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Investigating Transfer Pathways

and Early Workforce Earnings Trajectories in Ontario

INSIGHTS FROM STATISTICS CANADA'S ELMLP DATA LINKAGES

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Overview of the Study

As the higher education sector evolves and implements new supports and articulation agreements for transfer students, it remains critically important to continually monitor the early workforce earnings of new graduates and how these outcomes vary across transfer pathways. As such, this research brief makes use of new survey and administrative data linkages available in Statistics Canada's Education and Labour Market Longitudinal Platform (ELMLP). We draw upon the nationally representative 2015 cohort of the National Graduates Survey (NGS) linked to additional educational characteristics from Postsecondary Student Information System (PSIS) administrative files as well as T1 Family File (T1FF) tax data.

These unique linkages allow us to bring together the richness of the sociodemographic and educational experience measures available in the NGS, the construction of multiple transfer pathways derived from the PSIS administrative files, and the real earnings trajectories of graduates across their first few years in the labour market via the T1FF tax files. Specifically, our analyses shed light on the early earnings trajectories of graduates who took one of five key postsecondary pathways: 1) non-transfer college (NTC), 2) non-transfer university (NTU), 3) university to university (UU), 4) college to university (CU), and 5) college to college/university to college (CC/UC). Taken together, this study provides a renewed exploration of the earnings differences for recent postsecondary graduates across Canada, with a particular emphasis on the Ontario context.

Key Findings

The PSIS-NGS-T1FF data linkage reveals that the most common postsecondary pathways among the 2015 cohort of graduates in Canadian public postsecondary institutions are non-transfer pathways. In Ontario, about 58% of graduates completed a university degree without transferring during our observation window compared to 48% for Canada as a whole. For colleges, non-transfer graduates comprised 32% of all graduates in Ontario and 35% of all graduates in Canada.

In terms of transfer pathways, Ontario shows a lower relative proportion (9%) of transfer graduates than the rest of Canada (18%). Among those who transfer, university to university transfer (UU) rates were similar (5%), college to university (CU) rates were higher for Canada as a whole (8% vs. 1%), and college to college and university to college rates (CC/UC) were also slightly higher for Canada (5%) than for Ontario (3%). In terms of average income, Ontario graduates earned $32,700 on average in 2016 (one year after graduation) — about $3,000 less than the average income for graduates in Canada as a whole ($35,800).

For all Canadian graduates, there is a slight income premium ($1,400) for transfer graduates in year one (in 2016), but this gap narrows in 2017 and remains quite modest in 2018 ($300) and 2019 ($700).

In Ontario, a slightly different relationship emerges. In 2016 and 2017, transfer graduates earn $3,800 more than their non-transfer counterparts on average. But, in 2018, the income gap between the two groups narrows ($500), and by 2019, non-transfer students show higher relative incomes ($51,600 vs. $49,800).

In terms of income across various pathways, UU transfer graduates have the highest relative income in 2016 ($41,700), followed by NTU ($37,400), CU ($36,000), NTC ($33,100), and CC/UC transfer graduates ($32,800). By 2019, however, the income differences across UU transfer graduates ($56,900) and NTU graduates ($56,500) and CU graduates ($54,700) narrow considerably. As well, a small income gap between the NTC and CC/UC transfer graduates remains ($300 vs. $400) over time.

Similarly, in Ontario, UU transfer graduates yield the highest incomes ($42,600) in 2016. But, unlike in the Canada-wide analyses, CU transfer graduates show the second highest incomes ($39,200), followed by NTU ($34,000), NTC ($29,400), and CC/UC ($25,200) transfer graduates. Interestingly, while the income trajectories for the Ontario graduates differ in comparison to the Canada-wide analyses, by 2019, once again, UU and NTU show the highest incomes ($55,600 and $55,800 respectively). CU graduates in Ontario drop to third-highest by 2019 ($51,200), and NTC maintains a small income advantage over CC/UC transfer graduates over time ($43,900 vs. $40,500).

When controlling for a number of sociodemographic and educational factors that also influence incomes in multivariate regression models, the results for Canada as a whole indicate that in 2016, UU graduates earn the most, followed by NTU graduates, CU graduates, NTC graduates, and CC/UC graduates. By 2019, UU graduates remain the highest earners, but NTU graduates and CU graduates narrow the relative earnings gaps considerably. In Ontario, the story is slightly different. In 2016, UU graduates show the highest incomes, followed by CU graduates, NTU graduates, NTC graduates, and CC/UC graduates. By 2019, both NTU and CU graduates close the gap on UU graduates.

In Ontario, the story is slightly different. In 2016, UU graduates show the highest incomes, followed by CU graduates, NTU graduates, NTC graduates, and CC/UC graduates. By 2019, both NTU and CU graduates close the gap on UU graduates and report the highest incomes.

Investigating Transfer Pathways and Early Workforce Earnings Trajectories in Ontario: Insights From Statistics Canada's ELMLP Data Linkages

Introduction

Increasingly complex and non-linear pathways are becoming commonplace within postsecondary education in Ontario and in neighbouring jurisdictions (Decock, 2004; Finnie et al., 2020; Zarifa et al., 2020). A growing body of research is revealing that many students transfer across different credentials, fields of study, institutions, and sectors and may even migrate across regions of the country while doing so (e.g., Finnie et al., 2017, 2020, 2021; Hillier et al., 2020; Sano et al., 2020; Zarifa et al., 2020).

While most students continue to transition from high school directly into college or university and complete their programs at their initial institution, a non-trivial proportion of students transfer laterally within higher education sectors (college to college; university to university) (e.g., Bahr, 2009), while others transfer across sectors (college to university; university to college) prior to completing their studies (McCloy et al., 2017). Not only are researchers paying close attention to the rates of demand or uptake across these varied pathways as well as the characteristics of those of who transfer (Hillier et al., 2020; Pizarro Milian et al., forthcoming; Sano et al., 2020; Zarifa et al., 2020), but much attention is being devoted to monitoring their subsequent education and early employment outcomes (Finnie et al., 2020, 2021). Studies have long pointed out that graduates who follow a certain transfer pathway may be subjected to different experiences in the workforce (Dhuey et al., 2021; Dubois, 2007; Dumaresq et al., 2003; Finnie et al., 2020, 2021; Walters, 2003).

As the higher education sector evolves and implements new supports and articulation agreements for transfer students, it remains critically important to continually monitor the early workforce earnings of new graduates and how these outcomes vary across various transfer pathways.

As such, this research brief makes use of new survey and administrative data linkages available in Statistics Canada's Education and Labour Market Longitudinal Platform (ELMLP). We draw upon the nationally representative 2015 cohort of the National Graduates Survey (NGS)

linked to additional educational characteristics from Postsecondary Student Information System (PSIS) administrative files, as well as T1 Family File (T1FF) tax data. These unique linkages allow us to bring together the richness of the sociodemographic and educational experience measures available in the NGS survey, the construction of multiple transfer pathways derived from the PSIS administrative files, and the real earnings trajectories of graduates across their first few years in the labour market via the T1FF tax files.

Specifically, our analyses shed light on the early earnings trajectories of graduates who took one of five key postsecondary pathways: 1) non-transfer college (NTC), 2) non-transfer university (NTU), 3) university to university (UU), 4) college to university (CU), and 5) college to college/university to college (CC/UC).[1] Taken together, this study offers new insights on the earning differences for recent postsecondary graduates across Canada, with a particular emphasis on the Ontario context.

Existing Evidence on the Early Workforce Experiences of Transfer Graduates: Earnings Deficits or Earnings Premiums?

Decades of existing research on school-to-work transitions have estimated income disparities across levels of education, fields of study, and types of programs (e.g., Statistics Canada, 2022). Similarly, within the existing transfer student literature, earnings differences continue to be routinely studied as a key marker of early employment successes (e.g., Chen et al., 2022; Dhuey et al., 2021; Finnie et al., 2017, 2020, 2021; Liu, 2021; Liu & Belfield, 2020; Xu et al., 2018; Xu et al., 2020).

Despite the attention given to economic outcomes, much debate remains as to whether transfer graduates experience lower relative earnings upon entering the workforce. Internationally, researchers have weighed in on the debate for almost two decades, uncovering both earnings deficits and earnings premiums for certain transfer pathways in comparison to direct entry students (Andrews et al., 2014; Chen et al., 2022; Holmund & Regnér, 2009; Light & Strayer, 2004; Liu, 2021; Liu & Belfield, 2020; Witeveen & Attewell, 2020; Xu et al., 2018). On the one hand, researchers have found support for earnings deficits. That is, students who transfer earn significantly less than their non-transfer or direct entry counterparts. For instance, in Sweden, among an administrative sample of 61,410 direct entry university students (n = 50,782) and university to university (UU) transfer students (n = 10,628), researchers found earning deficits for UU transfer students (2.1% to 29.4% less annually) compared with direct entry university students (Holmund & Regnér, 2009). Moreover, these deficits held even after adjustments for students' individual and parental background characteristics, university characteristics, family characteristics, employment sector, and unemployment experiences.

Similarly, research from the U.S. has also uncovered earnings deficits for transfer pathways. For example, Andrews and colleagues (2014) analyzed a sample of over 150,000 direct entry, college to university (CU), and UU transfer students from the University of Texas, Austin, Texas A&M-College Stations, other four-year college or university, and community colleges to determine whether transfer students experienced earning premiums or deficits compared with their direct entry peers. Compared with direct entry university students, UU transfer students in Texas were found to earn 2.9% to 14.8% less annually. Also, in the Texas sample, among the CU transfer students, earnings deficits persisted with between 1.7% and 5.5% less earned annually compared with their direct entry peers. Andrews et al. also found that U.S. transfer students moving from

[1] Unfortunately, we did not have sufficient sample sizes to separate out CC and UC pathways.

college to university (CU) experienced earning deficits (of 1.7% to 18.9% less annually) compared with direct entry university students. When examining income by quarter, researchers have also found earnings deficits among CU transfer students (Xu et al., 2018). Among a sample of over 31,000 CU transfer students in Virginia, USA, Xu and colleagues (2018) found almost $900 less quarterly earnings among CU transfer students, or approximately $300 less per month, compared with direct entry university students. The authors suggest that additional structure and guidance by both institution administrations and transfer students' direct entry peers must be provided to transfer students to aid their success throughout their adjustment in a CU transfer pathway.

Other international studies, however, point to earnings advantages or premiums experienced by transfer students. For instance, among their various samples of graduates in the U.S., college to college (CC), UU, and CU transfer students all experienced earning premiums compared with their direct entry peers at their respective postsecondary education levels (Chen et al., 2022; Liu & Belfield, 2020). Drawing on a nationally representative sample of 2007/2008 graduating seniors from the Baccalaureate and Beyond (B&B) survey, Chen and colleagues (2022) found CU transfer students experienced earning premiums compared with their direct entry university peers. These premiums ranged between $1,045 and $1,247 and were statistically significant, suggesting that CU transfer students may not all experience earning deficits compared with their direct entry peers.

Finally, one recent study by Liu (2021) suggests that there may not be a penalty or a benefit for taking a UC transfer pathway. Among a sample of approximately 22,000 direct entry and university to college (UC) transfer students at public institutions in one anonymous U.S. state, Liu found no significant earning differences among UC transfer students compared with direct entry college students.

Existing research on Canada's situation offers little clarity on the relationship between postsecondary education pathways and earnings trajectories. Over the past twenty years, researchers have noted both earnings deficits and earnings premiums for certain transfer or credential accumulation pathways across the country (Dhuey et al., 2021; Dubois, 2007; Dumaresq et al., 2003; Finnie et al., 2020, 2021; Walters, 2003). Several researchers have uncovered earnings premiums for CU transfer students compared with direct entry university students (Dubois, 2007; Dumaresq et al., 2003; Walters, 2003). For example, among a sample of 3,468 direct entry (n = 1,839) and CU transfer students (n = 1,629) from the 2001 BC University Baccalaureate Graduate Survey, CU transfer students earned approximately $1,600 more annually compared with their direct entry university peers (Dumaresq et al., 2003). Other work points to earning premiums among UU transfer students. Specifically, Walters (2003) found that among the 1995 cohort of the National Graduates Survey, CC transfer students experienced earnings deficits while UU transfer students experienced earnings premiums when compared with direct entry students. Walters (2003) also found earnings deficits among UC students compared with their direct entry peers. Similarly, Dubois (2007) found that college graduates and university graduates with any completed postsecondary background experienced earning premiums (6% to 16% more) in the first two to five years post-graduation compared with direct entry students.

More recent research indicates earnings premiums and deficits for transfer students as well. Among a sample of graduates from two Canadian colleges and three Ontario universities, Finnie and colleagues (2017) reported earnings premiums for all non-direct students when compared with direct entry students, regardless of whether students graduated from a college or a university. Transfer diploma graduates earned $2,030 more and transfer degree graduates earned $2,390 more annually than their direct entry peers; the gap between transfer and direct entry students

narrowed by $960 for diploma graduates and $870 for degree graduates, respectively, each year post-graduation.

Finnie and colleagues (2020, 2021) examined a cohort of Ontario students from the Education and Labour Market Longitudinal Platform (ELMLP). Data from the ELMLP was gathered from the Postsecondary Student Information System, administrative information on Canadian postsecondary education students, and the T1FF. Student transfer patterns were determined based on their institution type and field of study (FOS), creating four categories of student pathways: no change in institution or FOS; same institution, new FOS; different institution, new FOS; and different institution, same FOS. Interestingly, UU transfer students who changed their FOS earned $2,500 less annually than their direct entry peers who remained in their original FOS (Finnie et al., 2020). Similar findings were found among UU transfer students who did not change their FOS; these students earned $2,000 less compared with their direct entry peers who remained in their original FOS (Finnie et al., 2020).

In 2021, Finnie and colleagues further expanded their scope of student mobility to capture the type of credential students transferred from, resulting in eight unique categories of student pathways based on whether students did or did not change their institution, credential, or FOS. Their work revealed that, compared to direct entry university students, significant earnings premiums were evident for UU transfer students remaining in the same FOS at a new institution across the first three years since graduation, and significant earnings deficits for UU transfer students at a new institution and in a new FOS across the first year since graduation only. CU transfer students at a new institution in the same FOS had significant earnings deficits compared with direct entry university students across the first three years since graduation, whereas CU transfer students at a new institution and in a new FOS had non-significant earnings premiums in the first year, non-significant earnings deficits in the second year, and small significant earnings deficits in the third year. Significant earnings premiums were found among UC transfer students, where college diploma graduates who changed their institution and credential and remained in the same FOS earned significantly more than their direct entry college peers across the first through fifth year post-graduation. Significant earnings deficits were found across the first, second, and fourth years post-graduation for CC transfer students at a new institution and in a new FOS. While deficits persisted during the third and fifth years post-graduation, they were not statistically significant.

A recent study by Dhuey and colleagues (2021) zeroed in on Ontario graduates and assessed their earnings outcomes related to their uptake of multi-credential pathways across the 2010 and 2015 cohorts of postsecondary graduates. Overall, their work uncovered similar earnings premiums and deficits patterns among respondents in both the 2013 and 2018 National Graduates Surveys. With respect to specific pathways, they revealed that UU multi-credential graduates—those who earned one credential prior to moving to a new credential—experienced earnings premiums (10% more), whereas UC and CC multi-credential graduates experienced earnings deficits (12% and 18%–24% less, respectively). These findings held, even once adjusting for various student and education factors.

Finally, using Wave 3 of the Longitudinal and International Study of Adults (LISA), St- Denis and colleagues (2021) examined the roles of the first postsecondary education credential and subsequent postsecondary pathways on income as an adult. When compared with those who earned a single college credential, all multi-credential graduates in Ontario and Canada except CC graduates experienced significant earnings premiums. The lowest ranges of earnings

premiums were among UC (26% to 45% more) and CU graduates (30% to 40% more), followed by UU graduates with two undergraduate degrees (56% to 83% more) and graduates with an undergraduate and graduate degree (60% to 79% more). Single credential university graduates also experienced earnings premiums (46% to 61% more) compared with single credential college graduates. These findings were consistent while controlling for sociodemographic characteristics, fields of study of first and second credentials, and field of study changes between credentials.

Taken together, the existing literature offers little consensus as to whether certain transfer pathways are likely to provide earnings premiums or deficits upon entry into the workforce. As such, we turn to a novel data linkage in Statistics Canada's Education and Labour Market Longitudinal Platform to provide a unique assessment of the earnings trajectories of the 2015 cohort of Canadian postsecondary graduates.

Characteristics of the Class of 2015 Graduates: How Do Ontario Graduates Compare Among All Canadian Graduates?

Before turning to earnings differences across transfer pathways, we explore first the socio-demographic and educational characteristics of our analytic samples of graduates from the PSIS- NGS-T1FF data linkage. Throughout our analysis, and as done in St-Denis et al. (2021) through their analysis with the LISA, we separate out Ontario graduates and compare their characteristics to those of the rest of Canada. For additional details on the data linkages and methodological approach, please see Appendix A.

Our results in Table 1 show the sample means and proportions for all variables that we use in this study, as well as their respective data sources. In Figure 1, we plot the distributions of transfer types for both Canada as a whole as well as Ontario. As expected, for both Canada and Ontario, the most common postsecondary pathways are the non-transfer pathways. In Ontario, about 58% of graduates completed a university degree without transferring compared to 48% for Canada as a whole. In terms of college non-transfer graduates, the figures were 32% for Ontario and 35% for Canada. For transfer pathways, Ontario shows half the relative proportion (9%) of transfer graduates compared to the rest of Canada (18%). Among those who transfer, university to university (UU) transfer rates were similar (5%), college to university (CU) rates were higher for Canada as a whole (8% vs. 1%), and college to college/university to college (CC/UC) rates were also slightly higher for Canada (5%) than for Ontario (3%).

Returning to Table 1, in terms of average income, we can see that in 2016, Ontario graduates earned $32,700 on average, about $3,000 less than the average income for graduates in Canada as a whole ($35,800). Interestingly, while the initial earnings are slightly higher Canada- wide, the self-reported average debt size is $2,500 greater among Ontario graduates ($13,900 vs. $11,400). There are higher relative proportions of university graduates (65% vs. 59%) in Ontario and lower relative proportions of college graduates (35% vs. 41%) in comparison with Canada as a whole. The distributions of sex are quite similar with approximately 60% of graduates identifying as female.

Not surprisingly, given the inclusion of Quebec and the larger French-speaking population

present in the Canada-wide sample, larger relative proportions of Ontario graduates spoke English as their first language at home (83% vs. 62%). In terms of race/ethnicity and country of origin, Ontario shows lower relative proportions of visible minorities (69% vs. 78%), similar levels of Indigenous people (about 1% to 2%), and slightly higher levels of immigrants (22% vs. 16%) compared to Canada as a whole. For marital status and dependencies, Ontario graduates are more likely to be single (89% vs. 81%) and not have children (93% vs. 90%) than those in the rest of Canada. For disability status, Ontario graduates are on par with rest of the country (approx. 24% report a disability). In terms of educational characteristics, we see slightly more full-time students, scholarship holders, and co-op attendees among Ontario graduates and similar levels of STEM graduates (20%) in comparison to Canadian graduates as a whole. Finally, graduates from Ontario report higher levels of parental education (80% vs. 68%).

TABLE 1

Summary Measures for Analysis Variables, Canada and Ontario (PSIS-NGS-T1FF Linkage)

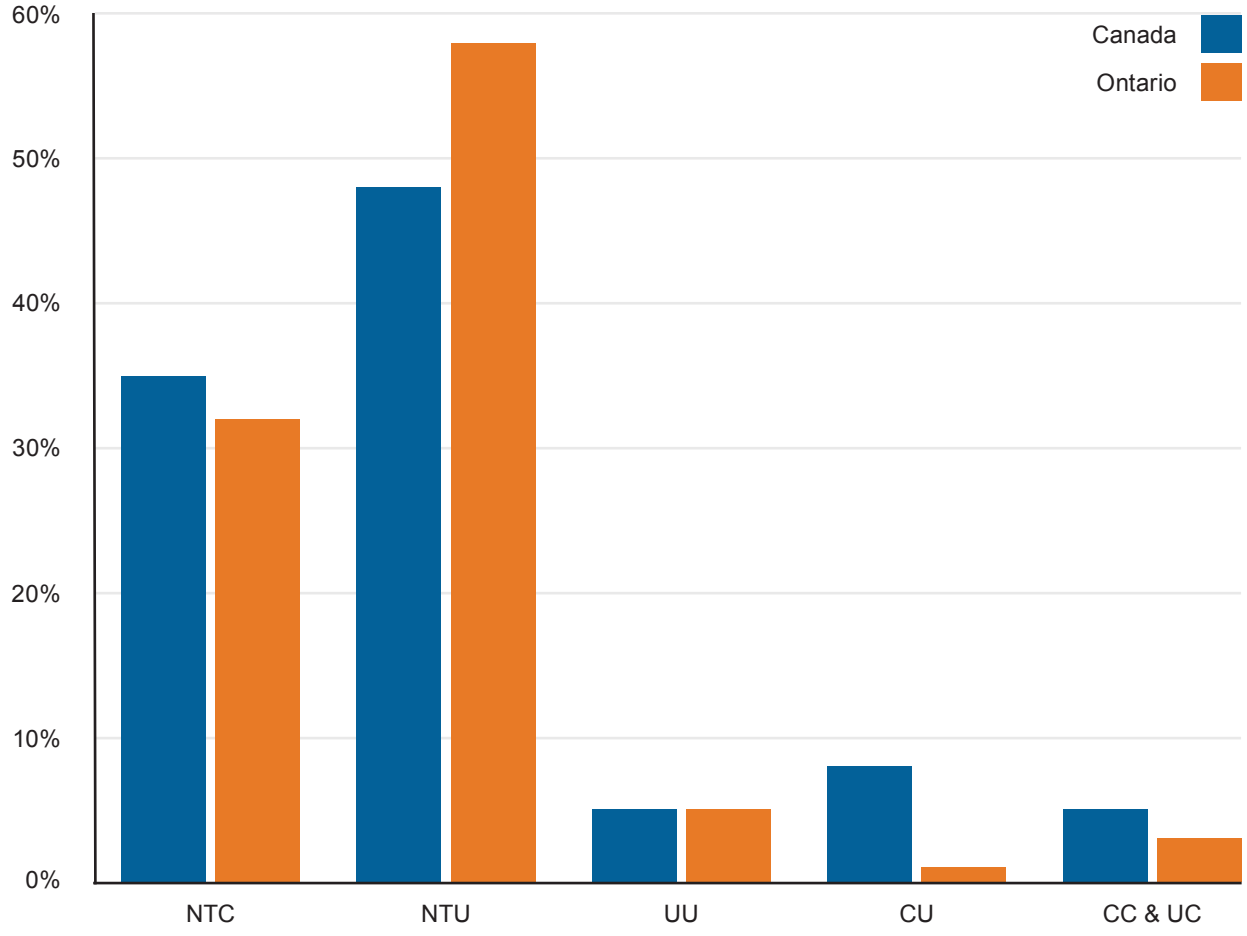
Variable	Canada	Ontario	Data Source
	Mean/Proportion		
Debt Size of All Loans at Time of Graduation (CAD)	11,400	13,900	NGS
T4E Income (CAD)	35,800	32,700	T1FF
Age at Time of Graduation (years)	23.29	22.88	NGS
Average Income Before Graduation (CAD)	14,100	11,100	T1FF
Transfer Pathway			PSIS
Non-transfer College	0.35	0.32	
Non-transfer University	0.48	0.58	
University to University	0.05	0.05	
College to University	0.08	0.01	
College to College/University to College	0.05	0.03	
Region of Graduate's Institution			PSIS
Atlantic Provinces	0.06		
Quebec	0.29		
Ontario	0.40		
Prairie Provinces	0.15		
British Columbia & Territories	0.11		
Graduate Degree Type in 2015			NGS
College	0.41	0.35	
University	0.59	0.65	
Sex			
Male	0.40	0.39	
Female	0.60	0.61	
Language Spoken at Home			NGS
English	0.62	0.83	
French	0.26	0.02	
Other	0.07	0.09	
Bilingual	0.05	0.07	

Visible Minority Status			NGS
Visible Minority	0.22	0.31	
Non-visible Minority	0.78	0.69	
Indigenous Status			NGS
Indigenous	0.02	0.01	
Non-Indigenous	0.98	0.99	
Country of Birth			NGS
Born in Canada	0.84	0.78	
Born outside Canada	0.16	0.22	
Marital Status			T1FF
Single, Never Married	0.81	0.89	
Married, Cohabitation	0.19	0.11	
Dependents			NGS
At Least One Child	0.10	0.07	
No Children	0.90	0.93	
Further Education			PSIS
No PSIS Entry after 2016	0.72	0.75	
PSIS Entry after 2016	0.28	0.25	
Registration Status			NGS
Full-time Student	0.88	0.92	
Part-time Student	0.04	0.01	
Both Full- and Part-time	0.09	0.07	
Field of Study			NGS
STEM Program	0.21	0.20	
non-STEM Program	0.79	0.80	
Disability Status			NGS
Disability	0.23	0.24	
No Disability	0.77	0.76	
Scholarships			NGS
None	0.69	0.63	
$1 to less than $10,000	0.26	0.30	
$10,000 and above	0.06	0.07	
Co-op Status			NGS
Co-op	0.14	0.17	
Non-Co-op	0.86	0.83	
Highest Level of Parent Education			NGS
HS or Less	0.32	0.20	
College or Above	0.68	0.80	
n	9390	1070	

Note. The income reported is the average income for 2016. The marital status estimates are derived from the marital status record in the T1FF in 2016. The region variable is based on the province or territory of the graduate's educational institution.

FIGURE 1

Transfer Pathways (NGS-PSIS-T1FF)



In Table 2, average T4E incomes for 2016, 2017, 2018, and 2019 across our two transfer pathway variables are presented. These values are the raw income values as reported in the tax data for years 1, 2, 3, and 4 after graduation. To visualize the raw income trajectories over the first four years, we plot the income values from Table 2 in Figures 2a through 3b.

Figures 2a and 2b display the incomes across transfer and non-transfer graduates for all of Canada and for Ontario only, respectively. Overall, not surprisingly, the incomes for both transfer and non-transfer graduates increase over the period. For all Canadian graduates (Figure 2a), there appears to be a slight earnings premium ($1,400) for transfer graduates early on (in 2016), but this premium shrinks in 2017 and remains quite modest in 2018 ($300) and 2019 ($700). In Figure 2b, we see a slightly different relationship for Ontario graduates. In 2016 and 2017, transfer graduates earn $3,800 more than their non-transfer counterparts on average. But, in 2018, the average earnings premium between the two groups shrinks ($500), and by 2019, non-transfer students show higher relative earnings ($51,600 vs. $49,800).

TABLE 2

Average T4E Income by Year, Location, and Transfer Pathway (PSIS-NGS-T1FF Linkage) (2019 Constant Dollars)

Canada				
Variable	2016	2017	2018	2019
Transfer Status				
Non-transfer Student	35,600	41,700	47,500	52,300
Transfer Student	36,800	42,200	47,900	53,300
Transfer Pathway				
Non-transfer College	33,100	37,700	42,300	46,500
Non-transfer University	37,400	44,600	51,400	56,500
University to University	41,700	47,500	53,100	56,900
College to University	36,000	42,200	48,700	54,700
College to College/University to College	32,000	36,400	41,200	46,100
n		9,039		

Ontario				
Variable	2016	2017	2018	2019
Transfer Status				
Non-transfer Student	32,400	39,300	46,600	51,600
Transfer Student	36,200	41,200	46,100	49,800
Transfer Pathway				
Non-transfer College	29,400	34,800	40,400	43,900
Non-transfer University	34,000	41,800	50,000	55,800
University to University	42,600	48,400	52,600	55,600
College to University	39,200	45,800	46,800	51,200
College to College/University to College	25,200	28,500	35,700	40,500
n		1,070		

FIGURE 2A

T4E Income by Transfer Status, Canada

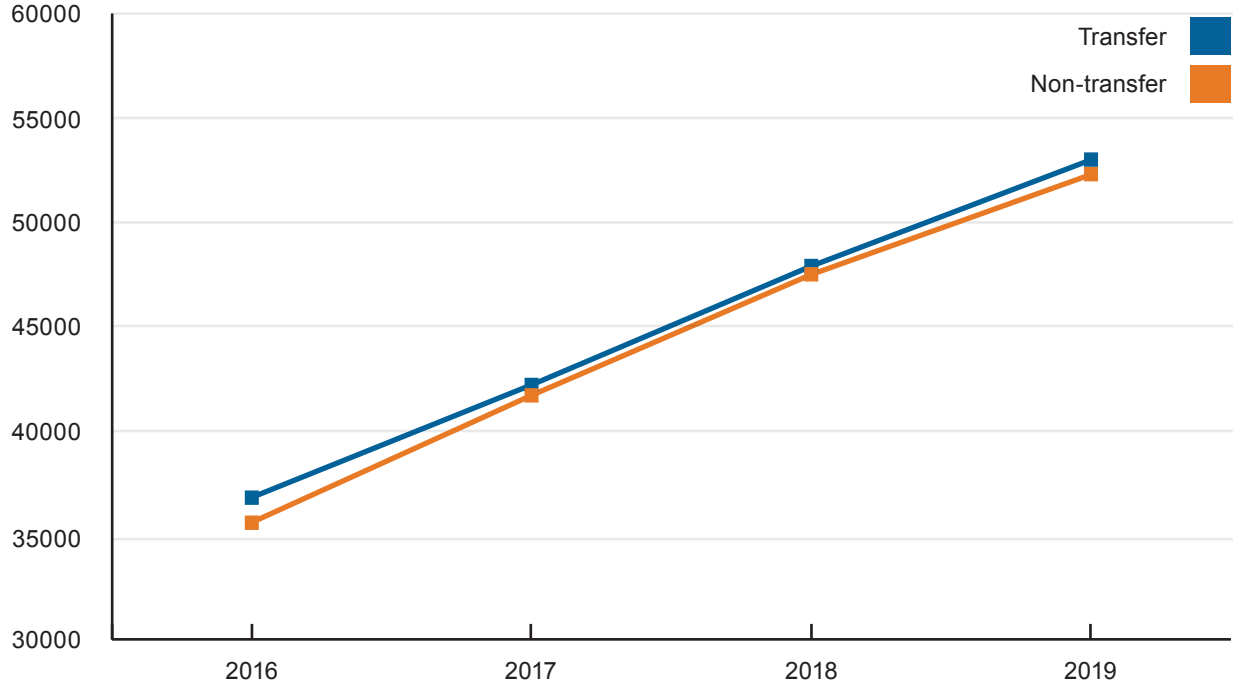
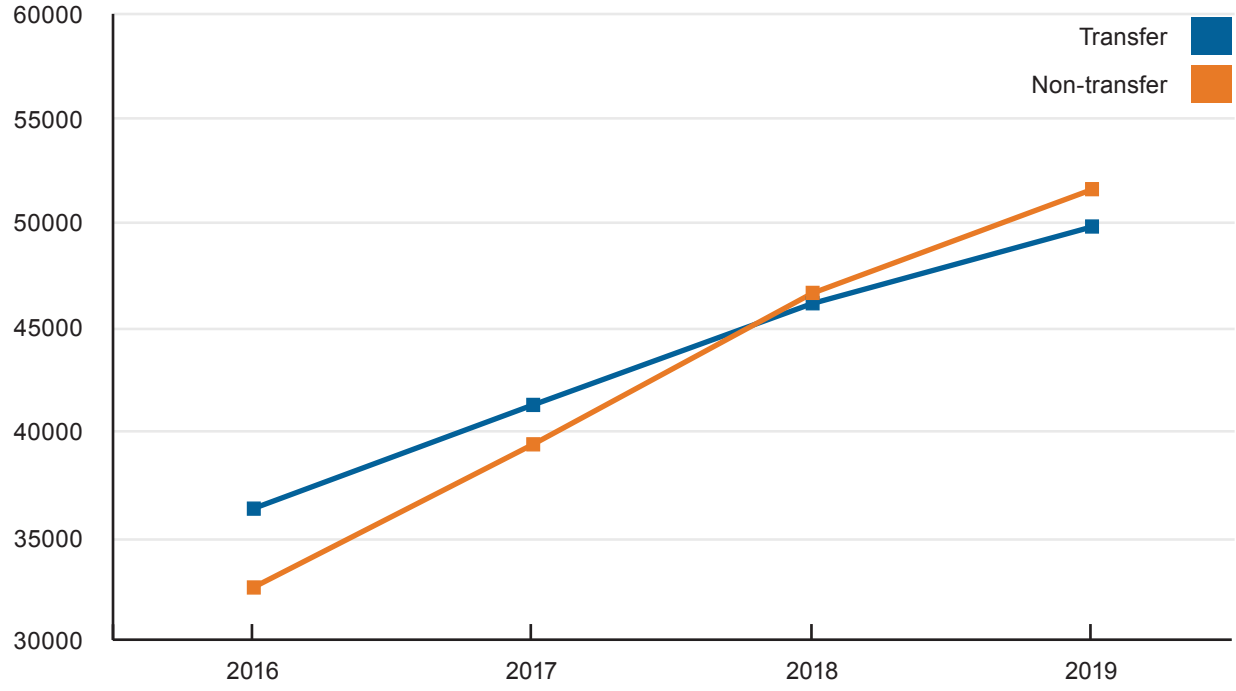


FIGURE 2B

T4E Income by Transfer Status, Ontario



Turning to Figures 3a and 3b, the graphs display the unadjusted earnings trajectories across our five transfer and non-transfer pathways. In Figure 3a, we consider all Canadian graduates. Overall, we can see that the UU transfer graduates have the highest relative earnings in 2016 ($41,700), followed by NTU ($37,400), CU ($36,000), NTC ($33,100), and CC/US ($32,800) transfer graduates. By 2019, however, the earnings differences across UU transfer graduates ($56,900) and NTU graduates ($56,500) and CU graduates ($54,700) narrow considerably. As well, the initial earnings gap between the NTC and CC/UC transfer graduates remains similar ($300 vs. $400) over time. However, NTC and CC/UC earnings trajectories generally remain lower and more differentiated from those of counterparts.

In Figure 3b, the relationships for Ontario graduates' postsecondary pathways and their earnings trajectories are presented. In 2016, similar to in Canada as a whole, UU transfer graduates yield the highest earnings ($42,600). But, unlike in the Canada-wide analyses, CU transfer graduates show the second highest earnings ($39,200), followed by NTU ($34,000), NTC ($29,400), and CC/UC ($25,200) transfer graduates. Interestingly, while the earnings trajectories for the Ontario graduates differ in comparison to the Canada-wide analyses, by 2019, once again, UU and NTU show the highest earnings ($55,600 and $55,800 respectively). CU graduates in Ontario drop to third-highest by 2019 ($51,200), and NTC maintains a respectable earnings premium over CC/UC transfer graduates over time ($43,900 vs. $40,500).

FIGURE 3A

T4E Income by Transfer Pathway, Canada

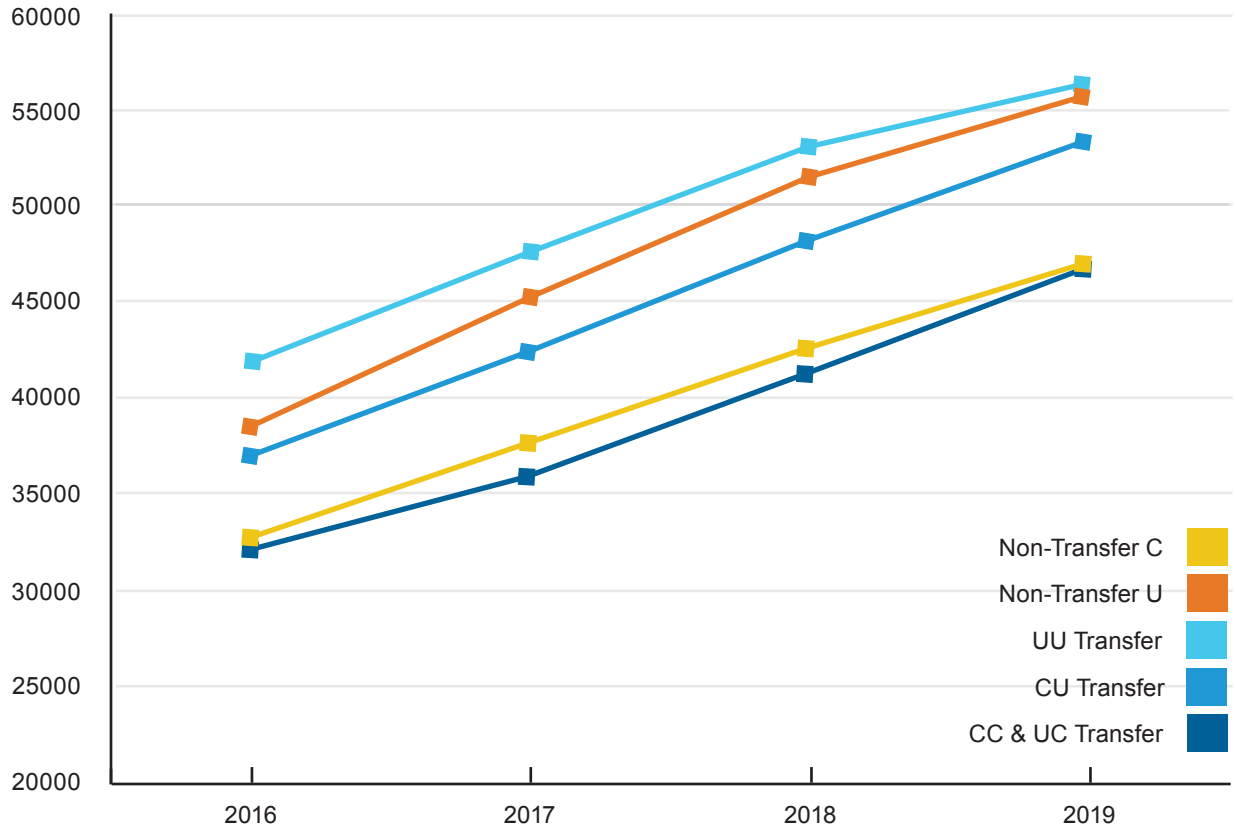
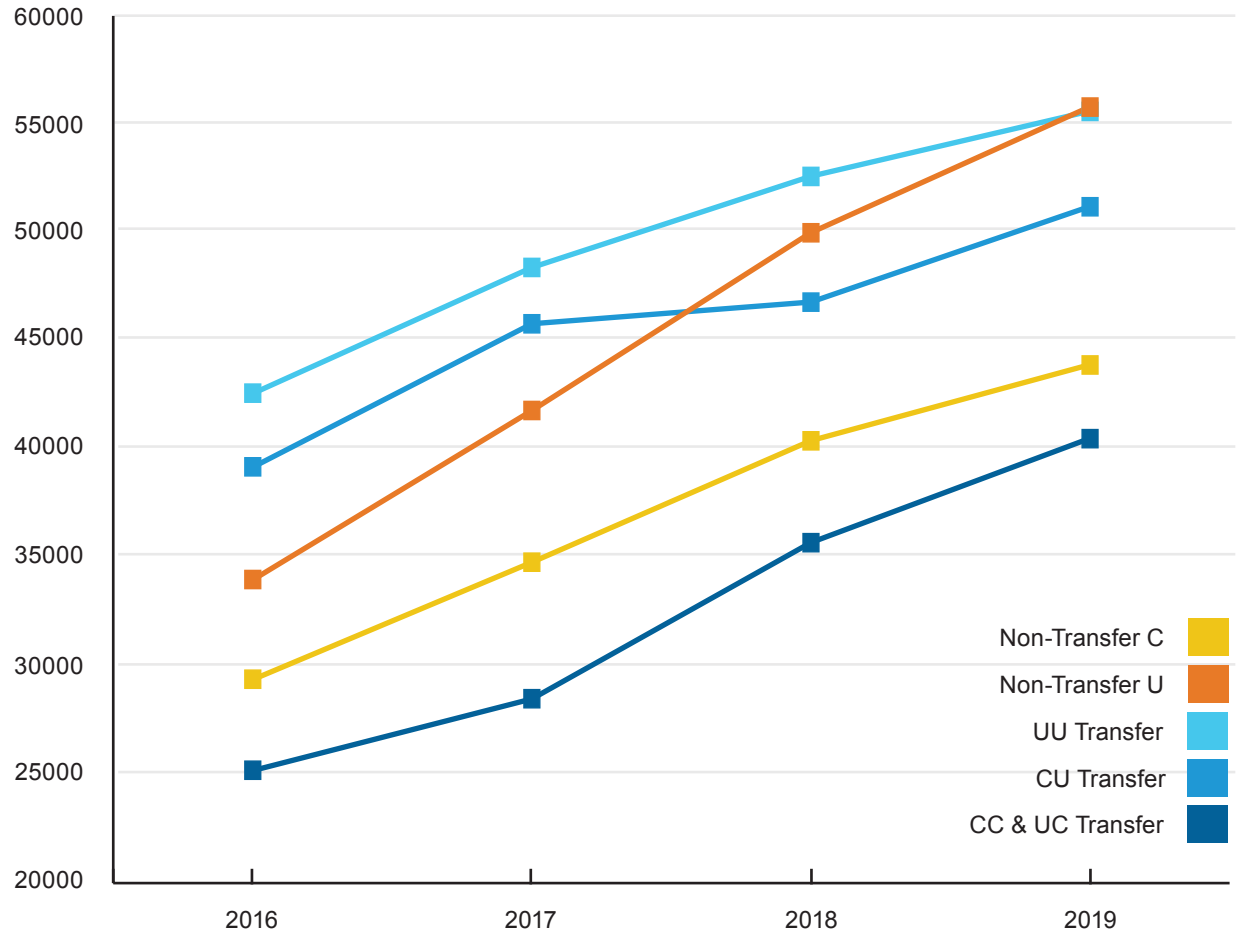


FIGURE 3B

T4E Income by Transfer Pathway, Ontario



Predicting the Early Workforce Earnings Outcomes of 2015 Graduates: Transfer Status

In this section, we estimate two sets of ordinary least squares (OLS) regression models to examine the relationships between student pathways and income in 2016, 2017, 2018, and 2019. For details on sample restrictions, statistical models, and other methodological details, see Appendix A.

In Table 3, our first set of models provides a broad comparison of the earnings outcomes over time for transfer and non-transfer graduates. Overall, the results reveal significant differences only in the earnings of graduates in 2016. Interestingly, one year after graduation, transfer graduates experience a statistically significant 6% earnings premium in relation to non-transfer graduates ($p < 0.01$). However, the situation changes by year two. By 2017, the earnings difference shrinks to 3% and is no longer statistically significant, and likewise, in our models for 2018 and 2019, no significant differences in graduate earnings emerge between transfer and non-transfer graduates.

TABLE 3

Logged Ordinary Least Squares Regressions Predicting the Early Workforce Earnings Outcomes of 2015 Graduates: Transfer Status (PSIS-NGS-T1FF Linkage)

Variable	2016	2017	2018	2019
Transfer Student (ref: Non-transfer)	.0629**	.0340	−.00434	−.0177
University (ref: College	.122***	.145***	.202***	.222***
Region of Institution (ref: Atlantic)				
Quebec	.036*	.128**	.0904*	.0852+
Ontario	.737*	.0471	.0897**	.0891*
Prairie Provinces	.207***	.158***	.120***	.151***
British Columbia & Territories	.132***	.140***	.112**	.120**
Average Income Before Graduation	.000***	.000***	.000***	.000***
PSIS Entry After 2016	-.686***	-.671***	−.622***	−.569***
Age at Time of Graduation	0.117**	.0101**	.0139***	.00237
Female	-.592***	-.0915***	−.0994***	−.164***
Language Spoken at Home (ref: English)				
French	.157***	.0323	.0692*	.100**
Other	.00502	-.120***	−.0242	.0197
Bilingual	.0360	.00231	.0628+	.0794*
Not Visible Minority	.0539*	.0330	.0309	.00980
Non-Indigenous	-.0568	-.0503	−.0864+	−.0315
Born Outside Canada	-.0270	.0453	.0174	.00235
Married	.101***	.123***	.0765***	.00668
No Children	.203***	.404***	.458***	.220***
Student Status (ref: full-time)				
Part-time Student	-.0503	-.00468	−.0421	.0742
Both Full- and Part-time	-.0392	-.0364	−.0844**	−.0367
Non-STEM Field of Study	-.0499*	-.0357+	−.0419*	−.0956***
No Reported Disability	.109***	110***	.119***	.0934***
Debt Size of All Loans at Time of Graduation	.000***	.000***	.000***	.000***
Scholarships (ref: $0)				
$1 to less than $10,000	.0224	.0363+	.0223	.0390*
$10,000 and above	-.158***	-.159***	−.0764*	−.0625+
Non-co-op Program	-.0768***	-.0516*	-.0808***	-.0229
Parent Education (ref: Less than College)				
College or Above	-.0202	.0243	-.0131	.0401*
Constant	9.550***	9.535***	9.636***	10.14***
n	9,390	9,390	9,390	9,390
Adjusted R-squared	.268	.236	.210	.145

Notes: Standard errors are available upon request.

+ p<0.10 * p<0.05 ** p<0.01 *** p<0.001

In Figure 4a, we plot the fitted earnings values for our transfer pathway variable from these saturated models above, holding all other variables in the model at their sample means and proportions. Figure 4a provides a visualization of the findings described above for Canada as a whole. In 2016, there is a distinct income advantage for transfer graduates over non-transfer graduates, but this gap narrows over time. In Figure 4b, we plot the fitted earnings values for transfer and non-transfer graduates in Ontario and hold all other variables in our model at their sample means and proportions. In Ontario, we can see that a slightly different relationship between transfer status and earnings emerges. In 2016, transfer graduates in Ontario show a slightly wider earnings premium in comparison to that of all transfer graduates in Canada.

However, over the course of the three years that follow, non-transfer graduates make considerable relative gains. In both 2018 and 2019, they report higher earnings than their transfer counterparts. Overall, there is consistency in the Ontario and Canada-wide findings in terms of initial earnings premiums for transfer graduates, but in Ontario, these differences change direction over time and suggest that non-transfer students may earn a premium as the time since graduation increases.

FIGURE 4A

Predicted T4E Income by Transfer Status, Canada

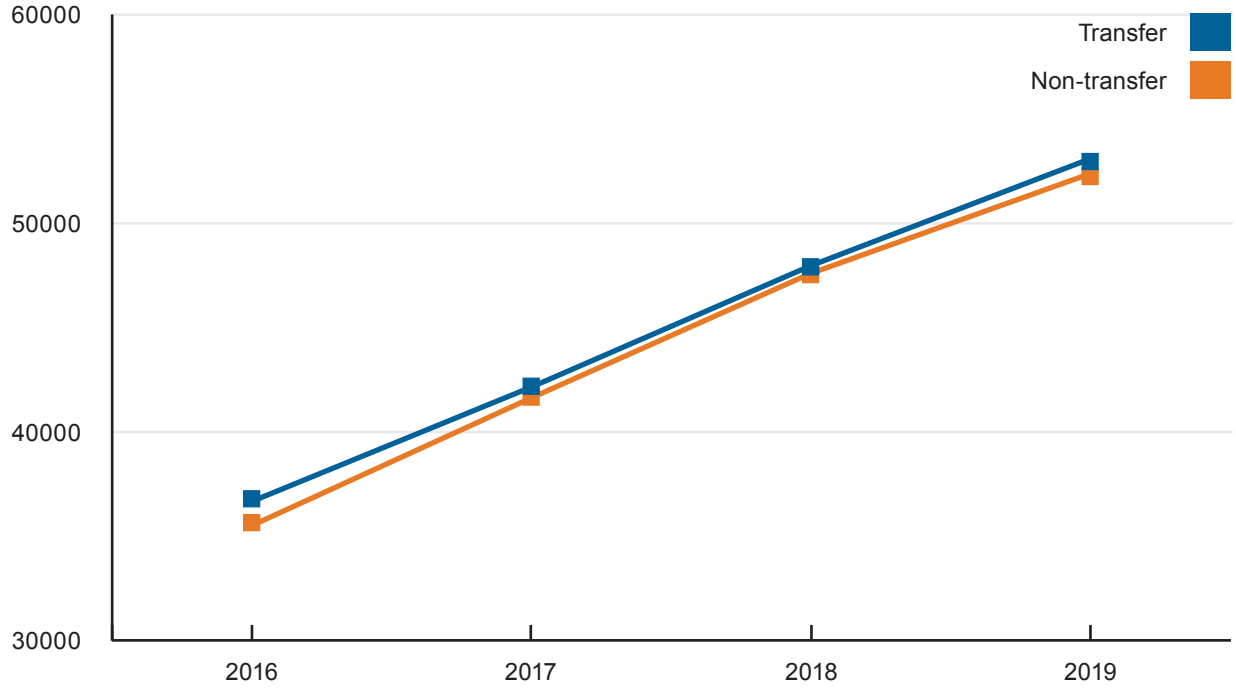
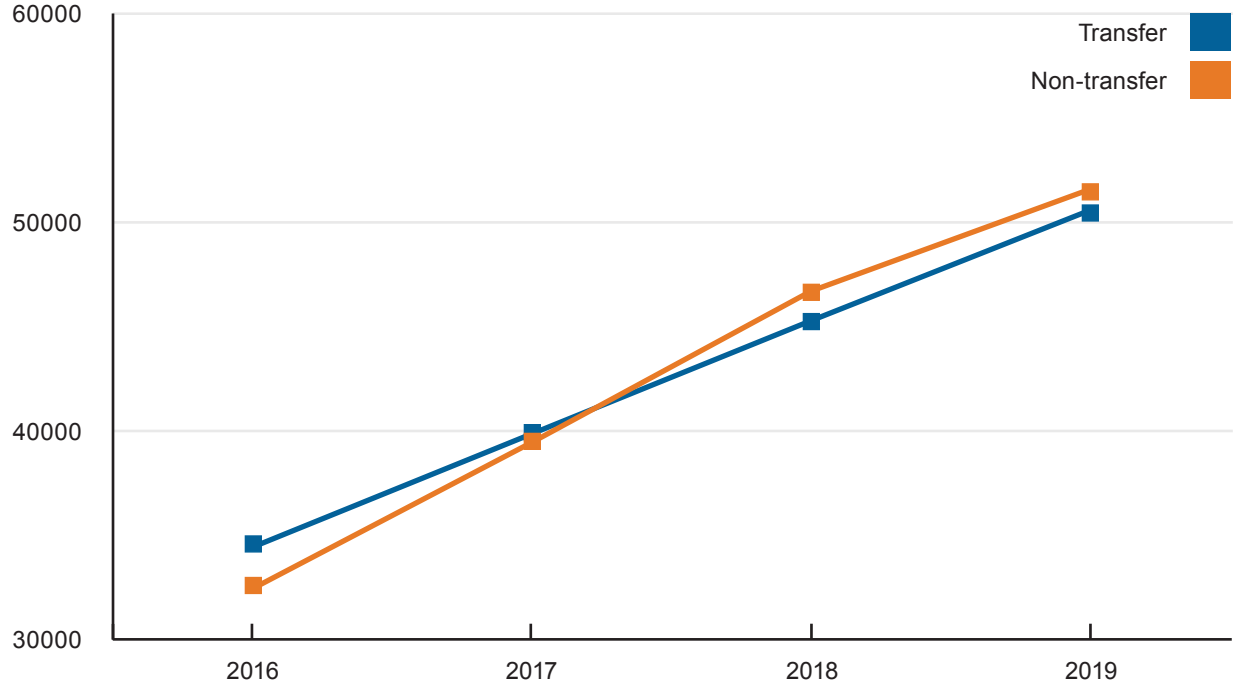


FIGURE 4B

Predicated T4E Income by Transfer Status, Ontario



Logged Ordinary Least Squares Regressions Predicting the Early Workforce Earnings Outcomes of 2015 Graduates: Transfer Pathways

To provide further insights into how these relationships might vary across transfer and non-transfer pathway types, in this section, we estimate an additional series of logged OLS models to explore the earnings outcomes across five key transfer and non-transfer pathways.

In Table 4, we show the OLS estimates for our transfer pathway variable from each of the four models. By and large, we see similar relationships emerge in each of the four years. The transfer and non-transfer pathways do vary in their relationships with earnings. In comparison to non-transfer college graduates, UU, CU, and NTU graduates consistently earn significantly ($p < .001$) more in the workforce. At times over our period of study, CC/UC graduates also show some modest but statistically significant earnings premiums in comparison to NTC graduates. Moreover, these relationships between transfer pathways and earnings exist even when controlling for a whole host of other sociodemographic and educational experience variables derived from the NGS and PSIS files.

TABLE 4

Logged Ordinary Least Squares Regressions Predicting the Early Workforce Earnings Outcomes of 2015 Graduates: Transfer Pathways (PSIS-NGS-T1FF Linkage).

Variable	2016	2017	2018	2019
Transfer Student (ref: Non-transfer College)				
Non-transfer University	.141***	.162***	.224***	.258***
University to University	.261***	.277***	.245***	.176***
College to University	.134***	.122***	.127***	.180***
College to College/University to College	.0747*	.0223	.0615+	.0885*
Region of Institution (ref: Atlantic)				
Quebec	.0377	.137**	.0993*	.0843+
Ontario	.0749*	.0486	.0912**	.0890*
Prairie Provinces	.211***	.163***	.125***	.154***
British Columbia and Territories	.138***	.148***	.119**	.125**
Average Income Before Graduation	.000***	.000***	.000***	.000***
PSIS Entry After 2016	−.688***	−.673***	−.623***	−.571***
Age at Time of Graduation	.0113**	.00960**	.0140***	.00271
Female	−.0605***	−.0925***	−.101***	−.168***
Language Spoken at Home (ref: English)				
French	.163***	.0383	.0733*	.103**
Other	.00687	−.119***	−.0216	.0234
Bilingual	.0370	.00274	.0651+	.0831*
Not Visible Minority	.0552*	.0341	.0331	.0127
Non-Indigenous	−.0581	−.0511	−.0885+	−.0337
Born Outside Canada	−.0260	.0466	.0184	.00311
Married	.101***	.122***	.0780***	.00959
No Children	.199***	.400***	.456***	.217***
Student Status (ref: full-time)				
Part-time Student	−.0555	−.0115	−.0492	.0722
Both Full- and Part-time	−.0426	−.0403	−.0850**	−.0357
Non-STEM Field of Study	−.0538**	−.0400*	−.0470*	−.0967***
No Reported Disability	.109***	.110***	.120***	.0945***
Debt Size of All Loans at Time of Graduation	.000***	.000***	.000***	.000***
Scholarships (ref: $0)				
$1 to less than $10,000	.0190	.0327+	.0207	.0373+
$10,000 and above	−.165***	−.166***	−.0816*	−.0691+
Non-co-op Program	−.0818***	−.0571*	−.0869***	−.0265
Parent Education (ref: Less than College)				
College or Above	−.0215	.0228	−.0135	.0406*
Constant	9.557***	9.547***	9.630***	10.12***
n	9,390	9,390	9,390	9,390
Adjusted R-squared	.270	.238	.212	.147

Notes: Standard errors are available upon request.

+ p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Figure 5a displays the Canada-wide fitted values and 95% confidence intervals for our transfer pathway variable from the saturated models above, holding all other variables in the model at their sample means and proportions. In 2016, UU graduates earn the most, followed by NTU graduates, CU graduates, NTC graduates, and CU/UC graduates. By 2019, UU graduates remain the highest earners, but NTU graduates and CU graduates narrow the relative earnings gaps considerably. At the same time, the relative earnings gap for NTC and CC/UC transfer widens over time. In Figure 5b, we separate out Ontario's fitted values and 95% confidence intervals for our transfer pathway variable from the saturated models above, holding all other variables in the model at their sample means and proportions. In Ontario, the story is slightly different. In 2016, UU graduates show the highest earnings, followed by CU graduates, NTU graduates, NTC graduates, and CC/UC graduates. By 2019, both NTU and CU graduates close the gap on UU graduates. The earnings gap between these university graduates and both NTC and CC/ UC college graduates, however, widens over time.

FIGURE 5A

Predicted T4E Income by Transfer Pathway, Canada

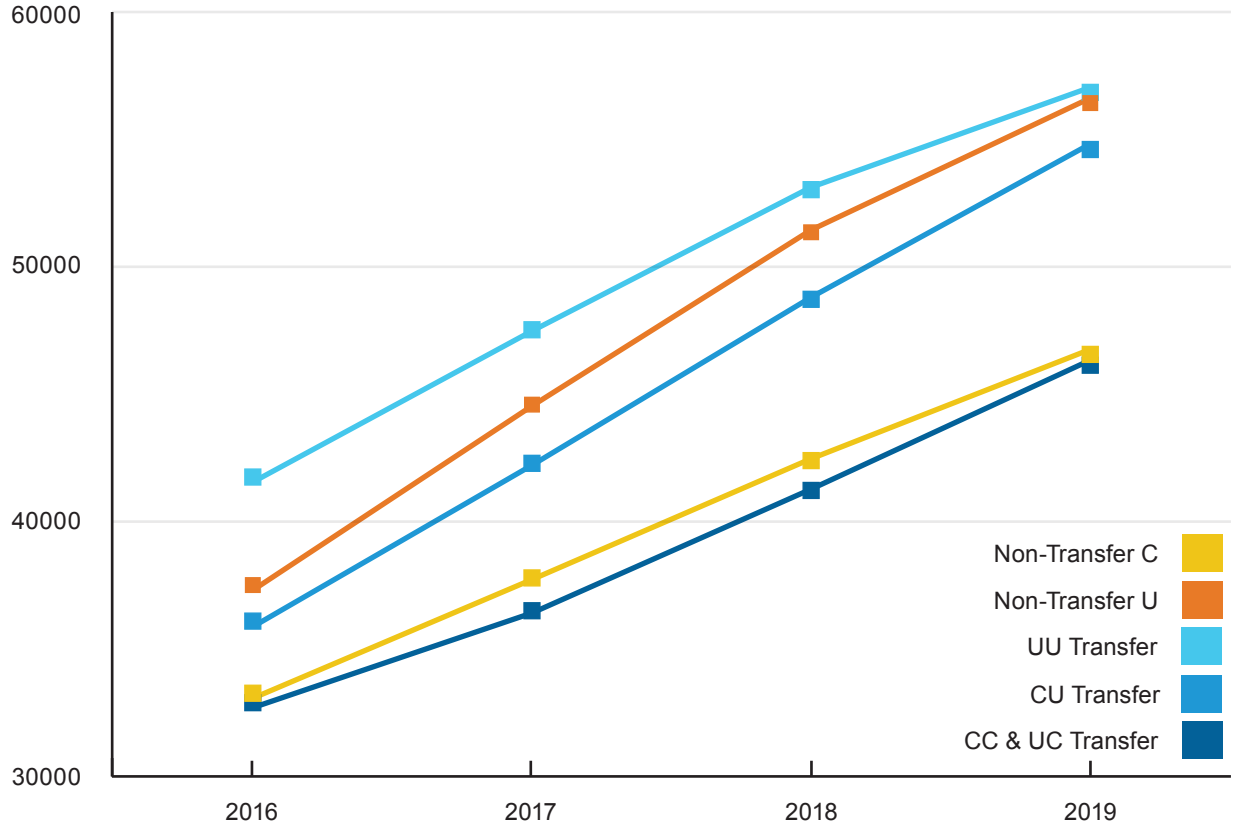
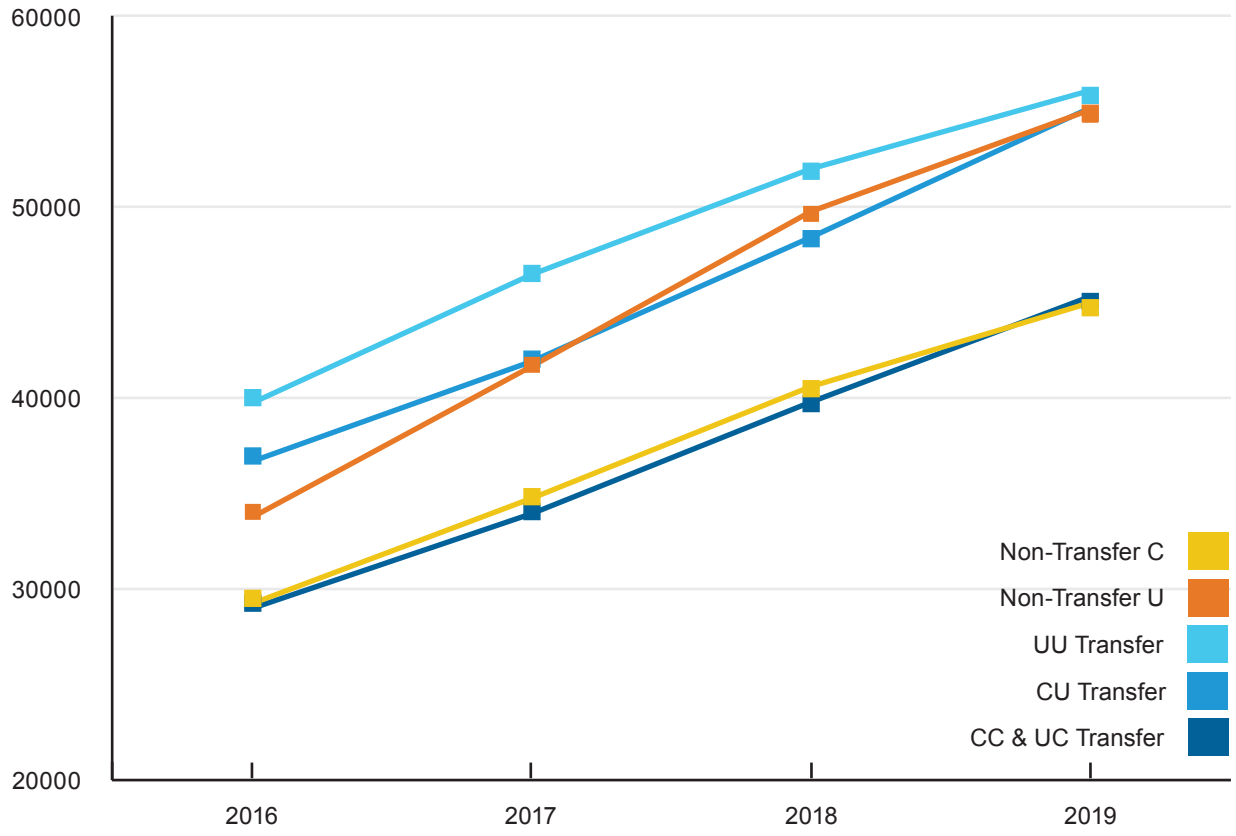


FIGURE 5B

Predicted T4E Income by Transfer Pathway, Ontario



Conclusions and Policy Implications

This study provides new and important evidence on the earnings outcomes of recent transfer graduates. Drawing on Statistics Canada's National Graduates Survey 2015 Cohort linked to postsecondary enrolment census data via PSIS and tax filer data via T1FF, we provide a new assessment of the early earnings trajectories of graduates both in Ontario as well as in Canada as a whole. Taken together, our results offer several key implications for administrators and education officials concerned with monitoring transfer students as they transition into the labour market.

First, our initial results situate Ontario's rates of transfer pathway uptake within the country as a whole. Our descriptive results revealed that relatively fewer college and university graduates are transferring in Ontario in comparison to the rest of the country. Specifically, approximately 8% of the 2015 cohort of Ontario graduates transferred during their undergraduate program compared to about 18% of Canadian graduates. When digging a bit deeper into the types of transfer pathways that students are taking, our study shows that much of these provincial differences are attributable to higher uptake among college to university (CU) pathways elsewhere in the country (1% in Ontario vs. 8% in Canada). While some of these provincial differences are, in part, attributable to differing

higher education arrangements in other provinces (e.g., CEGEP in Quebec), this relatively low CU uptake in Ontario underscores the importance of continuing to support the province's efforts to facilitate further CU pathway development.

Second, our study contributes by providing a new large-scale empirical assessment that weighs in on a critical ongoing debate within the existing literature on transfer in Canada and abroad. Is there, or is there not, an early workforce earnings penalty for transfer graduates? At the outset, our results do provide some good news for students who may be considering transferring institutions during their college and university careers. By and large, our findings do not point to a substantial earnings deficit within the first four years for graduates who transferred during their academic programs. In fact, our descriptive results reveal that, on average, transfer graduates earn more than non-transfer graduates one year into the workforce. This relationship is common in both Ontario and Canada for the first few years after graduation. However, in Ontario, transfer students begin with a 10.5% initial earnings premium ($3,800), compared to a 3% ($1,200) earnings premium for transfer graduates in all of Canada. This earnings premium for transfer graduates does hold four years into the workforce for all of Canada, but in Ontario, the earnings premium for transfer graduates reverses and becomes a deficit by 2019, as graduates who did not transfer enjoy a 3.5% earnings premium ($51,600 vs. $49,800).

In our multivariate analyses, we estimate a series of regression models to predict the relationship between transfer status and transfer pathway type and earnings outcomes. In these analyses, we control for various characteristics that also might influence earnings in order to isolate the unique effects of transfer pathway behaviours on earnings outcomes. Overall, our models indicate that transfer status is a key factor to consider when predicting early workforce earnings. In both Ontario and Canada-wide analyses, we consistently find that in 2016, transfer graduates experience an earnings premium. This situation remains similar over time in Canada. But, in Ontario, non-transfer graduates end up earning relatively more by 2019. As such, our Canada-wide analyses certainly resonate with prior work that found earnings premiums for transfer students (e.g., Chen et al., 2022; Liu & Belfield, 2020). But, in Ontario, after four years in the workforce, our findings resemble those of other studies that have uncovered earnings deficits for graduates who transferred during their postsecondary education (e.g., Andrews et al., 2014; Holmund & Regnér, 2009; Xu et al., 2018).

Third, our study also provides much-needed information about how early earnings trajectories vary across the types of transfer pathways leading to graduation. Are some transfer pathways more likely than others to experience earnings deficits? When considering five key types of transfer and non-transfer pathways, a similar story does emerge for Ontario and for Canada as a whole. By 2019, graduates from university (non-transfer university, university to university, and college to university) all show higher relative earnings in comparison to college graduates (non-transfer college and college to college/university to college graduates). Interestingly, in both Ontario and Canada-wide, graduates who reported transferring across universities (UU) initially earn more than non-transfer university (NTU) graduates. But, by 2019, the two groups differ by only a couple hundred dollars ($55,800 vs. $55,600). For college graduates, however, the story is less encouraging. Our analyses reveal that the earnings deficit for transfer students is fairly substantial in Ontario (about 14% in 2016). The deficit does shrink over time, but it remains fairly large even four years after graduation (7% in 2019).

Moreover, our multivariate findings further confirm that zeroing in on the type of transfer pathway that graduates took during their studies adds another important element to consider.

Indeed, in step with prior research, some pathways, more so than others, yield earnings premiums early on in the labour market. When exploring various transfer pathways, our Ontario analyses reveal that UU transfer graduates showed the highest relative incomes in 2016, followed by CU, NTU, NTC, and CC/UC graduates, respectively. At least initially, our results appear to resonate with studies that have found earnings premiums for UU and CU pathways relative to NTU (e.g., Chen et al., 2022; Dubois, 2007; Dumaresq et al., 2003; Walters, 2003) and with studies that have found earnings deficits for CC/UC in comparison to NTC (e.g., Walters, 2003). But, by 2019 (four years into the workforce), NTU and CU graduates close the gap on UU graduates to earn the most, followed by college graduates (both NTC and CC/UC). However, it is important for policymakers to note that many of the earnings gaps that remain after four years in the workforce are not related to transfer pathways at all but appear to be attributable to whether graduates obtained a university or a college education. Taken together, Ontario's initial earnings premiums for CU transfer graduates, absence of a longer-term earnings penalty, and lower uptake of CU pathways relative to the rest of Canada, all suggest that the province continue to focus on bolstering CU articulation.

Future research in this area would benefit from following graduates for a longer period of time into the workforce. Certainly, as new T1FF tax filer years are added to Statistics Canada's ELMLP, it would be beneficial to continue to follow and compare the earnings trajectories across the various pathways over a longer period. While the earnings trajectory of non-transfer university graduates appears to be heading in the most promising direction at four years into the labour market, it remains unclear whether their relative gains will continue at five, ten, and fifteen years into the workforce. Related, extending the time frame with additional years of earnings data (e.g., 2020, 2021, and 2022) would also offer insights as to how the COVID-19 pandemic might have altered these earnings trajectories across our pathway types. Second, our work here provides a comprehensive exploration of the relationships between transfer pathways and only one particular workforce outcome for transfer graduates: earnings. It would be fruitful for future analyses to examine how the various postsecondary pathways we consider here might also influence other employment outcomes for graduates, such as employment status, underemployment, job-education mismatch, occupation, industry, and job satisfaction. Finally, while a major strength of this study was to glean important insights from the recent NGS-PSIS-T1FF linkages, small sample sizes in the NGS survey data did prevent us from exploring differences in earnings trajectories for transfer students within regions of Ontario. In step with prior ONCAT studies that have understood how transfer dynamics can vary across northern and southern regions (Hillier et al., 2020; Pizarro Milian et al., 2022; Sano et al., 2020; Zarifa et al., 2020; Zarifa et al., 2022), it would be equally important for future work to employ the PSIS-T1FF linkage in order to consider how earnings and employment outcomes might vary even within regions of the Province of Ontario.

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Appendix A

Methodology

Data

This study uses a three-fold data linkage available in Statistics Canada's Education and Labour Market Longitudinal Platform (ELMLP; for more information, see Barnett et al., 2022). The linkage of the Postsecondary Student Information System (PSIS), the T1 Family File (T1FF), and the National Graduates Survey (NGS) forms a large, detailed dataset of administrative student data from public colleges and universities, T1 income tax data, and a nationally representative sample of graduates from public colleges and universities in the class of 2015, respectively. The NGS-PSIS-T1FF allows for detailed analyses to be conducted among the sample, including primary research questions related to postsecondary education pathways and early labour market outcomes, in addition to secondary research questions related to student sociodemographic and parental characteristics. The linkage also allows researchers to maximize research opportunities within typically smaller samples in a larger, nationally representative sample.

Subsample Restrictions

Our approach places several restrictions on our final subsample. Individuals selected for our analyses were a) between 20 and 30 years old at the time of graduation, b) completed an undergraduate degree or college diploma, c) reported a positive income on their taxes from 2015 to 2019, and d) did not have missing observations across our covariates. In the PSIS dataset, there are duplicate entries for the same person (e.g., a person may have finished an undergraduate degree in May and started a graduate degree in September). To determine which PSIS entry to use, we employed the following steps: First, we compared the NGS to the PSIS based on whether they have the i) same type of degree, ii) same education level (e.g., undergraduate/graduate), iii) same province of study, and iv) same field of study (i.e., Classification of Instructional Programs). Second, we rank the entry by 1) match NGS (if snapshot or grad_f = 1); 2) match NGS but is not snapshot (or grad_f = 1); 3) do not match NGS but is snapshot (or grad_f = 1); and 4) latest program if available. We retained the entry with the highest rank.

Dependent Variables

Our dependent variables are the real annual earnings of graduates as reported in the T1FF tax data. Specifically, we use the T4E income from the T1FF. Given our graduates complete their programs in 2015, we assess the earnings differences across transfer pathways at four points in time (one year in 2016, two years in 2017, three years in 2018, and four years in 2019). All earnings are converted and reported in 2019 constant dollars using Statistics Canada's Consumer Price Index (CPI).

Focal Independent Variables: Transfer and Transfer Pathways

Our focal independent variable for this study is transfer status. We create two transfer pathway variables for the study. First, we create a dichotomous variable that captures whether or not graduates transferred over the course of the program they completed in 2015. Specifically, an individual is identified as a transfer student if, at any point between 2009 and 2014, they pursued

education at the same level (i.e., undergraduate or graduate) but did so at a different institution compared to the previous year. Additionally, they neither graduated in the current year nor in the preceding year. Second, we disaggregate transfer types and create a variable with the following pathways: 1) non-transfer college (NTC); 2) non-transfer university (NTU); 3) university to university (UU); college to university (CU); and college to college/university to college (CC/UC).[2] To establish the transfer path, for each year, we examine if the student has undergone any transfers between institutions, following the procedure used in the previous step. Subsequently, we assign the transfer path by considering the type of educational institution the student attended in the previous year and their current year of enrolment. In cases where the student had multiple transfers, we assign the transfer closest to the year 2015.

Control Variables

In addition to these variables of interest, we include a number of other sociodemographic and educational factors that have also been shown to influence graduates' earnings outcomes. Specifically, we include measures to account for level of education, region,[3] age, sex, language,[4] visible minority status, Indigenous status, country of birth, marital status, presence of children, registration status, field of study, further education after 2015,[5] disability status, average income prior to graduation,[6] debt size, scholarships, co-op status, and parental education (further details are shown in Table 1). Several of these are drawn from the NGS as they are either absent from the PSIS files or not recommended for analysis with the official documentation.

Analytical Approach

To investigate the early earnings trajectories across transfer pathways, we use descriptive statistics including summary measures and cross-tabulations to provide a preliminary picture of the relationships. Second, we use the log transformation on our earnings variable and estimate a series of ordinary least squares regression models to examine the independent effects of our focal independent variable, namely transfer pathways, controlling for a number of other key predictors of earnings differences available in the NGS and PSIS. Except for marital status and income, all variables in our analysis remain constant. These two variables, marital status and income, are obtained from the T1FF dataset, enabling us to capture them year by year. For brevity, we present and discuss only the saturated models here, but three nested models were estimated for each of the tax years available in the T1FF (2016, 2017, 2018, and 2019).7 Finally, to aid in the interpretation of our findings, we also produce and graph the fitted values and 95% confidence intervals derived from our saturated regression models.

[2] Unfortunately, we did not have sufficient sample sizes to separate out CC and UC pathways.

[3] For the region variable, we group the Territories with the Province of British Columbia due to small sample sizes.

[4] For language spoken at home, we categorize it into four groups: English-only speakers, French-only speakers, speakers of languages other than French or English, and a bilingual category. The bilingual category includes individuals who speak both English and French as well as those who speak more than one language in addition to French or English.

[5] To identify whether an observation pursued further education after graduating in 2015, we utilize the PSIS records. The variable is set to equal to one if the observation has an entry at any point from year 2016 (one year after graduation) to year 2019.

[6] The average income before graduation variable was calculated based on tax filer income reported in T1FF years 2012 to 2014 (i.e., the three years prior to 2015).

[7] All earnings are reported in 2019 constant dollars.

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