-century despite considerable changes in the institutionalization of the semi-professions, in demographic compositions of classic professions, and in a series of challenges to the status of classic professions.

Research Questions and Hypotheses

We are guided by two research questions. First, do classic and semi-profession graduates differ in three kinds of *inputs*—their demographics, levels of investment, and attitudes toward their programs? Second, do those graduates differ in two kinds of labour market *outcomes*: training-job matches (i.e., likelihood of employment in their field of training) and average annual incomes? We adapt and apply a logics framework to advance a hypothesis and counterhypothesis. If the semi-professions and classic professions continue to be subject to accommodating and intensifying logics respectively, we would expect significant differences between their inputs and outcomes. In contrast, several changes over the past half-century discussed above may have eroded either of those logics, and as such, we would expect no significant difference in the inputs and outcomes between these sets of professions. We would also expect that differences in outcomes would not be mediated by differences in inputs and investments. Since intensifying logics serve to strengthen labour market shelters, we would expect classic professions to enjoy significantly better outcomes regardless of the characteristics of their graduates, as long as their graduates indeed attain required credentials and enter requisite labour markets.

Methods

Data

The data for our analyses is drawn from the 2018 National Graduate Survey (NGS), which was assessed at one of Statistics Canada's Research Data Centres. The NGS is a cross-sectional survey that collects information from a nationally representative sample of Canadian post-secondary graduates. The survey includes questions related to demographic characteristics, educational attainment, and labour market outcomes since graduation. The full sample of the 2018 NGS includes 35,759 respondents from the 2014–15 academic year who were surveyed three years post-graduation. The NGS is the

most extensive survey available in Canada to assess the school-to-work transitions of post-secondary graduates. The survey was conducted by computer assisted telephone interviewing (CATI) and is representative of all post-secondary graduates at publicly funded institutions within Canada. The response rate is approximately 63% of the targeted sample.

The analytic sample for this study only includes graduates with credentials in the most common professional degree programs discussed in the profession's literature (Evetts, 2003; Larson, 1977; Švarc, 2016), including teaching (Bachelor of Education), social work (Master of Social Work), nursing (Bachelor of Nursing Science; Bachelor of Science in Nursing), law (Bachelor of Laws), pharmacy (Bachelor of Science), as well as medicine and dentistry (Doctor of Medicine; Doctor of Dental Surgery; Doctor of Medicine in Dentistry). The sample is also restricted to graduates across the 10 Canadian provinces that reported valid answers for their occupation and annual earnings. As is common in the econometrics literature examining the labour market outcomes of recent graduates, the analysis is also restricted to full-time and full-year workers,[2] resulting in a sample size of 3,798 respondents.[3]

Measures

Outcome Variables

To test differences in the early labour market outcomes of classic and semi-profession graduates, we operationalize two outcome measures. The first outcome variable in our regression models identifies whether the respondents are working in educationally matched labour market outcomes. This variable is derived using the education and occupation survey questions in the NGS to map their degree at graduation to their occupation at the time of the survey. Respondents who were employed full-time in a profession directly related to their schooling are classified as *matched*, while respondents who are employed in unrelated occupations are classified as *unmatched*. For example, respondents that received a law degree in 2015, and reported working full-time (>30 hours per week) as a lawyer, three years after graduation, were considered matched.[4] The response variable for the second series of regression models is annual employment income reported by respondents working full-time at the time of the survey.

Explanatory Variables

The focal explanatory variable in this study distinguishes among the professional degree programs which are then dichotomized into two classifications: (1) Classic Professions, and (2) Semi-Professions. Classic Professions include medical doctors, dentists, pharmacists, and lawyers. Semi-Professions include teachers, social workers, and nurses. In order to test our two theoretical logics, we use measures that assess student inputs and investments in their professional programs. This includes time to degree, which is the duration of enrolment in post-secondary education based on a respondent's enrolment and graduating year, as well as the enrolment (full-time or part-time) and employment status of respondents during their professional degree programs. We also incorporate a measure that assesses the main factors that contributed to their choice of university. For example, university reputation, availability, and proximity to home, as well as employment opportunities and personal or professional interest. A further description and analysis of these variables is provided in Table 2.

We also include several other important inputs and predictors of employment, including disability status, parental education,[5] student loan source, gender, age group, marital status, dependent children, region of residence, language, and immigrant status and minority status.

Disability status consists of two categories: (0) Respondent has no disability, and (1) Respondent has a disability. The parental education variable identifies whether respondents have at least one parent with an undergraduate credential and consists of two categories: (0) Does not have a university degree, and (1) Has a university degree. We include measures assessing the use of student loans to subsidize their post-secondary education (PSE), including both government and other sources of loans, which are dichotomized into the following two categories: (0) Does not have loans to subsidize PSE, and (1) Has loans to subsidize PSE.

The two categories for the gender variable include males (treated as the reference category) and females. Age groupings include: 20 to 29 years old (treated as reference), 30 to 39 years old, and those 40 years of age or older. Marital status consists of three categories: married (treated as the reference category), previously married, and single, while the dependent children variable is dichotomized into two categories: (0) Does not have chil-

dren, and (1) Has children. The region variable assesses the respondent's region of residence and consists of the following five categories: (1) Atlantic Region, (2) Quebec, (3) Ontario (treated as the reference category), (4) Prairie Region, and (5) British Columbia. The language variable consists of two categories: (0) Not bilingual, and (1) Bilingual (English and French). Finally, both minority status and immigrant status assess whether or not respondents identify as such. As mentioned above, these measures are included as control variables in our models because they have been identified as important predictors of labour market outcomes in prior research examining the school-to-work transitions of post-secondary graduates in Canada (Finnie, 2000; Jehn et al., 2019; Robst, 2007). A further description of these variables is provided in Table 1.[6]

Statistical Analysis

All analyses are weighted to adjust for the complex sampling design of the NGS. Missing data ranged from <1.0% for parental education, government loans, marital status, children, and language, to approximately 2.1% for minority status and 2.3% for other loan sources. We imputed the values for missing observations using multiple imputation by chained equations (MICE) with 10 replicates (Royston & White, 2011). Descriptive statistics are then estimated separately for classic and semi-professions to provide weighted study sample characteristics for all of the variables included in our analyses (Table 1). We also provide bivariate statistics for our analysis of student inputs and investments in their professional degree programs (Table 2).

We then estimate a set of logistic regression models to predict the extent to which graduates of professional degree programs are able to find employment in their professions, three years after graduation (Table 3). The first of these models only includes the professional degree classification variable to determine baseline differences in outcomes. The second model adds our theoretically relevant control variables to assess the extent to which the differences identified in Model 1 are attributable to the control variables. To better interpret the binary logit results from our models, average marginal effects are provided in Table 3 and predicted probabilities are estimated and subsequently presented as a graphical display for the focal explanatory variable in our analyses (Figure 1). Finally, we estimate a set of OLS regression models to assess the difference in earnings between classic and semi-professional degree programs (Table 4). Similar to the logistic regression results in Table 3, Model 1 includes the variable capturing professional degree classification to assess the earnings differences among professional degree holders without controls. In the second model we also include the control variables. The results from the models are then used to determine predicted average earnings and are again presented as a graphical display for the focal explanatory variable (Figure 2).

Results

Table 1 provides the weighted descriptive statistics for all variables in this study. In the interest of space, only the results related to the response variables are discussed. The percentage of classic profession graduates with educationally matched labour market outcomes is approximately 81%, compared to 67% among semi-profession graduates. The average annual earnings of classic profession graduates are approximately $80,250, while semi-profession graduates have average annual earnings of $59,500. These differences are consistent with the notion that classic professions have retained their labour market advantages over time.

Table 2 includes bivariate statistics on student inputs and investment in their programs. The results indicate significant differences between classic and semi-professions across all outcomes ($p < 0.001$). The majority of semi-profession graduates are able to complete their degree in under two years, while the majority of classic profession graduates invested four or more years. Semi-profession graduates are more likely to have studied part-time and worked at least part-time during their studies, compared to those in the classic profession graduates. The main factors contributing to semi-profession graduates' choice of university was either availability of program or proximity to home, compared to classic profession graduates who were most concerned about the university's reputation.

Combined, these results support our hypothesis that semi-profession graduates demonstrate an accommodating logic with weaker inputs and investments. A much larger proportion of graduates of the semi-professions were employed while completing their programs, while also being more concerned about program availability

Table 1

Study Sample Characteristics based on data from the 2018 National Graduate Survey (N = 3,798)

	Classic Professions	Semi-Professions	P-Value
Education-Job-Match (%)			**
Matched Outcomes	81.47	67.33	
Annual Earnings (mean)	$80,250	$59,500	***
Disability Status (%)			
Has Disability	21.76	24.05	
Parental Education (%)			***
Undergraduate Degree	67.78	42.51	
Government Student Loans (%)			***
Has Government Loans	75.22	53.52	
Other Student Loans (%)			***
Has Other Loans	67.72	24.26	
Gender of Respondent (%)			***
Female	58.50	80.01	
Age Group (%)			***
20 to 29	53.62	54.82	
30 to 39	40.35	25.62	
40+	6.03	19.56	
Marital Status (%)			
Married	56.27	56.67	
Previously Married	2.38	4.25	
Single	41.34	39.08	
Dependent Children (%)			***
Has Dependent Children	11.35	32.59	
Region (%)			
Atlantic	6.19	7.84	
Quebec	23.73	27.95	
Ontario	40.60	32.51	
Prairie	18.21	20.51	
British Columbia	11.26	11.19	
Language (%)			***

	Classic Professions	Semi-Professions	P-Value
Bilingual	48.47	34.14	
Immigrant Status (%)			**
Immigrant	25.51	14.28	
Visible Minority (%)			**
Minority	29.13	18.84	
Observations	439	3359	

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$
All descriptives include sampling weights to account for unequal probability of selection into the sample.
Significance tests are based on Chi-square tests.

Table 2

Student Investments and Attitudes based on data from the 2018 National Graduate Survey (N = 3,798)

	Classic Professions	Semi-Professions	P-Value
Time to Degree (%)			***
1-2 Years	12.86	45.76	
3 Years	42.06	17.09	
4+ Years	45.08	37.15	
Program Enrolment Status (%)			***
Full-Time	96.51	75.54	
Part-Time	2.29	17.03	
Both	1.20	7.43	
Program Employment Status (%)			***
Full-Time	20.16	23.65	
Part-Time	29.76	43.01	
Both	17.35	17.01	
Not Working	32.73	16.33	
Most Important Factor in Choice of University (%)			***
University Reputation	38.63	18.81	
Availability of Program	22.40	32.22	
Proximity to Home	23.61	35.37	
Tuition Fees	2.44	2.64	
Recommended by Family or Friends	2.89	2.98	

	Classic Professions	Semi-Professions	P-Value
Other	10.04	7.98	
Observations	439	3359	

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$
All descriptives include sampling weights to account for unequal probability of selection into the sample.
Significance tests are based on Chi-square tests.

and wanting to remain close to home, which suggests lower overall investment in their programs of study. In contrast, classic profession graduates demonstrated an intensifying logic with greater investments in their training across all measures.

Table 3 provides the binary logistic regression estimates for education-job match, converted to average marginal effects. For discrete (categorical) variables, the marginal effects represent differences in the predicted probability of being in a matched occupation, in comparison to the references categories (see Long & Freese, 2014). Model 1 presents the marginal effects, net of the effects of the control variables. The purpose of Model 2 is to assess whether differences in outcomes among professional degree graduates remain after controlling for differences in the control variables. Comparing the two models, the marginal effects remain consistent between models, which highlights key differences in labour market processes, even after controlling for observable characteristics. The effect of the professional degree classification is statistically significant for both models ($p < 0.001$).[7] Importantly, that coefficient is barely altered by the entry of demographic variables in Model 2. It is reduced only by 21%. This suggests that the advantages of the classic professions stem largely from their labour market shelters and capacity to strongly connect their training to jobs, rather than from the demographic and attitudinal characteristics of their graduates. Doctors, dentists, pharmacists, and lawyers are more likely to report better education-job matches than teachers, social workers, and nurses because the former are more tightly regulated, both in terms of their training, and in terms of their job entry, regardless of their incumbents' demographics and attitudes. Whereas classic profession students' investments are crucial for entry into their professional degree programs, they become far less relevant in the job market once they attain their credentials.

To provide an easy-to-interpret output, we converted the estimates into predicted probabilities, while holding the independent control variables constant at typical values, their average proportions (see Fox & Andersen, 2006). The predicted probabilities of being employed in a profession directly related to their professional degree, three years after graduation, are plotted in Figure 1, along with their corresponding 95% confidence intervals. After controlling for differences in the control variables, the estimates from Figure 1 reveal the predicted probability of graduates with degrees in medicine, dentistry, pharmacy, and law to be employed full-time in jobs directly related to their schooling is approximately 84%, three years after graduation. The predicted probability that graduates with degrees in nursing, social work, and teaching will be employed in educationally matched labour market outcomes, three years after graduation, is approximately 67%. Fully one-third of semi-profession graduates are not working in their field three years after graduation, conditional on other variables in the model.

Table 4 provides the OLS regression estimates predicting full-time earnings for graduates with professional degrees, three years after graduation. The purpose here is again to assess whether differences in earnings among professional degree graduates remain after controlling for differences in demographics, and the degree to which those controls mediate the effect of profession-type. The first model regresses annual employment earnings on the professional degree classification variable, without controls, while Model 2 adds the control variables. The coefficient for profession type shows that the semi-professions earn approximately $20,000 less than their classic profession peers, which is statistically significant in both models ($p < 0.001$).[8] Importantly, that coefficient shrinks only 4% in Model 2 upon the addition of demographic and attitudinal variables. This pattern strongly suggests that the capacity of the classic professions to set high wages in their labour market shelters is what sets them apart from the semi-professions, rather than their demographics or attitudes.

As with our logistic regression results, we also

Table 3

Binary Logit Models—Education-Job-Match

	Model I	Model 2	Wald Tests
Professional Degree Classification			
Classic Professions	(1)	(1)	
Semi-Professions	-0.14**	-0.11*	
Disability Status		-0.01	
Parental Education		-0.05	
Government Student Loans		0.02	
Other Student Loans		0.03	
Female		0.01	
Age Group			***
20 to 29		(1)	
30 to 39		-0.09*	
45+		-0.25***	
Marital Status			
Married		(1)	
Previously Married		0.03	
Single		-0.08*	
Dependent Children		0.03	
Region			***
Ontario		(1)	
Atlantic		0.16***	
Quebec		0.02	
Prairie		0.13***	
British Columbia		0.14***	
Bilingualism		0.10**	
Immigrant		-0.02	
Minority		0.01	
Time to Degree			**
1-2 Years		0.08*	
3 Years		0.10**	
4+ Years			
Program Enrolment Status			
Full-Time		(1)	

	Model l	Model 2	Wald Tests
Part-Time		-0.06	
Both		-0.10	
Program Employment Status			*
Full-Time		(1)	
Part-Time		0.10*	
Both		0.01	
Not Working		0.09	
Most Important Factor in Choice of University (%)			
University Reputation		(1)	
Availability of Program		0.04	
Proximity to Home		-0.00	
Tuition Fees		-0.02	
Recommended by Family or Friends		-0.05	
Other		-0.06	
Observations	3798	3798	

Average marginal effects shown
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$
All models include sampling weights to account for unequal probability of selection into the sample
Source: 2018 National Graduate Survey

Figure 1

Predicted Probability of Matched Outcomes

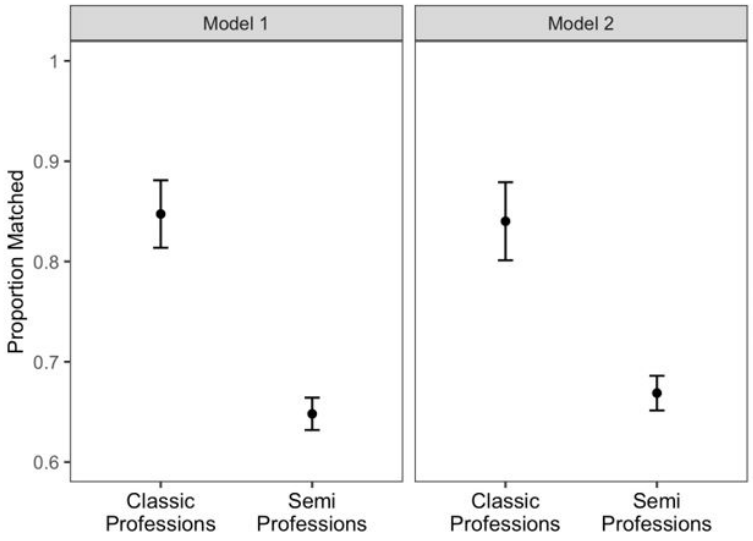


Table 4

Ordinary Least Squares Regression—Average Annual Earnings

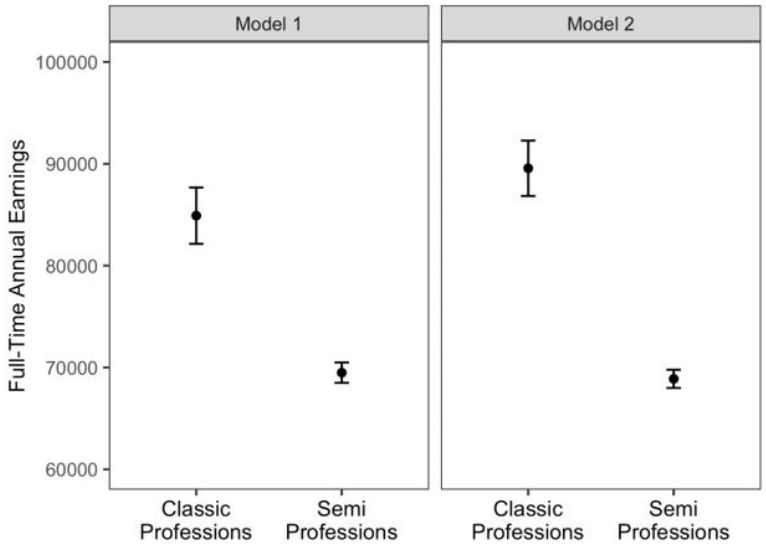
	Model I	Model 2	Wald Tests
Professional Degree Classification			
Classic Professions	—	—	
Semi-Professions	-20784.62***	-19895.22***	
Disability Status		-6137.64***	
Parental Education		-1201.41	
Government Student Loans		-3002.83	
Other Student Loans		1538.19	
Female		-4492.21*	
Age Group			***
20 to 29		—	
30 to 39		7755.99**	
45+		14241.63***	
Marital Status			*
Married		—	
Previously Married		3024.40	
Single		-4873.96**	
Dependent Children		-6128.60**	
Region			***
Ontario		—	
Atlantic		4103.21*	
Quebec		-3597.63	
Prairie		9374.45***	
British Columbia		1665.18	
Bilingualism		1262.34	
Immigrant		-6300.76*	
Minority		1764.14	
Time to Degree			***
1-2 Years		—	
3 Years		225.01	
4+ Years		5839.61**	
Program Enrolment Status			
Full-Time		—	

	Model I	Model 2	Wald Tests
Part-Time		4744.35	
Both		1963.16	
Program Employment Status			***
Full-Time		—	
Part-Time		-10364.51***	
Both		-13781.11****	
Not Working		-10014.17****	
Most Important Factor in Choice of University (%)			
University Reputation		—	
Availability of Program		727.07	
Proximity to Home		-1825.47	
Tuition Fees		-323.82	
Recommended by Family or Friends		-4512.61	
Other		3044.65	
Observations	3798	3798	

Average marginal effects shown
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$
All models include sampling weights to account for unequal probability of selection into the sample
Source: 2018 National Graduate Survey

Figure 2

Predicted Full-Time Annual Earnings



display margins converted into earnings (in 2018 CDN dollars) and plotted in Figure 2. The effects display in Figure 2 provides the predicted average earnings for classic and semi-professional degree holders, holding the independent control variables constant at typical values, accompanied by their corresponding 95% confidence intervals. The estimates in Figure 2 reveal that, after controlling for differences in demographics, graduates with degrees in medicine, dentistry, pharmacy, and law report the highest average earnings of approximately $89,500.[9] Respondents with either nursing, social work, or teaching credentials reported significantly lower average earnings ($69,000), three years after graduation. This suggests a gap of 23% in wages three years after graduation, taking demographics and attitudes into account.

Discussion and Conclusion

In sum, we empirically tested whether classic and semi-professions differed significantly across two bundles of variables: those that measured characteristics of their recruits (attitudes, investments, and demographics) and those that measured outcomes (employment matches and earnings). We found significant differences among both groups of variables at zero-order levels, and also that outcomes continued to differ significantly even after controlling for an array of demographic and other variables.

We interpret these differences as having been generated by intensifying and accommodating logics.[10] The "intensifying logic" among the classic professions triggers a self-reinforcing cycle in which initially superior returns to degrees prompt high levels of competition and trainee-investment. In contrast, programs and labour markets for the semi-professions are connected by an accommodating logic in which lesser returns and competition encourages training providers to adapt to the varying life circumstances of their applicants. Whereas classic professional programs are generally offered by a relatively small number of research-intensive post-secondary institutions, semi-professional training is offered across a larger array of institutions, whose enrolments are only loosely connected with job market trends, prompting their applicants to not invest heavily into their training. Admission processes for classic professional degree programs also typically require standardized tests, whereas such tests are unnecessary for entry into semi-professional degree programs. These diverging logics reflect differences in professions' capacities to regulate their training opportunities and provide shelters for their practice.

Longstanding labour market advantages of the classic professions—high wages, social status, and job security—has generated high demand for their credentials. When that demand goes unmet, those credentials become relatively exclusive, thus fueling competition for them. That competition in turn generates an intensifying logic that leverages greater investments among their prospective trainees, encouraging them to alter their lifestyles in ways that align with the dictates of their desired program. Those dictates often involve moving residences, taking out large loans for tuition, re-arranging schedules to allow for study time, writing onerous standardized tests, deferring employment, and psychologically identifying with the profession.

However, if there is a glut of supply for credentials, a very different logic is triggered— the accommodating logic. Relatively weakly regulated training can dilute competition for admissions, which in turn weakens the power of those training programs to leverage strong investments from their applicants, whether earning high grades, paying large tuition fees, writing onerous standardized tests, placing a priority on program prestige, or psychologically identifying with the profession. We also acknowledge that we did not actually measure those logics, but instead inferred them through observed patterns of associations, as per social mechanisms reasoning (e.g., Hedström & Bearman, 2009; Thornton et al., 2012).

This study contributes to the literatures in sociology of professions and sociology of education by comparing the early labour market outcomes of recent graduates with classic versus semi-professional degrees. To our knowledge no Canadian study has comprehensively compared the employment outcomes of these graduates. Our statistical analyses revealed stark differences in the inputs and outcomes among semi-professions versus classic professions. Graduates of semi-profession programs, which have considerably larger enrolments, invest less in their training, and have different attitudes than classic profession graduates. Respondents who were trained in classic profession fields also report higher rates of education-job match and earnings.

We also found that considerable proportions of grad-

uates with degrees in education, social work, and nursing do not work full-time in their respective professions three years after graduation and had wages that were 23% lower than their counterparts in the classic professions, taking demographics and attitudes into account. Importantly, the small amounts of the classic-semi-profession gaps in job match and in earnings that were mediated by demographics and attitudes suggests that the capacity of the classic professions to set high wages in their labour market shelters sets them apart from the semi-professions, rather than their demographics or attitudes. Investments in training are crucial for entry into classic professional programs, but once those credentials are attained, attitudes and demographics appear to matter little for education-job match and particularly for wages. Further, our logics framework contributes to the literature on professions by generating novel hypotheses that are amenable to empirical testing with high quality data, and by providing a holistic explanation for an entire pattern of empirical associations, rather than just a single outcome. Finally, it also generates solid grounds for a reasonable counterhypothesis.

We end by discussing a promising direction for further research on our topic: acquiring enhanced data. The NGS followed professional degree holders three years after graduation. But recent data liberation initiatives by Statistics Canada include new linkages between surveys and administrative data that can follow professional graduates over longer periods of time. Such linkages could allow researchers to investigate the effects of changing supplies of graduates. For instance, in 2015, Ontario's provincial government lengthened its Bachelor of Education curriculum in response to a perceived over-supply of credentialed teachers, hoping extending training from one to two years would lower demand and reduce the over-supply (see Ontario Universities' Application Centre, 2020). Two years later, that policy improved teacher trainees' chances of obtaining full-time employment in the field (Ontario College of Teachers, 2017). While three years after graduation represents a reasonable timeline to assess the school-to-work transitions of post-secondary graduates, some processes, such as attaining full-time employment in one's field, may take longer and require longitudinal data with extended time points.

In sum, this study has contributed a unique sociological framework that infers latent social mechanisms that generate observed patterns of associations that distinguish classic from semi-professions, and tests hypotheses using high quality Canadian data. We hope our framework will be tested in other contexts and can bolster understandings of alignments between professional programs and labour markets.

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Notes

1 Some programs that do not formally require the writing of standardized tests nevertheless strongly encourage students to include them in their application packages.
2 Respondents that work 10 months or greater are considered full year. This was done to account for the shortened number of months in a typical school year for teachers.
3 Graduates who reported that they had continued their schooling, including graduates who continued their training as interns, residents, or fellows were excluded from the analyses.
4 The education variable in the survey was derived using the Classification of Instructional Programs (CIP) and occupation variable was constructed using the National Occupational Classification Codes (NOC).
5 The parental education and student loan variables also represent proxies for parental socio-economic status.
6 We are unable to include proxies for scholastic aptitude or ability in our regression models. Standardized tests such as the SAT or ACT are not required for admission into Canadian universities, and scores for tests needed to enter professional degree programs (e.g., LSAT, MCAT, GMAT etc.) are unavailable in Statistics Canada's National Graduate Survey. We anticipate that the effects of these unobserved variables are partially absorbed into the coefficients for semi-professions in our regression models. We encourage researchers in other countries with access to nationally representative data that also includes school identifiers as well as information on respondents' grades and/or standardized test scores to employ this framework in subsequent analyses.
7 Wald tests are used to assess whether the effects of categorical variables with more than two categories are statistically significant.
8 Wald tests are used to assess whether the effect of categorical variables with more than two categories are statistically significant.
9 All estimates are reported in Canadian dollars and rounded to the nearest hundredth.
10 A reviewer suggested that our findings may not reflect

any underlying logics, but instead reflect professions' different placements in core versus peripheral areas of the economy. We acknowledge the plausibility of this alternate interpretation, noting that the National Graduate Survey unfortunately lacks measures of whether respondents were employed in core versus peripheral sectors. But while acknowledging that all professions likely vary internally with their own cores and peripheries, our article is oriented to explain differences between sets of professions in aggregate—whether entire professions, on average, are better positioned to generate self-reinforcing advantages, as evidenced in the characteristics of their recruits, their investments, and their economic outcomes. We believe our logics approach captures this holistic process. That reviewer also suggested that engineers may be an important anomaly for our framework, as they control their labour supply far less than do classic professions, yet earn high incomes. We call for further research on engineers, noting that they may not need to control their supply while their skills remain buoyant in knowledge-based economies, and that their high university admissions standards likely also serve to indirectly regulate entry into their profession.