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Outcomes for Alternate Pathways

REPORT

Julie Dubois
Learning Policy Directorate
Strategic Policy and Research

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Abstract

This paper used the 1995 Follow-up of the National Graduates Survey to explore the labour market outcomes of college and university graduates who followed different routes towards their graduation in 1995. The objective was to determine whether some previous postsecondary experience and educational pathways were associated with good or poor labour market outcomes two and five years after graduation.

First, this study examined earnings and labour force status of graduates having different previous postsecondary experiences. The impact of having previous postsecondary education (PSE) on labour market outcomes was found to be generally positive: five years after graduation, the earning premium associated with previous PSE was statistically significant and ranged from 6% to 16% and almost all graduates with previous PSE were less likely to be inactive and unemployed compared to graduates without previous PSE. Only university graduates who had a previous trade or college degree were persistently more likely to be unemployed compared to university graduates without previous PSE.

The second part of this study examined whether the so called "traditional pathway" provided graduates with better labour market outcomes than alternate pathways. Graduates who chose indirect routes were not found to be worse off in term of labour market outcomes compared to students who choose direct routes. In fact indirect routes had in many cases a positive impact on earning, employment, and labour force participation. The only negative impact of an indirect route that persisted over time was observed for college delayers who had a higher likelihood of being inactive.

These findings suggest that indirect pathways towards postsecondary graduation are not less efficient, as in the majority of cases graduates who followed these indirect routes found their way from high school to the labour market without being penalized economically. Following indirect routes might actually increase efficiency if they are used to gain labour market experience, improve information and help students make better choices.

1. Introduction

According to the latest National Graduates Survey (NGS), the majority of graduates had been out of school for some time prior to starting their university or college programs or they had some postsecondary education (PSE) prior to enrolling in their program. In 2000, only 36% of college graduates and 50% of university graduates had no previous PSE and entered directly into their program after high school. In addition to indirect pathways toward PSE enrolment, a non negligible proportion of students chose indirect ways leading to graduation: almost 15% of college graduates and more than 30% of bachelors graduates took a break or studied part-time, which delayed the completion of their program.

However, moving directly to a postsecondary program from high school and completing it within the expected time frame is believed by some to result in the greatest social, economic, and personal returns from postsecondary education (Hearn, 1992). On the other hand, empirical results found little economic penalty associated with pursuing an indirect route to an undergraduate degree instead of the more conventional direct route (Wannell, Pereboom and Lavallée, 2000). Nevertheless, obtaining a second postsecondary credential that was not designed to be a continuation of the first one was found to result in an earning disadvantage for some students (Henchy, 1998).

To shed light on these views, this paper explores whether following indirect (or non-traditional) routes had an impact, positive or negative, on labour market outcomes of college and university graduates of the Class of 1995. The research paper is organized as follows. The second section following this section gives a description of the data used in the study. The third section determines the economic implications of obtaining a previous postsecondary credential that is not necessarily the continuation of the second one. The fourth section examines whether the so called "traditional pathway" (entering PSE directly after high school, studying full-time and without interruption) provided graduates with better labour market outcomes than alternate pathways. In both sections three and four, descriptive statistics on earnings and labour force status by "previous PSE earned" and "educational pathways followed" are presented first. Because descriptive statistics mask a lot of variation by field of study and other personal and labour market characteristics, regressions models were also estimated to determine the adjusted effect of "previous PSE earned" and "educational pathways followed" on labour market outcomes. To conclude, section 5 presents a summary of the results found and the policy implications are discussed in section 6. The final section proposes directions for future research.

2. Description of the Data

The source of data for this study is the Statistic Canada National Graduates Survey (NGS). The NGS is the most comprehensive survey available in Canada to analyse the impact of educational pathways on labour market outcomes. The NGS is a representative sample of graduates from Canadian public postsecondary education institutions (universities, colleges, trade schools) and is specifically designed to provide information about the link between educational experiences and employment outcomes of these graduates.

The NGS is sponsored by Human Resources and Social Development Canada (HRSDC) and has been conducted since 1984. Each graduating class is interviewed twice: two years after graduation and five years after graduation. Data on the Class of 1995 is used in this study as it is the most recent Class that has been interviewed twice. It is essential to analyse outcomes reported after the longest period of time (five years in this case) after graduation as longitudinal research has shown that it takes some time before skills obtained by graduates translate into labour market advantage (Giles and Drewes, 2002).

The present analysis focuses on community college/CEGEP and bachelor graduates who did not obtain an additional degree, diploma, or certificate subsequent to the credentials they originally obtained in 1995. Those graduates who did were excluded in order to make comparisons between graduates with the same most recent level of education. Part-time workers who cited school as a reason for their partial involvement in the labour market were also excluded on the grounds that such individuals were by definition, still principally students. For the same reason, 1995 graduates who were enrolled full-time in school during the 2000 reference week were also excluded from the sample. After these exclusions, the sample consisted of 5,715 college graduates and 4,184 university graduates (bachelor's level).

In section 3, a sample including all graduates selected according to the previously defined criteria was used to examine outcomes associated with educational activities prior to previous postsecondary education (PSE) enrolment. In section 4, in order to measure the impact of following indirect routes on outcomes, a sub-sample of graduates with no previous PSE experience was used. This sub-sample included 3,544 college graduates and 2,317 bachelor's graduates. The exclusion of graduates with previous PSE experience was necessary to examine the effect of delaying/entering directly as this variable is available in the NGS only for graduates without previous PSE. The effects of studying part-time and of taking a break on labour market outcomes were also examined with this sub-sample to eliminate as much heterogeneity as possible. Indeed, graduates with and without previous PSE had very different educational pathways[1] and therefore examining outcomes associated with these pathways with a sample including all graduates could lead to misleading results. For example, earnings of students who studied part-time could be higher than the earnings of full-time students, possibly due to the fact that more part-time students had previous

[1] Among the 1995 Class, 11% of college graduates without previous PSE studied part-time (20% for bachelors) compared to 13% for college graduates with previous PSE (25% for bachelors). And, 6% of college graduates without previous PSE took a break (16% for bachelors) compared to 4% among college graduates with previous PSE (11% for bachelors).

PSE, and therefore higher earnings. Looking at students with the same level of education eliminates this effect.

Table A in the appendix presents descriptive statistics of the samples selected. Among all graduates (sample 1), 35% of college graduates and 52% of university graduates had previous PSE. Most of college graduates with previous PSE did not complete a degree (46%) while 33% completed a trade or a college degree and 20% completed a university degree. Among university graduates with previous PSE almost half had a trade/college degree, reflecting the Quebec system that requires the completion of CEGEP before entering university. The other half of university graduates with previous PSE had a university degree (33%) or had only attended PSE without completing any degree (20%).

Delaying PSE entry after high school was a common choice among college graduates, with 46% of them choosing this educational pathway (in sample 2). Studying part-time and taking a break during college were less popular choices as only 11% and 6% of college students took these pathways respectively. Among university graduates however, the three indirect pathways were almost equally chosen: 18% of university graduates delayed PSE; 20% studied part-time at some point; and 16% took a break during their program.

3. Economic implications of having previous PSE experience

3.1 Descriptive analysis of outcomes by previous PSE experience

Table 1 reports mean earnings and labour force status two and five years after graduation of the 1995 graduating Class by their educational activities prior previous postsecondary education (PSE).

Outcomes of College Graduates

For college graduates, more education was associated with higher earnings. Two years after graduation, college graduates with incomplete previous PSE earned on average 12% more than graduates with a college degree only. College graduates with a previous trade or college degree earned 15% more than graduates with a college degree only. And, college graduates with a previous university degree earned 22% more than their counterpart with a college degree only. However, five years after graduation, these earning advantages declined to 5% for students who had incomplete previous PSE, to 7% for those who had a previous trade or college degree and to 21% for college graduates with a university degree.

Descriptive statistics on the labour force status revealed that college graduates with a previous PSE degree also had a lower unemployment rate two and five years after graduation compared to college graduates who had only one degree. College graduates who had incomplete previous PSE also had a lower unemployment rate than those without any previous PSE experience two years after graduation but not five years after graduation. Another interesting difference in the labour force status by educational activity prior PSE is the higher proportion of college graduates with a previous university degree that was out of the labour force two and five years after graduation.

Outcomes of University Graduates

For university graduates (bachelor's level), previous PSE education did not systemically result in higher earnings. In fact, only university graduates who previously completed another university degree had higher earnings two and five years after graduation than graduates with only one university degree. And, this advantage decreased over time, from 12% two years after graduation to 9% five years after graduation.

Table 1
Unadjusted outcomes of graduates by educational activity prior PSE

	Weighted numbers	Labour market outcomes in 1997*					Labour market outcomes in 2000*				
		Annual earnings and Ratio**	Employed (%)	Unemployed (%)	Out of the labour force (%)	UR***	Annual earnings and Ratio**	Employed (%)	Unemployed (%)	Out of the labour force (%)	UR***
College graduates with no previous PSE	38,362	24,521	87.1	7.9	5.0	8.3%	33,363	90.1	4.1	5.8	4.3%
College graduates with Incomplete previous PSE	9,615	27,501 112.2	89.5	5.6	5.0	5.9%	35,135 105.3	90.0	4.6	5.4	4.9%
College graduates with previous trade/college degree	6,873	28,174 114.9	90.5	5.2	4.3	5.4%	35,767 107.2	92.0	2.8	5.3	2.9%
College graduates with previous university degree	4,255	29,888 121.9	84.3	7.4	8.3	8.1%	40,278 120.7	90.5	2.2	7.3	2.4%
Bachelors with no previous PSE	31,190	31,023	88.6	5.9	5.6	6.2%	44,693	93.8	2.7	3.5	2.8%
Bachelors with incomplete previous PSE	6,782	33,132 106.8	89.7	7.5	2.7	7.7%	43,396 97.1	94.2	3.2	2.6	3.3%
Bachelors with previous trade/college degree	16,027	29,876 96.3	88.1	7.1	4.8	7.5%	42,031 94.0	92.0	5.3	2.8	5.4%
Bachelors with previous university degree	11,454	34,617 111.6	88.6	6.8	4.6	7.1%	48,696 109.0	93.2	3.5	3.3	3.6%

Based on a sample including all graduates who did not obtain an additional degree subsequent to the credentials they originally obtain in 1995 and who were not principally students during the reference week.

* Labour force status and estimated gross annual earnings for the job held during the 1997 and 2000 survey reference week.

** "Ratio" refers to the (previous PSE/no previous PSE) earning ratio.

*** "UR" refers to the unemployment rate which is equal to {number of unemployed / (number of employed + number of unemployed)}.

Moreover, all university graduates (bachelor's level) with previous PSE experience had a higher unemployment rate two years and five years after graduation compared to university graduates with no previous PSE. University graduates with a previous trade or college degree were the most disadvantaged in their chance of finding a job with an unemployment rate of 5.4% five years after graduation compared to 2.8% for bachelors with no previous PSE. Participation in the labour force was nevertheless somewhat higher among university graduates with previous PSE compared to those without previous PSE.

3.2 Adjusted outcomes by previous PSE experience

Although descriptive statistics presented in Table 1 can be informative with regard to previous educational activities that are associated with high and low earnings, unemployment rate and labour force participation, these data did not control for any other characteristics (other than previous educational activities) that affect labour market outcomes. Further results discussed in this section take into account these variables that play a role in determining the earnings function and the labour force status.

3.2.1 Adjusted earnings by previous PSE experience

The effects of having previous PSE experience on the log of earnings[2], two and five years after graduation, was estimated with ordinary least square (OLS) regressions that controlled for individual, labour market and other education characteristics. Results for the "previous PSE variables" are presented in Table 2[3]. All the coefficients estimated for these variables were positive and statistically significant ($p<.05$), except for university graduates with either previous incomplete PSE or a previous trade and college in the two years after graduation (1997). The impact of having previous PSE on earnings was therefore over and above the effects of the individual, labour market and other education variables in most of the cases, meaning that in general the labour market recognizes and rewards previous educational experience[4].

[2] The earning variable in the NGS represents what the graduate would have earned on a annual basis if the job held at the time of the interview lasted the full year, regardless of the actual job status (i.e. the number of weeks worked).

[3] See Table B1 in the appendix for all the results of the OLS regressions.

[4] Caution is required when interpreting these results since other theoretically important independent variables (i.e. ability) could not be included in the model. Therefore, the OLS results are subject to the omitted variable (or selection) bias.

Table 2
Effect of having previous PSE on the logarithm of earnings

	1997		2000	
	coefficient	p-value	coefficient	p-value
College Graduates				
College Degree + Previous Incomplete PSE	0.093	<.0001	0.089	<.0001
College Degree + Previous Trade/College	0.086	<.0001	0.094	<.0001
College Degree + Previous University	0.161	<.0001	0.141	<.0001
Bachelor Graduates				
Bach Degree + Previous Incomplete PSE	0.035	0.230	0.107	0.000
Bach Degree + Previous Trade/College	0.015	0.576	0.063	0.017
Bach Degree + Previous University	0.082	0.001	0.156	<.0001

Results of ordinary least squares (OLS) regressions of earnings 2 and 5 years after graduation, Class of 1995. See Table B1 in Appendix for more details.

Earnings of College Graduates

Adjusted earnings revealed that, college graduates with previous incomplete PSE or with a previous trade or college degree earned 9% more than graduates with only one college degree, two and five years after graduation (compared to the unadjusted premium of 12-15% two years after graduation and 5%-7% five years after graduation). This suggests that the unadjusted differences in earnings observed two years after graduation between those who had previous incomplete PSE or a previous trade or college degree and those without any previous PSE was due in part to the fact that graduates with previous PSE had more valuable human capital variables (for example more experience). But over time the characteristics of the two groups became more similar and therefore the earnings gap narrowed down.

For college graduates with a previous university degree, their adjusted earning was 16% and 14% higher than college graduates without previous PSE, two and five years after graduation respectively. This is less than what unadjusted earning revealed (21-22%), suggesting that graduates with a previous university degree had other human capital (other than their previous university degree) that explained a part of their higher unadjusted earnings.

Earnings of University Graduates

For university graduates (bachelor's level), statistically significant results observed five years after graduation revealed, contrary to what unadjusted data suggested that previous education experience was rewarded on the labour market. The estimated premium five years after graduation was 6% for a previous trade/college degree, 11% for incomplete PSE and 16% for a previous university degree. Moreover, while unadjusted data suggested that the earning advantage of a previous university degree declined over time, adjusted data showed the contrary. From two to five years after graduation the premium associated with a previous university degree doubled (from 8% to 16%). The positive premium was therefore masked in

the unadjusted data by the fact that bachelor graduates with a previous university degree had less valuable human capital than other bachelors graduates.

3.2.2 Adjusted labour force status by previous PSE experience

Table 3 presents the adjusted effect of having previous PSE on the likelihood of being unemployed and out of the labour force versus being employed two and five years after graduation, which was estimated with multinomial regressions that controlled for individuals characteristics and other education characteristics[5]. The vast majority of the coefficients estimated were statistically significant ($p<.05$) meaning that in most of the regressions the impact of having previous PSE on the labour force status was over and above the effects of the other individual variables.

Table 3
Effect of having previous PSE on the labour force status

	1997		2000	
	Out of the LF	Unemployed	Out of the LF	Unemployed
College Graduates				
College Degree + Previous Incomplete PSE	0.90 *	0.64	0.81	1.08 *
College Degree + Previous Trade/College	0.64	0.51	0.66	0.54
College Degree + Previous University	1.51	0.71	0.96 *	0.38
Bachelor Graduates				
Bach Degree + Previous Incomplete PSE	0.44	1.31	0.56	0.95 *
Bach Degree + Previous Trade/College	0.88	1.31	0.76	1.37
Bach Degree + Previous University	0.83	1.26	0.68	0.82

Results of multinomial logit models predicting the probability of being unemployed and out of the labour force versus being employed 2 and 5 years after graduation, Class of 1995. See Table B2 in Appendix for more details.

All coefficients are significant to 5% except coefficients with a star (*).

Labour Force Status of College Graduates

In line with unadjusted findings, Table 3 showed that college graduates with a previous PSE degree were less likely to be unemployed two and five years after graduation. College graduates with incomplete previous PSE were also less likely to be unemployed two years after graduation. But, five years after graduation, previous incomplete PSE had no effect on the likelihood of being unemployed.

[5] See Table B2 in the appendix for all the results of the multinomial regressions.

The previous unadjusted findings that college graduates with a previous university degree were more likely to be out of the labour force also hold within a two years period after graduation. But by five years after graduation, having a previous university degree did not influence anymore the labour force status of college graduates. For all other college graduates with previous PSE, the likelihood of being out of the labour force was lower compared to graduates without previous PSE (still in line with unadjusted results).

Labour Force Status of University Graduates

Also in line with unadjusted findings, university graduates (bachelor's level) with previous PSE were more likely to be unemployed two years after graduation. But five years after graduation adjusted results revealed another picture for some graduates: previous incomplete PSE was found to have no impact on the likelihood of being unemployed (similar to college graduates) and a previous university degree lowered the chance of being unemployed by about 20%. University graduates with a previous trade/college degree were still more likely to be unemployed five years after graduation (37% more likely) compared to graduates without previous PSE.

Finally, for university graduates, having any type of previous PSE experience lowered the likelihood of being out of the labour force compared to graduates without previous PSE (a result also observed with the 2000 unadjusted data).

4. Economic implications of choosing non-traditional pathways

4.1 Descriptive analysis of outcomes by educational pathways

Table 4 shows mean earnings and labour force status two and five years after graduation for students who followed direct routes towards previous postsecondary education (PSE) (entered PSE directly after high school, took no break during PSE, studied full-time) and those who took indirect pathways towards PSE (delayed PSE entry, took a break during PSE, studied part-time study).

Earnings Outcomes of College and University Graduates

Two years after graduation, the average annual earning of delayers was higher than the average annual earning of direct-entry students for both college graduates and university graduates (10% and 8% respectively). The average annual earning of college and university graduates who took a break was also higher than the average annual earning of graduates who did not take a break during their study (8% and 10% respectively). Similarly, college and bachelors graduates who studied part-time had higher earnings (13% and 4% respectively) than graduates who studied full-time.

Five years after graduation, however, the earning advantages of delayers and graduates who studied part-time decreased to 2% and 4% respectively for college graduates and disappeared for bachelor graduates. Only graduates who took a break kept a similar earning advantage two and five years after graduation (around 9% for both college and bachelors graduates).

Labour Force Outcomes of College graduates

Important differences in the labour force status were observed between college graduates who entered PSE directly after high school and those who delayed. The unemployment rate of the first group was half of delayers two years after graduation. By five years after graduation, this gap was reduced but delayers still had a higher unemployment rate than direct entry students (5% versus 3.7%). Delaying college entry was not only associated with a higher unemployment rate but also with a weaker labour force attachment. Indeed, while only 4% of direct college entry student were out of the labour force two and five years after graduation, this proportion reached 6% and 8% two and five years after graduation for delayers.

Table 4
Unadjusted outcomes of graduates by educational pathways

	Weighted numbers	Labour market outcomes in 1997*					Labour market outcomes in 2000*				
		Annual earnings and Ratio**	Employed (%)	Unemployed (%)	Out of the labour force (%)	UR***	Annual earnings and Ratio**	Employed (%)	Unemployed (%)	Out of the labour force (%)	UR***
College Graduates											
Entered directly after high school	20,848	23,557	90.0	5.7	4.3	6.0%	33,078	92.3	3.6	4.1	3.7%
Delayed entry	17,514	25,828 109.6	83.6	10.5	6.0	11.2%	33,726 102.0	87.4	4.6	7.9	5.0%
No break during PSE	36,036	24,399	87.0	8.0	5.0	8.4%	33,184	90.0	4.1	5.9	4.3%
Took a break during PSE	2,326	26,339 108.0	87.6	6.1	6.3	6.5%	36,098 108.8	90.7	4.0	5.3	4.2%
Studied full-time	34,217	24,194	86.8	8.0	5.2	8.4%	33,247	90.2	4.0	5.8	4.2%
Studied part-time	4,145	27,252 112.6	88.7	7.4	3.9	7.7%	34,417 103.5	88.9	5.1	6.0	5.4%
Bachelor Graduates											
Entered directly after high school	25,668	30,601	88.7	5.9	5.4	6.2%	44,756	93.6	2.9	3.5	3.0%
Delayed entry	5,523	33,089 108.1	87.8	6.0	6.2	6.4%	44,412 99.2	94.8	1.9	3.2	2.0%
No break during PSE	26,181	30,559	88.8	5.5	5.7	5.8%	44,093	94.0	2.8	3.2	2.9%
Took a break during PSE	5,009	33,567 109.8	87.4	7.9	4.8	8.3%	47,913 108.7	92.8	2.5	4.7	2.6%
Studied full-time	25,090	30,790	88.1	5.9	6.0	6.2%	45,161	93.6	3.0	3.4	3.1%
Studied part-time	6,100	31,991 103.9	90.4	6.0	3.6	6.3%	42,818 94.8	94.6	1.6	3.7	1.7%

Based on a sample including all graduates who did not obtain an additional degree subsequent to the credentials they originally obtain in 1995 and who were not principally students during the reference week and who did not have previous PSE experience.

* Labour force status and estimated gross annual earnings for the job held during the 1997 and 2000 survey reference week.

**"Ratio" refers to the (direct pathway/indirect pathway) earning ratio.

*** "UR" refers to the unemployment rate which is equal to {number of unemployed / (number of employed + number of unemployed)}.

College graduates who studied part-time and those who studied full-time had similar unemployment rates. The unemployment rate of college graduates who took a break was somewhat lower than those who did not take a break two years after graduation but five years after graduation the two groups had similar unemployment rates.

The labour force participation was also similar between full-time and part-time graduates, and between graduates who interrupted their studies and those who did not. Two years after graduation, fewer part-time students were out of the labour force (4%) than full-time graduates (6%), but five years after graduation the same proportions were inactive (6%). The percentage of inactive graduates was also around 6% among graduates who took a break and those who did not.

Labour Force Outcomes of University Graduates

For university graduates (bachelor's level), the unemployment rates of "indirect" graduates were similar to those of "direct" graduates, two and five years after graduation. For all groups, the unemployment rate was around 6% in 1997 (somewhat higher at 8% for graduates who took a break) and 2%-3% in 2000.

The discrepancies in the participation rates between "indirect" and "direct" bachelor graduates were also rather small and they were in general reduced five years after graduation. Only the labour force attachment of bachelor graduates who studied part-time seemed to be stronger two years after graduation (only 3.6% of them were out of the labour force) compared to full-time students (6% of them were out of the labour force). But five years after graduation, the proportion of full-time and part-time students out of the labour force was similar (3.4% versus 3.7%).

4.2 Adjusted outcomes by educational pathways

4.2.1 Adjusted earnings by educational pathways

Using a similar analysis as in section 3.2.1, the adjusted effects of following indirect routes were measured by regressing the log of earnings (two and five years after graduation) on individual, labour market and education variables, as well as on educational pathways. For the reasons explained in section 2, a sub-sample of graduates without previous PSE was used for these regressions. Table 5 shows the parameters estimated for the educational pathways variables[6].

[6] See Table C1 in the appendix for all results of the ordinary least square regressions.

Table 5
Effect of educational pathways on the logarithm of earnings

	1997		2000	
	coefficient	p-value	coefficient	p-value
College Graduates				
Delaying PSE entry	0.014	0.479	-0.011	0.599
Studying part-time	-0.014	0.669	-0.002	0.963
Taking a break during PSE	0.122	<.0001	0.074	0.016
Bachelor Graduates				
Delaying PSE entry	0.024	0.464	-0.052	0.155
Studying part-time	0.076	0.013	0.142	<.0001
Taking a break during PSE	0.043	0.142	0.002	0.961

Results of ordinary least squares (OLS) regressions of earnings 2 and 5 years after graduation, Class of 1995. See Table C1 in Appendix for more details.

Earnings of College Graduates

For college graduates, only "taking a break during PSE" was statistically significant among the educational pathways variables. Two years after graduation, college graduates who took a break during their studies earned about 12% more than those who did not. By five years after graduation, taking a break still had a positive effect on earning but it was smaller (7%).

Studying part-time versus full-time and delaying PSE entry versus entering directly did not affect earnings of college graduates either two or five years after graduation. These results suggested that the earning advantage in favour of college graduates who studied part-time and of those who delayed found with unadjusted data two years after graduation was due to their more extensive experience in the labour market. By five years after graduation, full-time and direct entry college graduates caught up with their counterparts who followed indirect routes and had therefore similar earnings (unadjusted data showed that the earning gap was reduced to 4% and 2% five years after graduation).

Earnings of University Graduates

In regressions for university graduates (bachelor's level), only studying part-time versus full-time had a statistically significant impact on earnings among the educational pathways variables. Bachelors graduates who studied part-time earned 8% more than their counterparts who studied full-time two years after graduation and 14% more five years after graduation. This surprising result could not be observed with unadjusted data. It might reflect the fact that many part-time students are persons already employed at higher salaries who took university degrees to upgrade their skills.

4.2.2 Adjusted Labour Force Status by Educational Pathways

As in section 3.2.2, the adjusted effects of following indirect routes on the probability of being unemployed and out of the labour force versus being employed, two and five years after graduation, was estimated with multinomial models. Results for the educational pathways variables are shown in Table 6[7].

Table 6
Effect of educational pathways on the labour force status

	1997		2000	
	Out of the LF	Unemployed	Out of the LF	Unemployed
College Graduates				
Delaying PSE entry	1.46	1.63	1.63	0.88
Studying part-time	2.01	0.71	1.06 *	0.87 *
Taking a break during PSE	0.43	0.70	0.55	0.95 *
Bachelors Graduates				
Delaying PSE entry	0.87 *	0.97 *	0.30	0.70
Studying part-time	0.77	1.23	1.18 *	1.07 *
Taking a break during PSE	0.35	0.88 *	0.77	0.56

Results of multinomial logit models predicting the probability of being unemployed and out of the labour force versus being employed 2 and 5 years after graduation, Class of 1995. See Table C2 in Appendix for more details.

All coefficients are significant to 5% except coefficients with a star (*).

Labour Force Status of College Graduates

Confirming what was observed with unadjusted data, college graduates who delayed their college entry were more likely to be out of the labour force and to be unemployed two years after graduation compared to direct entry graduates. Five years after graduation delayers were still more likely to be out of the labour force but somewhat less likely to be unemployed (a convergence in the unemployment rate between the two groups was also observed with the unadjusted data).

Unadjusted data suggested that full-time and part-time students tended to have more similar labour force status over time. The multinomial regressions confirmed this as two years after graduation "studying part-time" was statistically significant but by five years after graduation, it had no effect on the probability of being unemployed and inactive versus being employed.

Taking a break had a statistically significant effect on the probability of being inactive for college graduates, two and five years after graduation. Indeed, college graduates who took a break were 57% and 45% less likely to be inactive in 1997 and 2000 respectively compared to graduates who had not interrupted their studies. This is a positive effect that could not be observed with descriptive statistics. Taking a break also lowered the probability of being

[7] See Table C2 in the appendix for all the results of the multinomial regressions.

unemployed two years after graduation for college graduates but by five years after graduation taking a break did not have a significant effect on unemployment (this result was also observed with unadjusted data).

Labour Force Status of University Graduates

For university graduates (bachelor's level), "delaying" did not have a statistically significant effect on the labour force status two years after graduation. But five years after graduation, bachelors graduates who delayed were less likely to be unemployed and out of the labour force compared to direct entry bachelors graduates. Adjusted results shed light on the labour forces advantages of delaying for university graduates as small differences were observed between delayers and non-delayers with unadjusted data.

Similar to what was observed for college graduates, the multinomial regressions for university graduates showed that the effect of "studying part-time" (lowered the probability of being unemployed; increased the probability of being inactive) disappeared over time.

Finally, as for college graduates, "taking a break" had positive effects on the labour force participation of university graduates that were not necessarily observed with descriptive statistics. University graduates who took a break were 65% less likely to be inactive in 1997 and 23% less likely to be inactive in 2000 compared to their counterparts who did not interrupt their studies. And, while taking a break lowered the probability of being unemployed two years after graduation, it did not have a significant effect on the unemployment five years after graduation compared to graduates who did not take a break (similar unemployment rate for the two groups were also observed with descriptive statistics).

5. Conclusion

This paper used the *1995 Follow-up of the National Graduates Survey* to explore the labour market outcomes of college and university graduates who followed different routes towards their graduation in 1995. The objective was to determine whether some previous postsecondary experience and various educational pathways were associated with good or poor labour market outcomes two and five years after graduation.

First, this study examined earnings and labour force status of graduates having different previous postsecondary experiences. The impacts of having previous previous postsecondary education (PSE) on labour market outcomes were found to be generally positive: the earning premium associated with previous PSE was statistically significant and ranged from 6% to 16%, and graduates with previous PSE were as much or often even less likely to be inactive or unemployed compared to graduates without previous PSE. The only negative impact of having previous PSE that persisted over time was observed for university graduates (bachelor's level) who had a previous trade or college degree. Those were 37% more likely to be unemployed compared to bachelors without previous PSE (see Table 7).

The second part of this study examined whether the so called "traditional pathway" provided graduates with better labour market outcomes than alternate pathways. Graduates who choose indirect routes were not found to be worse off in term of labour market outcomes compared to students who choose direct routes. In fact indirect routes had in many cases a positive impact on earning, employment, and labour force participation. The only negative impact that persisted over time was observed for college delayers who had a higher likelihood of being inactive (see Table 7).

Table 7 below presents a summary of results found in this study. It shows how labour market outcomes of graduates who followed indirect educational pathways compare to the outcomes of their counterparts who followed direct pathways towards their graduation in 1995. All the negative impacts of following indirect educational pathways are shown in bold.

Table 7
Summary results of graduates who took indirect pathways compared to those who took direct pathways

	Outcomes Two years after Graduation (1997)		
	Earnings	Unemployment	Out of the labour force
College Graduates			
1995 college degree + previous incomplete PSE	9% higher [2]	36% less likely [2]	no significant diff. [2]
1995 college degree + previous trade or college degree	9% higher [2]	49% less likely [2]	36% less likely [2]
1995 college degree + previous university degree	16% higher [2]	29% less likely [2]	**51% more likely** [2]
Delaying college entry	no significant diff. [3]	**63% more likely** [3]	**46% more likely** [3]
Studying part-time in college	no significant diff. [4]	29% less likely [4]	**2 times more likely** [4]

Table 7 *(continued)*
Summary results of graduates who took indirect pathways compared to those who took direct pathways

	Outcomes Two years after Graduation (1997)		
	Earnings	**Unemployment**	**Out of the labour force**
Taking a break during college	12% higher [5]	30% less likely [5]	57% less likely [5]
University Graduates (bachelor's)			
1995 bachelor degree + previous incomplete PSE	no significant diff. [2]	**31% more likely** [2]	56% less likely [2]
1995 bachelor degree + previous trade or college degree	no significant diff. [2]	**31% more likely** [2]	12% less likely [2]
1995 bachelor degree + previous university degree	8% higher [2]	**26% more likely** [2]	17% less likely [2]
Delaying university entry	no significant diff. [3]	no significant diff. [3]	no significant diff. [3]
Studying part-time in university	8% higher [4]	**23 % more likely** [4]	23% less likely [4]
Taking a break during university	no significant diff. [5]	no significant diff. [5]	65% less likely [5]
	Outcomes Five years after Graduation (2000)		
	Earnings	**Unemployment**	**Out of the labour force**
College Graduates			
1995 college degree + previous incomplete PSE	9% higher [2]	no significant diff. [2]	20% less likely [2]
1995 college degree + previous trade or college degree	9% higher [2]	46% less likely [2]	34% less likely [2]
1995 college degree + previous university degree	14% higher [2]	62% less likely [2]	no significant diff. [2]
Delaying college entry	no significant diff. [3]	12% less likely [3]	**63% more likely** [3]
Studying part-time in college	no significant diff. [4]	no significant diff. [4]	no significant diff. [4]
Taking a break during college	7% higher [5]	no significant diff. [5]	45% less likely [5]
University Graduates (bachelor's)			
1995 bachelor degree + previous incomplete PSE	11% higher [2]	no significant diff. [2]	44% less likely [2]
1995 bachelor degree + previous trade or college degree	6% higher [2]	**37% more likely** [2]	24% less likely [2]
1995 bachelor degree + previous university degree	16% higher [2]	18% less likely [2]	32% less likely [2]
Delaying university entry	no significant diff. [3]	30% less likely [3]	70% less likely [3]
Studying part-time in university	14% higher [4]	no significant diff. [4]	no significant diff. [4]
Taking a break during university	no significant diff. [5]	44% less likely [5]	23% less likely [5]

1. Comparative results five years after graduation
2. Compared to the outcome of graduates who had no previous PSE
3. Compared to the outcome of graduates who did not delayed
4. Compared to the outcome of graduates who studied full-time
5. Compared to the outcome of graduates who did not take a break

6. Policy Implications

Among the 1995 Graduating Class[8], 35% of college graduates and 53% of bachelors had already some kind of postsecondary experience before they enrolled in their 1995 program. Moreover, among college graduates, 30% delayed their college entry, 12% studied part-time and 5% took a break during their program. Among bachelors graduates these figures were 8%, 22% and 13%.

These students who previously obtained postsecondary credentials that were not necessarily linked to their second program, who did not move directly to a post-secondary program after high school and who did not complete their program within the expected time frame because they took a break during their program or because they studied part-time, are often seen as pursuing less efficient routes.

However findings in this study suggested that these indirect routes are not less efficient as they were associated with as good, or better, labour market outcomes as direct routes. Following indirect routes might actually increase efficiency if they are used to gain labour market experience, improve information and help students make better choices.

Two exceptions were nevertheless observed: 1) university graduates (bachelor's) who had a previous trade or college degree and 2) college graduates who delayed their college entry after high school. These two groups were persistently disadvantaged in terms of their labour force status (the first group was 37% more likely to be unemployed while the second group was 63% more likely to be inactive). This suggests that college delayers used their time out of the educational system less efficiently while bachelors graduates with a previous trade or college degree had more trouble transposing their human capital acquisition into marketable skills. Educational supports and counselling services should target these students as soon as they can be identified to minimize any economic loss.

In general, however, graduates who followed indirect routes found their way from high school to the labour market without being penalized economically compared to graduates who followed a direct route, suggesting that students are well assisted in their transitions.

[8] Based on a sample including all graduates who did not obtain an additional degree subsequent to the credentials they originally obtain in 1995 and who were not principally students during the survey reference week.

7. Directions for Further Research

The present paper used the 1997 and 2000 follow-ups of the 1995 Class to compare labour market outcomes of college and university graduates with and without previous previous postsecondary education (PSE) experience. Earning equations revealed that the labour market rewarded the acquisition of previous PSE credentials and even previous incomplete PSE. Boothby and Drewes (2006) estimated the earnings of multiple credential holders (without taking account of the sequence of degree acquisition) with the Censuses (1981 to 2001) and drew a different conclusion. Workers possessing both a college and a trade degree were found to have lower earnings than their counterparts with a college degree only. Men who combined a bachelor's degree with a trade or college degree were also found to have lower earnings than men who possessed a bachelor's degree only. Results for women were more mixed but there were no evidence that the rewards to multiple credentials justified the additional investment. Ideally, when studying the effect of holding multiple credentials on earnings, the field of study of the degrees and the sequence in which they are obtained should be taken into account. While the combination of degrees cannot be sequenced in the Census, the sample size of one National Graduates Survey (NGS) class impedes the analysis by field of study. Future work could attempt to pool NGS cohorts to study the labour market impact of holding multiple degrees, by PSE type and program.

The higher earnings associated with studying part-time in university and taking a break during college could possibly be explained by the fact that these graduates are rewarded for the labour market experience they acquired during their time out of school. However, other groups (delayers, part-time college students, university students who took a break) also spent some time out of school but were not found to earn higher earnings compared to graduates who took a direct pathway. Future work could exploit the longitudinal and more detailed information on labour market activity (before, during and after PSE) included in the Youth in Transition Survey (YITS) to identify the factors explaining higher earnings associated with some pathways.

Appendix

Table A
Descriptive statistics, Class of 1995

	Sample 1: All Graduates		Sample 2: Graduates with no Previous PSE	
	College	**Bachelor**	**College**	**Bachelor**
Sample Size	59,179	65,584	38,362	31,190
(unweighted sample size)	(5,715)	(4,184)	(3,544)	(2,317)
Individual Variables				
Females	58.54	60.50	56.44	56.52
Visible minority	7.75	9.43	7.46	13.17
Socio-Demographic Variables in 1997				
Married or ever married	34.15	30.20	29.85	25.71
Have dependant children	24.46	17.53	21.35	10.69
Age (mean)	28.90	28.32	27.57	26.66
Age squared (mean)	907.88	846.45	825.90	740.07
Province in 1997				
Newfoundland	0.81	1.26	0.54	1.51
Prince-Edward-Island	0.48	0.30	0.45	0.40
Nova Scotia	2.08	3.64	1.78	4.90
New Brunswick	1.70	2.46	1.68	3.27
Quebec	20.26	26.78	17.87	2.09
Ontario	46.76	40.01	51.99	57.67
Manitoba	3.15	3.87	2.88	4.93
Saskatchewan	2.23	3.98	2.25	5.27
Alberta	11.36	8.89	12.08	10.66
British Colombia	11.17	8.81	8.47	9.31
Socio-Demographic Variables in 2000				
Married or ever married	50.33	42.68	46.79	50.23
Have dependant children	36.94	32.01	32.91	24.19
Age (mean)	31.90	31.32	30.57	29.66
Age squared (mean)	1090.30	1025.38	1000.31	909.03
Province in 2000				
Newfoundland	0.64	1.12	0.46	1.28
Prince-Edward-Island	0.41	0.34	0.42	0.46
Nova Scotia	2.20	3.18	1.84	4.20
New Brunswick	1.67	2.29	1.58	2.87
Quebec	20.75	26.65	18.34	1.09
Ontario	45.53	39.28	50.57	58.16
Manitoba	3.13	3.65	2.90	4.34
Saskatchewan	2.27	3.45	2.23	4.54
Alberta	12.11	9.58	12.89	11.74

Table A *(continued)*
Descriptive statistics, Class of 1995

	Sample 1: All Graduates		Sample 2: Graduates with no Previous PSE	
	College	Bachelor	College	Bachelor
British Colombia	10.88	9.15	8.33	9.62
Labour Market Variables in 1997				
Employed	87.65	88.54	87.05	88.57
Unemployed	7.17	6.51	7.91	5.89
Out of the labour force	5.18	4.95	5.04	5.55
Earnings (mean)	$25,811	$31,584	$24,521	$31,023
Full-time job (30 hours or more)	86.05	87.88	87.02	90.51
Part-time job (29 hours or less)	13.95	12.12	12.98	9.49
Self-employed	5.52	6.31	4.99	6.85
Paid worker - permanent	67.98	61.27	68.17	64.09
Paid worker - temporary	10.53	17.62	9.90	14.04
Paid worker - seasonal	2.81	2.34	3.00	2.36
Labour Market Variables in 2000				
Employed	90.33	93.29	90.08	93.80
Unemployed	3.86	3.53	4.07	2.72
Out of the labour force	5.81	3.18	5.85	3.48
Earnings (mean)	$34,383	$44,600	$33,363	$44,693
Full-time job (30 hours or more)	90.62	92.30	91.73	93.15
Part-time job (29 hours or less)	9.38	7.70	8.27	6.85
Self-employed	9.09	9.22	9.24	9.79
Paid worker - permanent	74.53	76.23	74.30	76.47
Paid worker - temporary	4.62	6.64	4.56	5.69
Paid worker - seasonal	1.90	1.62	1.93	1.52
Education Variables, 1995				
Educational, Recreational and Counselling Services	8.77	21.42	8.76	12.65
Fine and Applied Arts	5.71	2.78	6.31	2.88
Humanities and Related Fields	3.49	10.16	2.85	13.58
Social Sciences and Related Fields	11.60	23.59	12.42	27.24
Commerce, Management and Business Administration	24.85	13.45	27.55	13.45
Agricultural and Biological Sciences/Technologies	4.14	4.53	4.71	6.37
Engineering and Applied Sciences/Technologies	23.58	9.13	23.75	9.85
Health professions, Sciences and Technologies	15.24	6.87	11.81	3.87
Mathematics and Physical Sciences	1.32	5.65	0.79	7.61

Table A ***(continued)***
Descriptive statistics, Class of 1995

	Sample 1: All Graduates		Sample 2: Graduates with no Previous PSE	
	College	**Bachelor**	**College**	**Bachelor**
Interdisciplinary/no specialization/unknown	1.28	2.24	1.05	2.42
Co-op program	17.80	8.83	18.76	9.83
Previous PSE Experience				
1995 degree only	64.82	47.56	NA	NA
1995 degree + previous incomplete PSE	16.25	10.34	NA	NA
1995 degree + previous trade or college degree	11.61	24.44	NA	NA
1995 degree + previous university degree	7.19	17.46	NA	NA
Pathways and Schemes of Study				
Delaying PSE entry	29.60	8.42	45.66	17.71
Studying part-time	11.51	22.41	10.81	19.56
Taking a break during PSE	5.37	13.43	6.06	16.06

Percentages (or mean, when indicated in parenthesis) are shown.
NA : Not Applicable

Table B1
Ordinary Least Squares (OLS) regressions of earnings 2 and 5 years after graduation, controlling for previous PSE, Class of 1995 [1]

	College Graduates				Bachelor Graduates			
	1997		2000		1997		2000	
	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value
Intercept	9.290	<.0001	9.880	<.0001	9.715	<.0001	11.048	<.0001
Individual Variables	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Females	-0.224	<.0001	-0.262	<.0001	-0.120	<.0001	-0.185	<.0001
Visible minority	-0.023	0.34	-0.076	0.00	-0.047	0.10	0.040	0.024
Married or ever married	0.024	0.15	0.046	0.00	0.041	0.04	-0.008	0.689
Have dependant children	0.004	0.81	-0.029	0.09	-0.020	0.44	-0.016	0.182
Age	0.051	<.0001	0.036	<.0001	0.038	0.00	0.000	0.084
Age squared	-0.001	<.0001	0.000	<.0001	0.000	0.04	-0.049	0.073
Newfoundland	-0.073	0.30	-0.161	0.06	-0.173	0.01	-0.231	0.002
Prince-Edward-Island	-0.178	0.06	-0.242	0.02	-0.364	0.02	-0.305	0.031
Nova Scotia	-0.278	<.0001	-0.272	<.0001	-0.291	<.0001	-0.239	<.0001
New Brunswick	-0.198	<.0001	-0.148	0.01	-0.206	<.0001	-0.237	<.0001
Quebec	-0.093	<.0001	-0.125	<.0001	-0.170	<.0001	-0.169	<.0001
Ontario	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Manitoba	-0.176	<.0001	-0.191	<.0001	-0.176	<.0001	-0.221	<.0001
Saskatchewan	-0.066	0.11	-0.081	0.08	-0.097	0.01	-0.107	0.013
Alberta	-0.054	0.01	-0.024	0.30	-0.070	0.01	-0.063	0.024
British Colombia	0.075	0.00	0.030	0.22	0.006	0.84	-0.051	0.076
Labour Market Variables								
Full-time job (30 hours or more)	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Part-time job (29 hours or less)	-0.712	<.0001	-0.781	<.0001	-0.330	<.0001	-0.969	<.0001
Employed	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Self-employed	-0.079	0.01	-0.092	0.00	0.063	0.05	0.017	0.5322
Paid worker - permanent	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Paid worker - temporary	0.035	0.07	-0.118	0.00	-0.099	<.0001	-0.117	0.000
Paid worker - seasonal	-0.107	0.00	-0.252	<.0001	-0.439	<.0001	-0.171	0.003
Education Variables								
Educational, Recreational and Counselling Services	0.011	0.67	-0.145	<.0001	-0.144	<.0001	-0.110	<.0001
Fine and Applied Arts	-0.007	0.80	-0.033	0.31	-0.595	<.0001	-0.233	<.0001
Humanities and Related Fields	0.056	0.16	0.029	0.49	-0.273	<.0001	-0.190	<.0001
Social Sciences and Related Fields	0.077	0.00	0.008	0.73	-0.230	<.0001	-0.130	<.0001
Commerce, Management and Business Administration	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Agricultural and Biological Sciences/Technologies	0.042	0.20	-0.079	0.03	-0.137	0.00	-0.071	0.0969

Table B1 *(continued)*
Ordinary Least Squares (OLS) regressions of earnings 2 and 5 years after graduation, controlling for previous PSE, Class of 1995 [1]

	College Graduates				Bachelor Graduates			
	1997		2000		1997		2000	
	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value
Engineering and Applied Sciences/Technologies	0.178	<.0001	0.141	<.0001	0.115	0.00	0.108	0.001
Health professions, Sciences and Technologies	0.202	<.0001	0.182	<.0001	0.159	<.0001	0.257	<.0001
Mathematics and Physical Sciences	0.119	0.03	0.116	0.06	0.007	0.86	0.195	<.0001
Interdisciplinary/no specialization/unknown	-0.306	<.0001	-0.128	0.06	-0.145	0.01	-0.004	0.948
Co-op program	0.074	<.0001	0.021	0.27	0.137	<.0001	0.110	<.0001
Previous PSE Experience								
College or Bach degree only	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
College or Bach degree + previous incomplete PSE	0.093	<.0001	0.089	<.0001	0.035	0.23	0.107	0.000
College or Bach degree + previous trade/college degree	0.086	<.0001	0.094	<.0001	0.015	0.58	0.063	0.017
College or Bach degree + previous university degree	0.161	<.0001	0.141	<.0001	0.082	0.00	0.156	<.0001
Adj R-square		0.4045		0.3513		0.2616		0.3869
Number of observations		5,713		5,714		4,184		4,184

1. The earning variable available in the NGS represents what the graduate would have earned on a annual basis were the job held at the time of the interview to last the full year, regardless of the actual job status (i.e. the number of weeks worked).

Table B2
Multinomial logit models predicting the probability of being unemployed and out of the labour force versus being employed 2 and 5 years after graduation, controlling for previous PSE, Class of 1995

	College Graduates				Bachelors Graduates			
	1997		2000		1997		2000	
	Out of the Labour Force vs. Employed	Unemployed vs. Employed	Out of the Labour Force vs. Employed	Unemployed vs. Employed	Out of the Labour Force vs. Employed	Unemployed vs. Employed	Out of the Labour Force vs. Employed	Unemployed vs. Employed
	Odds ratios		Odds ratios		Odds ratios		Odds ratios	
Individual Variables								
Females	1.59	1.03 *	2.74	1.43	1.77	0.81	1.85	1.31
Visible minority	0.93 *	1.33	0.86	1.28	1.51	3.08	0.85 *	2.60
Married or ever married	1.88	0.68	1.66	0.59	1.48	0.64	0.96 *	0.70
Have dependant children	2.83	1.37	2.82	1.01 *	2.40	1.52	4.11	1.39
Age	0.72	1.18	0.67	1.00 *	0.84	1.27	0.81	1.06 *
Age squared	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00
Newfoundland	0.94 *	1.81	0.83 *	1.44 *	1.23 *	1.48	0.73 *	4.53
Prince-Edward-Island	0.67 *	2.29	0.39 *	2.76	1.90	4.99	4.45	4.91
Nova Scotia	1.27	2.50	0.89 *	2.92	1.69	1.41	2.54	2.43
New Brunswick	0.37	1.54	0.70	1.45	1.16 *	1.86	1.44	3.12
Quebec	1.00 *	1.01 *	1.07 *	0.96 *	1.23	1.36	1.16 *	1.97
Ontario	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Manitoba	0.48	0.44	0.91 *	1.13 *	1.30	1.11 *	1.45	1.09 *
Saskatchewan	0.47	0.65	0.96 *	0.81 *	1.07 *	0.62	1.85	1.42
Alberta	0.53	0.50	1.39	0.75	0.84	0.94 *	2.12	1.28
British Colombia	0.68	0.72	1.08 *	0.93 *	1.37	0.61	1.91	0.71
Education Variables								
Educational, Recreational and Counselling Services	1.33	0.65	0.86	0.60	0.50	1.06 *	0.94 *	13.99
Fine and Applied Arts	1.09 *	0.45	1.12 *	0.97 *	2.67	2.68	2.18	13.93
Humanities and Related Fields	1.28	1.26	1.19 *	1.83	2.09	2.22	2.43	5.53
Social Sciences and Related Fields	0.98 *	0.53	0.73	0.77	1.57	3.34	1.80	7.03
Commerce, Management and Business Administration	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Agricultural and Biological Sciences/Technologies	0.48	0.61	0.86 *	0.86 *	1.83	2.00	2.94	12.05
Engineering and Applied Sciences/Technologies	1.08 *	0.64	0.71	0.82	1.20 *	0.86	0.49	4.13
Health professions, Sciences and Technologies	0.66	0.38	0.51	0.45	0.70	0.82	1.00 *	4.12
Mathematics and Physical Sciences	0.58	0.43	0.25	1.21 *	2.07	0.66	1.75	8.50
Interdisciplinary/no specialization/unknown	2.72	1.17 *	3.27	2.48	1.89	1.32	1.85	17.85
Co-op program	0.83	0.75	1.60	0.72	0.65	1.71	0.95 *	1.39
Previous PSE Experience								
College or Bach degree only	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
College or Bach degree + previous incomplete PSE	0.90 *	0.64	0.81	1.08 *	0.44	1.31	0.56	0.95 *
College or Bach degree + previous trade/college degree	0.64	0.51	0.66	0.54	0.88	1.31	0.76	1.37
College or Bach degree + previous university degree	1.51	0.71	0.96 *	0.38	0.83	1.26	0.68	0.82
Likelihood Ratio test (Pr>ChiSq)		<.0001		<.0001		<.0001		<.0001
Number of observations		4,072		4,320		3,097		3,269

All coefficients are significant to 5% except coefficients with a star (*).

The likelihood ratio test tests the null hypothesis that all coefficients equal 0

Table C1
Ordinary Least Squares (OLS) regressions of earnings 2 and 5 years after graduation, controlling for educational pathways, Class of 1995[1]

	College Graduates				Bachelor Graduates			
	1997		2000		1997		2000	
	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value
Intercept	9.278	<.0001	9.792	<.0001	9.551	<.0001	11.252	<.0001
Individual Variables	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Females	-0.243	<.0001	-0.290	<.0001	-0.162	<.0001	-0.201	<.0001
Visible minority	-0.041	0.17	-0.110	0.00	-0.020	0.54	0.066	0.01
Married or ever married	0.019	0.40	0.056	0.01	0.026	0.34	-0.030	0.33
Have dependant children	0.014	0.58	-0.024	0.26	-0.038	0.37	-0.025	0.25
Age	0.053	<.0001	0.043	0.00	0.052	0.00	0.000	0.14
Age squared	-0.001	<.0001	-0.001	0.00	-0.001	0.01	-0.048	0.17
Newfoundland	-0.103	0.36	-0.168	0.16	-0.197	0.02	-0.246	0.02
Prince-Edward-Island	-0.189	0.13	-0.222	0.10	-0.358	0.05	-0.384	0.04
Nova Scotia	-0.251	<.0001	-0.190	0.00	-0.306	<.0001	-0.280	<.0001
New Brunswick	-0.219	0.00	-0.145	0.04	-0.215	0.00	-0.206	0.00
Quebec	-0.080	0.00	-0.102	<.0001	0.079	0.24	0.043	0.69
Ontario	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Manitoba	-0.190	<.0001	-0.185	0.00	-0.193	<.0001	-0.214	0.00
Saskatchewan	-0.053	0.31	-0.024	0.68	-0.089	0.05	-0.128	0.02
Alberta	-0.025	0.32	-0.013	0.63	-0.058	0.09	-0.080	0.03
British Colombia	0.047	0.12	0.037	0.28	-0.007	0.85	-0.062	0.12
Labour Market Variables								
Full-time job (30 hours or more)	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Part-time job (29 hours or less)	-0.677	<.0001	-0.873	<.0001	-0.374	<.0001	-1.161	<.0001
Employed	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Self-employed	-0.126	0.00	-0.142	<.0001	0.141	0.00	-0.089	0.02
Paid worker - permanent	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Paid worker - temporary	0.017	0.49	-0.136	0.00	-0.180	<.0001	-0.129	0.01
Paid worker - seasonal	-0.093	0.03	-0.285	<.0001	-0.277	<.0001	-0.307	0.00
Education Variables								
Educational, Recreational and Counselling Services	0.039	0.20	-0.154	<.0001	-0.096	0.02	-0.100	0.03
Fine and Applied Arts	0.017	0.63	-0.009	0.80	-0.595	<.0001	-0.258	0.00
Humanities and Related Fields	0.190	0.00	0.114	0.05	-0.271	<.0001	-0.258	<.0001
Social Sciences and Related Fields	0.074	0.01	0.008	0.78	-0.242	<.0001	-0.207	<.0001
Commerce, Management and Business Administration	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Agricultural and Biological Sciences/Technologies	0.049	0.21	-0.086	0.05	-0.213	<.0001	-0.110	0.05
Engineering and Applied Sciences/Technologies	0.211	<.0001	0.141	<.0001	0.099	0.02	0.055	0.26
Health professions, Sciences and Technologies	0.162	<.0001	0.155	<.0001	0.213	0.00	0.225	0.00
Mathematics and Physical Sciences	0.185	0.03	0.265	0.01	-0.020	0.67	0.146	0.01
Interdisciplinary/no specialization/unknown	-0.503	<.0001	-0.027	0.74	-0.217	0.00	-0.154	0.06
Co-op program	0.053	0.01	0.016	0.48	0.206	<.0001	0.149	0.00
Pathways and Schemes of Study								
Delaying PSE entry	0.014	0.48	-0.011	0.60	0.024	0.46	-0.052	0.15
Studying part-time	-0.014	0.67	-0.002	0.96	0.076	0.01	0.142	<.0001
Taking a break during PSE	0.122	<.0001	0.074	0.02	0.043	0.14	0.002	0.96
Adj R-square		0.406		0.385		0.298		0.399
Number of observations		2,828		2,901		1,860		1,951

1. The earning variable available in the NGS represents what the graduate would have earned on a annual basis were the job held at the time of the interview to last the full year, regardless of the actual job status (i.e. the number of weeks worked).

Table C2
Multinomial logit models predicting the probability of being unemployed and out of the labour force versus being employed 2 and 5 years after graduation, controlling for educational pathways, Class of 1995

	College Graduates				Bachelor Graduates			
	1997		2000		1997		2000	
	Out of the Labour Force vs. Employed	Unemployed vs. Employed	Out of the Labour Force vs. Employed	Unemployed vs. Employed	Out of the Labour Force vs. Employed	Unemployed vs. Employed	Out of the Labour Force vs. Employed	Unemployed vs. Employed
	Odds ratios		Odds ratios		Odds ratios		Odds ratios	
Individual Variables								
Females	1.43	1.21	2.71	1.51	2.19	0.92 *	1.89	1.44
Visible minority	0.77	1.36	1.18	1.52	1.78	3.00	0.84 *	2.14
Married or ever married	1.75	0.60	1.31	0.55	1.04 *	0.28	0.32	0.57
Have dependant children	2.63	1.70	3.55	0.96 *	5.69	1.12 *	10.71	1.68
Age	0.66	1.17	0.62	0.99 *	0.78	1.71	0.73	0.99 *
Age squared	1.01	1.00	1.01	1.00	1.00	0.99	1.00	1.00 *
Newfoundland	1.22 *	1.59	0.73 *	1.31 *	1.50	2.61	0.29	5.45
Prince-Edward-Island	0.78 *	2.52	0.34 *	3.58	2.06	10.34	6.00	5.35
Nova Scotia	1.92	1.49	0.68	3.01	1.66	1.87	2.30	3.36
New Brunswick	0.38	1.07 *	0.69 *	0.78 *	1.17 *	2.47	1.25 *	2.57
Quebec	0.99 *	0.95 *	1.05 *	0.55	0.70 *	0.77 *	0.25	2.59
Ontario	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Manitoba	0.38	0.29	0.74	0.85 *	1.42	1.18 *	1.33 *	2.13
Saskatchewan	0.56	0.54	0.61	0.63	0.84 *	0.75	1.61	1.64
Alberta	0.56	0.34	1.42	0.62	1.04 *	1.44	2.76	2.15
British Colombia	1.08 *	0.48	1.32	0.95 *	1.98	0.66	2.33	1.27 *
Education Variables								
Educational, Recreational and Counselling Services	1.13 *	0.84	0.70	0.65	1.55	1.42	1.88	2.07
Fine and Applied Arts	0.65	0.34	1.06 *	0.71	0.99 *	2.90	3.35	1.85
Humanities and Related Fields	1.61	0.74	0.96 *	1.46	3.40	2.51	3.58	1.78
Social Sciences and Related Fields	1.60	0.27	0.94 *	0.43	2.81	4.14	2.61	3.52
Commerce, Management and Business Administration	~~~	~~~	~~~	~~~	~~~	~~~	~~~	~~~
Agricultural and Biological Sciences/Technologies	0.57	0.59	0.87 *	0.94 *	2.79	2.47	2.99	4.98
Engineering and Applied Sciences/Technologies	1.39	0.65	0.59	0.65	1.44	1.67	0.21	1.12 *
Health professions, Sciences and Technologies	1.29	0.43	0.44	0.56	1.63	0.49	2.76	1.86
Mathematics and Physical Sciences	1.60 *	0.57	0.33	1.78	3.83	1.26 *	1.44 *	4.36
Interdisciplinary/no specialization/unknown	3.02	1.88	2.30	2.67	1.98	2.34	1.79	2.77
Co-op program	0.71	0.51	1.71	0.53	0.81	0.50	0.84 *	1.19 *
Pathways and Schemes of Study								
Delaying PSE entry	1.46	1.63	1.63	0.88	0.87 *	0.97 *	0.30	0.70
Studying part-time	2.01	0.71	1.06 *	0.87 *	0.77	1.23	1.18 *	1.07 *
Taking a break during PSE	0.43	0.70	0.55	0.95 *	0.35	0.88 *	0.77	0.56
Likelihood Ratio test (Pr>ChiSq)		<.0001		<.0001		<.0001		<.0001
Number of observations		3,542		3,543		2,317		2,317

All coefficients are significant to 5% except coefficients with a star (*).
The likelihood ratio test tests the null hypothesis that all coefficients equal 0

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