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# Ethno-Racial Disparities in Vertical Transfer Intent among Ontario College Applicants: An Analysis of the University/College Applicant Study™

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# Executive Summary

## Project Purpose

Through this project we analyzed ethno-racial disparities in vertical transfer (e.g., college-to-university) intent among Ontario college applicants using Academica's University/College Applicant Study (UCAS). This is a topic that has received very limited attention within the Ontario context, but which has both research and policy implications.

## Key Findings

### **Ethno-Racial Minorities<sup>1</sup> Intend to Transfer at Higher Rates**

Nearly every ethno-racial minority group analyzed intended to engage in vertical transfer at a higher rate than white counterparts. These groups included Black, Latino/Caribbean, and Indigenous students. These statistically significant differences persist even in models that were adjusted for potential confounders or include applicants with previous PSE experience.

### **Ethno-Racial Disparities Are Not Unique To Ontario**

Similar ethno-racial disparities are detected when we fit our model on college applicants in other regions, including Alberta and the rest of Canada. This leads us to believe that the dynamics we are observing may not be rooted in unique structures within the Ontario post-secondary education (PSE) system.

## Policy/Research Implications

### **Tailored Transfer Student Supports**

Observed ethno-racial disparities warrant the local evaluation and development of institutional supports tailored for the groups that are most likely to intend to engage in vertical transfer. The Credit Transfer Institutional Grant (CTIG) could play a role in funding these tailored supports.

### **Need to Evaluate Upstream/Downstream Issues**

There is a need to better understand the relationship between streaming and student decision-making on vertical transfer intent earlier in the student life course. It is also necessary to examine disparities in who fulfills their transfer ambitions.

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<sup>1</sup>The term ethno-racial minority is used to refer to a group of people who constitute less than half of the population in a territory, and who tend to share common cultural, linguistic or other social characteristics (e.g., geographical origins) (United Nations, n.d.). The term differs from the more commonly used terms in Canada—including *visible* or *racialized* minority—in that certain traditionally marginalized ethno-racial groups (e.g., Latin Americans) may nonetheless self-identify as white.

# Introduction

Significant advances have been made in the study of student mobility within Ontario PSE over the past five years. Both the newly created Education and Labour Market Linkage Platform (ELMLP) (e.g., Walters et al., 2021; Zarifa et al., 2020) and various other Statistics Canada surveys—such as the National Graduates Survey (NGS) (e.g., Dhuey et al., 2021) and the Longitudinal International Study of Adults (LISA) (e.g., St-Denis et al., 2021)—have been leveraged in recent ONCAT-funded reports to produce fresh insights on both the predictors and outcomes of transfer. Today, we know more about transfer in Ontario than ever before.

Despite general progress, our understanding of the propensity for students from ethno-racial minority groups to travel transfer pathways (or intend to) remains rudimentary. Beyond a select group of qualitative studies analyzing the experiences of Black transfer students within specific institutions or regions (e.g., James, forthcoming; Mudavanhu et al., forthcoming), little has been done to develop a macro-level and statistical understanding of racialized students' demand for transfer pathways.

Certain quantitative transfer studies (e.g., Davies & Pizarro Milian, 2021) have relied on simple white/racialized distinctions when analyzing transfer, thus painting over the vast degree of heterogeneity that exists among ethno-racial groups with respect to educational aspirations, experiences, and attainment in Canada (e.g., Thiessen, 2009). Other recent quantitative studies have disaggregated ethno-racial categories (e.g., James & Parekh, 2021; Parekh, Brown, & James, 2020), but focused on student pathways only between the Toronto District School Board (TDSB) and York University. As such, their findings may not be representative of provincial-level trends.

This state of the Ontario transfer literature sharply contrasts with that within the United States, where scholars have devoted far more energy to analyzing ethno-racial dynamics in transfer (e.g., Castro & Cortez, 2017; Del Real Viramontes, 2021; Jain, 2009; Jain et al., 2011; 2016; Mesa & Blume, 2020; Perez & Ceja, 2010; Wang et al., 2017), with a particular focus on Black and Latin American transfer students. This American literature has found that significant differences exist in both the propensity for racialized students to transfer, their transfer experience, and their subsequent likelihood of graduating.

This study draws on data from Academica Group's University/College Applicant Study (UCAS) to statistically model the relationship between self-identified ethno-racial identity and vertical transfer intent among Ontario college applicants. Unlike previous studies (Henderson & McCloy, 2019; Pizarro Milian et al., 2022) that have used degree aspirations as a proxy for vertical transfer intent among college applicants, this study makes a marked improvement by analyzing responses to a UCAS question allowing respondents to explicitly signal their vertical transfer intent.

Our statistical modeling shows that among Ontario college applicants, nearly all ethno-racial minorities are more likely to report vertical transfer intent than their white counterparts. This finding proves remarkably robust, surviving an extensive group of statistical controls and replicating itself across various sub-sample analyses. Moreover, we see that trends within Ontario tend to replicate themselves—albeit with some variation—in models fitted on sub-samples of Alberta colleges applicants, as well as models using sub-samples of college applicants in the rest of Canada. We theorize that the likely mechanisms that prompt these observed trends outline the prospective policy strategies that could be adopted to promote equity within the Ontario transfer system.

## Literature Review

Vertical transfer (along with “upward”) is a term commonly used to refer to student pathways commencing in community colleges and leading into university. The study of this trajectory tends to dominate student mobility research, attracting far more attention than “reverse” (university-to-college), lateral (e.g., university-to-university), or swirl trajectories (Pizarro Milian & Zarifa, 2021; Taylor & Jain, 2017). Within the American context, studies find that the majority of community college students intend to transfer into university (e.g., Jenkins & Fink, 2015; Wang et al., 2017). However, it is unclear what share of students intend to travel a similar pathway when pursuing a degree within the Ontario context.

Recent research on vertical transfer in Ontario has focused primarily on student movement as opposed to intentions. Zarifa et al. (2020), for example, estimated that only roughly 2% of students who entered Ontario PSE transferred from college to university within their first two years of study. McCloy, Steffler, and Decock (2017), on the other hand, observed that among respondents to the province’s College Graduate Satisfaction Survey, only roughly 4-6% of college graduates transferred into a university program within six months of their graduation. Neither of these studies draw on data sources that include measurements of students’ ethno-racial identity, and as such, they do not provide insight into how this behavior varies across these groups.

Only select studies have examined the intersections of ethno-racial identity and vertical transfer in the Ontario context. Using an administrative linkage between records at the Toronto District School Board (TDSB) and the University of Toronto, Davies, and Pizarro Milian (2020) noted that white TDSB students were more likely than minorities to attend a college prior to entering that university. A second study performed using the National Survey of Student Engagement (NSSE) at Nipissing University observed that white students were far more likely to enter the university without previous post-secondary experience (Missaghian & Borato, 2022). In addition, James and Parekh (2021) observed that Black students were the

least likely (56.7%) to enter York University directly from high school, while East Asians were the most likely to enter YorkU directly (70.4%). Beyond institution-specific studies, we see that Dhuey et al. (2021) analyzed the 2013 and 2018 National Graduates Surveys, observing a far greater share of visible minorities among reverse (48%) than in vertical (28%) credential accumulation pathways.

The abovementioned studies have only scratched at the surface of the relationship between ethno-racial identity and vertical transfer. Moreover, they fail to answer the question of whether there are net ethno-racial differences in vertical transfer intent in Ontario. This is a consequential factor, given that transfer intent has been found to be strongly correlated with eventual transfer uptake (Steffler, McCloy, & Decock, 2018).

## Method

The UCAS™ is a proprietary data source that has been developed by Academica Group in collaboration with colleges/universities across Canada over the past two decades.<sup>2</sup> It is the largest applicant survey of its kind in Canada.

From 2008-2017, the UCAS sampling frame for Ontario college applicants was derived from Ontario College Application Service (OCAS) records that included applicants to every public college in the province. As such, the survey provides ideal coverage of the sector during this period. In subsequent years (2018 to present), the survey includes applicants to a non-random set of Ontario colleges that voluntarily decided to participate in the UCAS. This means that UCAS respondents during this period may not be statistically representative of the broader “universe” of applicants.

Our dependent variable for the analyses presented through this report comes from a question asking college applicants what their main reasons were for applying to PSE, with one option being to “complete the courses necessary to transfer to a (different) university.” We are not aware of any other multi-institutional survey that currently captures this type of information in Canada.

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<sup>2</sup>For a more detailed review of the strengths of this dataset, see Pizarro Milian's (2022) brief published by ONCAT: *Situating the UCAS™ Dataset within the Ontario PSE Data Landscape*.

Our focal predictor is constructed using two questions from the UCAS survey. The first question captures 12 ethno-racial groupings with which applicants may self-identify, including:

1. Black
2. Caribbean/West Indies
3. White
4. Chinese
5. Filipino
6. Japanese
7. Korean
8. Latin American/Hispanic
9. Middle Eastern/West Asian/Arab (e.g., Egyptian, Lebanese, Iranian)
10. South Asian (e.g., Pakistani, Sri Lankan)
11. Southeast Asian (e.g., Cambodian, Indonesian, Laotian)
12. Other

The second question allows respondents to self-identify as Indigenous, and includes the following categories:

1. First Nations
2. Métis
3. Inuit

As these are not mutually exclusive categories, respondents are allowed to select multiple groupings with which they self-identify. We thus grouped multiple responses into a “mixed” category instead of dropping them from the analysis.

It was not possible to generate precise and useful estimates for some groups within the Ontario college applicant population due to small sample sizes (e.g., Japanese, Korean). As such, we collapsed certain ethno-racial groups using strategies that are common within related literature.

We model the relationship between these two variables—ethno-racial identity and transfer intent—using logistic regression, a common technique applied to dichotomous dependent variables (Fox, 2015). In effect, what we are trying to ascertain through these models is whether college applicants from various ethno-racial groupings differ in their propensity to intend to transfer into university.

We analyze both the bivariate/unadjusted relationship between ethno-racial identity and vertical transfer intent, as well as the net or adjusted relationship between these two variables. The latter is important as it allows for an estimation of the relationship between these variables that accounts for differences in transfer intent among ethno-racial groups that may be attributable to potential confounders, such as their demographic characteristics, academic performance, or program preferences.

Our statistical models include a set of controls for variables that could partially mediate the relationship between ethno-racial groupings and vertical transfer intent. This includes:

1. **Demographics:** We include standard demographic controls for age, gender, immigration status, parental education, and region of residence.
2. **Applicant Pathway:** In models focusing on first-time applicants, we control for whether the individual is applying straight out of high school or after taking a gap year. Meanwhile, in models fitted on the broader applicant population—including those with previous PSE experience—we control for highest level of education previously completed.
3. **Academic Information:** In models focusing on first-time applicants, we control for average mark achieved in Grade 12. In all models, we control for a set of variables corresponding with the primary field of study applied to by the individual. All models also include a variable representing whether the individual also applied to university that year.

This selection of controls restricts us to analyzing the 2013-2022 period, as some of the questions corresponding with the abovementioned controls were not introduced into the UCAS until 2013. Other variables available only for a subset of these years (e.g., household income) were not used, which allowed us to maximize sample sizes across ethno-racial categories (see Table 1, Appendix).

We focus our analysis and discussion within the body of this report on UCAS respondents who applied for the first time to Ontario colleges during the 2013-2017 period. However, to evaluate the robustness of observed trends, we also run comparable models across various other/broader sub-samples (both first-time applicants and those with previous PSE experience) and geographic regions (Ontario, Alberta, and the rest of Canada). This also allows us to contextualize patterns observed in Ontario. These alternative model specifications can be found in the Appendix.



To communicate the results of our regression models—and render them more interpretable to non-specialists—we visualize the estimated predicted probability (0 to 1) that applicants from each ethno-racial grouping will intend to transfer to university, along with their 95% intervals. In certain cases, we present the unadjusted and adjusted estimates side by side. The former represents raw differences in the probability of transfer intent, without accounting for any factor aside from ethno-racial grouping. The latter accounts for our available controls listed above. Comparing these two types of estimates helps us to see the extent to which ethno-racial disparities in transfer intent are due to other factors.

Interested readers can find regression tables with estimated coefficients for each ethno-racial grouping within the Appendix.

## Findings

Our main logistic regression models focus on first-time applicants to Ontario colleges during the 2013-2017 period (see Appendix, Table 2). To improve the interpretability of these models, we plot estimates from them in Figure 1.<sup>3</sup> Again, these estimates represent the estimated probability that an individual identifying with a particular ethno-racial group will intend to transfer to university.

Through estimates from our unadjusted model (Model 1 in Table 2, Appendix) plotted in Figure 1—which only contains our focal predictor—we see that every ethno-racial group is more likely to intend to transfer to university than white counterparts. South Asian, Filipino, and Middle Eastern applicants to Ontario colleges intend to transfer to university at the highest estimated rates within that model. However, it is worth noting that our unadjusted models explain only a very small portion of the variance in transfer intent. Reported pseudo R<sup>2</sup> values for this unadjusted model are tiny both in absolute terms and relative to those observed in the fully adjusted models. As such, it does not appear that ethno-racial identity is the primary driver of vertical transfer intent within Ontario.

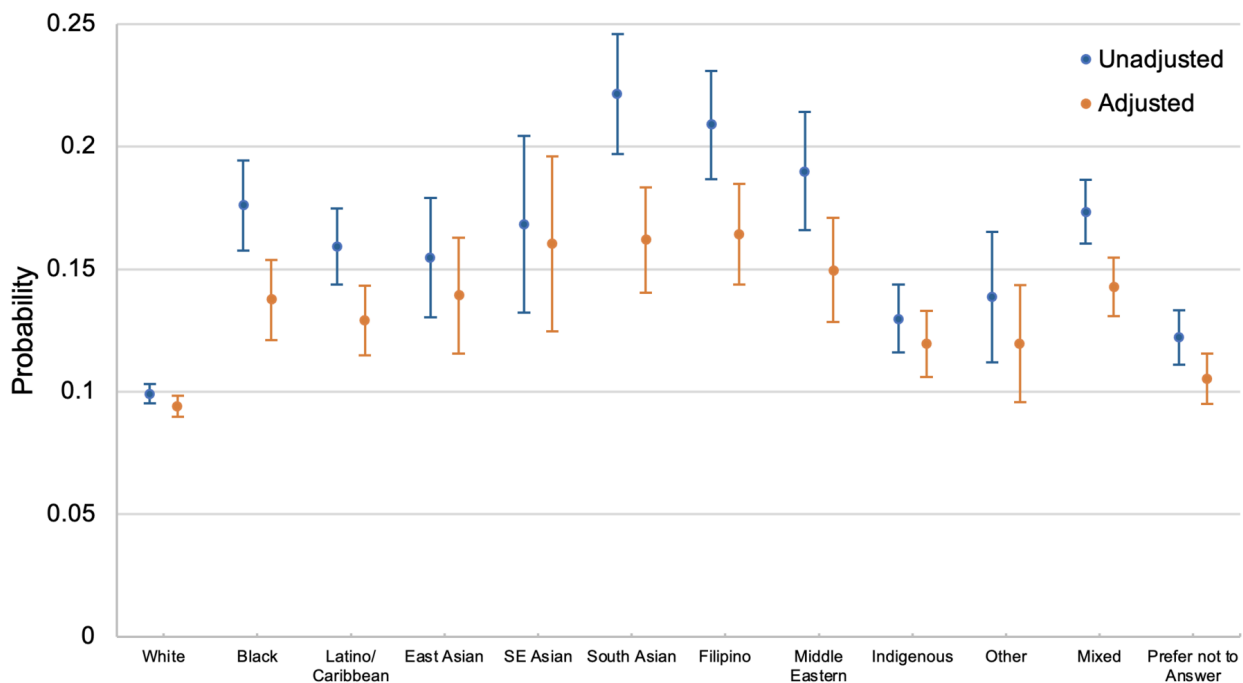
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<sup>3</sup>There are several important points to keep in mind when interpreting Figure 1, as well as similar figures in the Appendix. The y-axis represents the estimated probability that individuals within each group will intend to transfer to university, measured from 0 to 1. The x-axis contains the various ethno-racial groupings. For each grouping there is an unadjusted (blue) and adjusted (orange) estimate represented by the circles or “dots” above each grouping. Each estimate has “whiskers” surrounding that represent a 95% confidence interval. These intervals can be loosely interpreted as a range within which we are confident that the estimate for that group sits. Confidence intervals tend to shrink as the number of individuals within a group increases in a sample.

Once we control for available factors in the UCAS—including demographics, high school grades, and program area applied to—we see (again, in Figure 1) that the predicted probability of vertical transfer intent drops across all ethno-racial minority groupings. For example, the predicted probability that Black applicants will intend to transfer drops from 0.18 to 0.14. Similarly, the predicted probability that South Asian applicants will intend to transfer drops from 0.22 to 0.16. This means that a portion of the previously observed ethno-racial disparities in vertical transfer intent are attributable to differences between these groups across the dimensions that we can control for. Nevertheless, we continue to see that the estimated rate at which white college applicants intend to engage in vertical transfer within the adjusted model remains lower than that of every other ethno-racial group<sup>4</sup>.

**Figure 1**

*Predicted Probability of Transfer Intent*



The findings presented above prove remarkably robust to re-estimation using various other samples. This includes samples including college applicants with previous PSE experience, applicants during the broader 2013-2022 timeframe covered by the UCAS, and applicants in other regions (e.g., Alberta, the rest of Canada). Interested readers should consult the Appendix for these alternative models and some brief description.

<sup>4</sup>It is worth noting that the patterns observed through our adjusted logistic regression model (that containing the controls) were relatively consistent with those observed via probit and linear probability models.

## Discussion

Our study provides the first systematic exploration of ethno-racial disparities in vertical transfer intent within the Ontario context. Using the large sample sizes and rich demographic controls afforded by the University/College Applicant Study (UCAS), we statistically model the propensity with which college applicants intend to transfer to university in each decade. Through this exercise we discover that ethno-racial minorities intend to travel this pathway at far greater levels than their white counterparts. This is a finding that proves incredibly robust, replicating itself across various statistical models.

These findings raise a question that we cannot definitively answer with our data: What causes observed ethno-racial disparities in vertical transfer intent? Below we outline the plausible answers to this question. Both of the threads we develop requires further data gathering and analysis before we can determine with confidence the extent to which they explain observed dynamics.

First, over the past decade—particularly within the Greater Toronto Area—researchers have argued that certain racialized minorities are disproportionately and unfairly streamed<sup>5</sup> into college-level courses at the high school level (e.g., James & Turner, 2017). Local schoolboards have admitted this fact, noting that “Students who are Indigenous, Black, from households currently experiencing low socio-economic circumstances... have been more likely to be placed in streams with lower expectations and less access to post-secondary options” (York Region District School Board, n.d.). In light of this, the elevated rates of vertical transfer intent on the part of certain ethno-racial minorities could potentially be interpreted as a second attempt to play out their unfulfilled desire to attend university. After being prevented from pursuing university straight out of high school, perhaps a subset of students are using colleges as a steppingstone to their desired destination. We are unable to explore this hypothesis as the UCAS does not capture the academic track of applicants in high school. But, if this line of reasoning was “true”, one would expect that the observed ethno-racial disparities in our Ontario sample would gradually decrease as academic streaming is further delegitimized and phased out within the province’s high schools.<sup>6</sup>

A second plausible explanation is that ethno-racial minorities may be strategically opting to complete the early portion of their studies at a college, prior to transferring and completing a degree at university. Two potential forces could be prompting this sort of behavior. For

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<sup>5</sup>The Durham District School Board (n.d.) describes streaming as the “process of dividing students into differentiated groups based on their perceived academic ability and/or prior achievement.” (p. 1)

<sup>6</sup>This de-legitimation started around 2017 within the Toronto District School Board (TDSB), when the board proposed a 3-year plan to end streaming at the Grade 9/10 levels (Pichette, Deller, & Colyar, 2020). Further steps were taken at the provincial level to de-stream Grade 9 math by September, 2021 (Government of Ontario, 2021). Further de-streaming of other subjects at the Grade 9 level was also announced in 2022 under the province’s *Plan to Catch Up* (Government of Ontario, 2022). Some argue that current de-streaming efforts the high school level may not be enough to ameliorate social disparities (People for Education, 2022). And, they have argued for the need to end streaming practices that begin at the elementary school level (Follwell & Andrey, 2021).

starters, research has found that certain ethno-racial minorities have familial responsibilities that place pressure on them to stay close to home while attending PSE (e.g., Desmond & Turley, 2009). This could lead some into completing the first few years of their studies at a nearby college prior to going to a more distant university offering desired degrees.<sup>7</sup> An alternative reason why ethno-racial minorities may be strategically opting for vertical transfer could be due to increased price sensitivities. By attending college for 1-2 years, they could be acquiring an early batch of transferable credits at a cheaper rate than could be achieved within university. This is a benefit to transfer that ONCAT has advertised in the recent past<sup>8</sup> and which several policy reports have deemed feasible (e.g., Snowdon & Brady, 2014; Trick, 2013).<sup>9</sup> Further research is required to better understand these identified mechanisms.

Regardless of the mechanisms driving these observed patterns, several policy and program recommendations naturally follow. Nearly two thirds (68%) of those Ontario college applicants who intended to engage in vertical transfer during the 2013-2022 period were ethno-racial minorities,<sup>10</sup> despite this group accounting for less than half of survey respondents during this period. In light of this, efforts need to be made to consider how transfer-related advising/supports at both colleges and universities can be tailored to meet the specific needs of this diverse group. A one-size-fits-all approach to transfer student supports is far from ideal in this situation. It is likely that each institution will need to develop custom supports that align with their local transfer-intending (college) or incoming transfer (university) populations. There are likely lessons to be learned here from the success of tailored student supports in access-related offices across Ontario colleges/universities. Experimentation and evaluation of these tailored supports should be an important focus for projects funded by the Credit Transfer Institutional Grant (CTIF) in future years.

At a government level, the insights discovered through our analysis should serve as strong evidence for the need to systematically survey PSE applicants or high school graduates at the provincial level to better understand their intended educational pathways. Despite the many advances that have been recently made with administrative data—particularly using Statistics Canada’s ELMLP environment—such data are plagued by delays in their availability, limited coverage of demographics, and an inability to capture students’ intentions.

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<sup>7</sup> For example, a student in Barrie could attend Georgian College while still living at home, prior to transferring to the most proximate university (e.g., York) to finish their degree.

<sup>8</sup> In advertising materials produced by ONCAT (2019) it is suggested that potential benefits of transfer include: “save time” and “save money” (p. 2).

<sup>9</sup> It is worth noting that recent research by Pizarro Milian et al. (2023) using the PSIS-CSLP has found that graduates that travel vertical transfer pathways within Ontario borrow from the CSLP at similar rates as direct entry counterparts. They also borrow indistinguishable amounts from the CSLP. This evidence contradicts the idea that vertical transfer is a more cost-efficient strategy for the acquisition of a bachelor’s degree. Follow up research by Pizarro Milian et al. (forthcoming) using a richer TDSB-PSIS-CSLP linkage has also failed to identify differences in the borrowing amounts of direct entry and vertical transfer students, conditional on borrowing.

<sup>10</sup> As a reference point, 53% of applicants during this period identified as white.

Ontario would benefit from developing a strategy that thoughtfully combines available administrative records with short surveys at key junctures of the student life course, including both high school and PSE graduation. Though significant resources are already invested by various entities to generate these data in Ontario, the system and its students have suffered from a culture that keeps this information siloed and out of the hands of analysts (Gallagher-McKay, 2017). An ideal scenario would involve using the data sources listed in Table 6 of the Appendix to develop a full and high-definition image of student pathways within the province.

Immediate future steps which should be taken to further understand the relationship between ethno-racial identity and student pathways in Canada could include using the available linkage between Postsecondary Student Information System (PSIS) files and the 2016 Census. The latter source captures ethno-racial identity and could be used with the PSIS files to understand the varied pathways travelled by students during the 2016-2020 period. This option would take us beyond transfer intent—which is not captured in either of these data sources—and towards an analysis of actual pathways traveled by students.

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## Appendix

**Table 1**

*Transfer Intent (Proportion) by Ethno-Racial Grouping*

	Transfer Intent		Sample Size
	No	Yes	
Race			
White	0.90	0.10	22,918
Black	0.81	0.19	1,721
Latino/Caribbean	0.84	0.16	2,295
East Asian	0.85	0.15	913
South East Asian	0.83	0.17	429
South Asian	0.78	0.22	1,162
Filipino	0.79	0.21	1,370
Middle Eastern	0.81	0.19	1,079
Indigenous	0.87	0.13	2,381
Other	0.85	0.15	661
Mixed	0.82	0.18	3,378
Prefer not to Answer	0.88	0.12	3,520
Total	0.87	0.13	41,827

Note: Statistics presented here correspond with first-time Ontario college applicants (2013-2017) included in model presented in the body of the report (Figure 1 and Table 2).

**Table 2**

*Logistic Regression of Vertical Transfer Intent (2013-2017), First-Time Applicants to Ontario Colleges Only*

Variables	Model 1	Model 2	Model 3
Race			
Black	0.664*** (0.0686)	0.556*** (0.0740)	0.427*** (0.0759)
Latino/Caribbean	0.544*** (0.0633)	0.424*** (0.0692)	0.354*** (0.0703)
East Asian	0.509*** (0.0976)	0.357*** (0.102)	0.443*** (0.105)
SE Asian	0.609*** (0.133)	0.592*** (0.137)	0.609*** (0.138)
South Asian	0.950*** (0.0759)	0.729*** (0.0845)	0.620*** (0.0862)
Filipino	0.875*** (0.0720)	0.657*** (0.0807)	0.638*** (0.0820)
Middle Eastern	0.757*** (0.0832)	0.630*** (0.0884)	0.527*** (0.0895)
Indigenous	0.305*** (0.0663)	0.313*** (0.0672)	0.267*** (0.0681)
Other	0.381** (0.116)	0.344** (0.117)	0.268* (0.118)
Mixed	0.646*** (0.0516)	0.526*** (0.0548)	0.472*** (0.0556)

Variables	Model 1	Model 2	Model 3
Prefer not to Answer	0.235*** (0.0578)	0.178** (0.0587)	0.125* (0.0600)
Demographics <sup>11</sup>	No	Yes	Yes
Program/H.S. Grades/Application <sup>12</sup>	No	No	Yes
Pseudo R2	0.0154	0.0216	0.0549
Log Likelihood	-16017	-15915	-15374
Observations	41,827	41,827	41,827

Robust standard errors in parentheses. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

Extending our analytic sample to include all applicants to Ontario colleges during the 2013-2017 period in our model (Table 3)—including those with previous PSE (Figure 2<sup>13</sup>)—allows us to observe several interesting patterns. First, the estimated rate of transfer intent drops across the board, reflecting the fact that those with previous PSE experience have lower transfer intent. Second, very similar patterns emerge with respect to ethno-racial disparities in vertical transfer intent, where white applicants still lag considerably behind every other group. As such, it does not appear that these previously observed differences were strictly a function of dynamics that occur during the traditional high school to college transition. Put differently: even when including in the model those individuals who are applying to college in Ontario with previous PSE experience, there are significant ethno-racial disparities in vertical transfer intent.

<sup>11</sup>Coding of demographic controls is as such: Age: 0 = less than 19 years old, 1 = 19 years old or older; Gender: 0 = male; 1 = female, 2 = other; Immigration Status: 0 = born in Canada; 1 = Immigrant, 2 = International Student, 3 = Other; Parental Education: 0 = no complete PSE, 1 = completed PSE, 2 = DK/NA; Region of Residence: 0 = Metro Toronto, 1 = GTA, 2 = Southwest, 3 = Eastern, 4 = Northern, 5 = Rest of Canada, 6 = International.

<sup>12</sup>Coding of program/application controls is as such: H.S. Grades: 0 = <75%, 1 = 75-79%, 2 = 80-84%, 3 = 85-89%, 4 = 90-100%; Primary Program: 0 = Business; 1 = Agriculture/Environmental Studies; 2 = Communications/Arts; 3 = Computer Science; 4 = Education/Social Services; 5 = Engineering/Architecture; 6 = Health Sciences; 7 = Hospitality; 8 = Humanities/Social Sciences; 9 = Law Enforcement/Legal Studies; 10 = Math/Actuarial Sciences; 11 = Natural Sciences; 12 = Religious Studies; 13 = Skilled Trades/Apprenticeship; 14 = Upgrading/Basic Skills; 15 = Other; Applied to university: 0 = No, 1 = Yes.

<sup>13</sup>All estimates in this figure are adjusted for available covariates.

**Table 3**

*Logistic Regression of Vertical Transfer Intent (2013-2017), Including Those Applicants with Previous PSE*

	(1)	(2)	(3)	(4)
Variables	Ontario	Alberta	Ontario	Alberta
<b>Race</b>				
Black	0.632*** (0.0572)	0.0283 (0.144)	0.443*** (0.0632)	0.454* (0.180)
Latino/Caribbean	0.513*** (0.0536)	-0.0628 (0.209)	0.342*** (0.0593)	0.203 (0.217)
East Asian	0.301*** (0.0789)	-0.143 (0.179)	0.384*** (0.0853)	0.284 (0.204)
SE Asian	0.552*** (0.114)	0.142 (0.257)	0.550*** (0.119)	0.639* (0.294)
South Asian	0.674*** (0.0634)	-0.294 (0.164)	0.525*** (0.0727)	0.00163 (0.194)
Filipino	0.853*** (0.0617)	0.456*** (0.108)	0.625*** (0.0702)	0.621*** (0.145)
Middle Eastern	0.605*** (0.0693)	0.214 (0.220)	0.492*** (0.0757)	0.418 (0.250)
Indigenous	0.398*** (0.0560)	0.208 (0.117)	0.333*** (0.0575)	0.262* (0.0681)
Other	0.348*** (0.101)	-0.298 (0.527)	0.243* (0.104)	-0.179 (0.547)

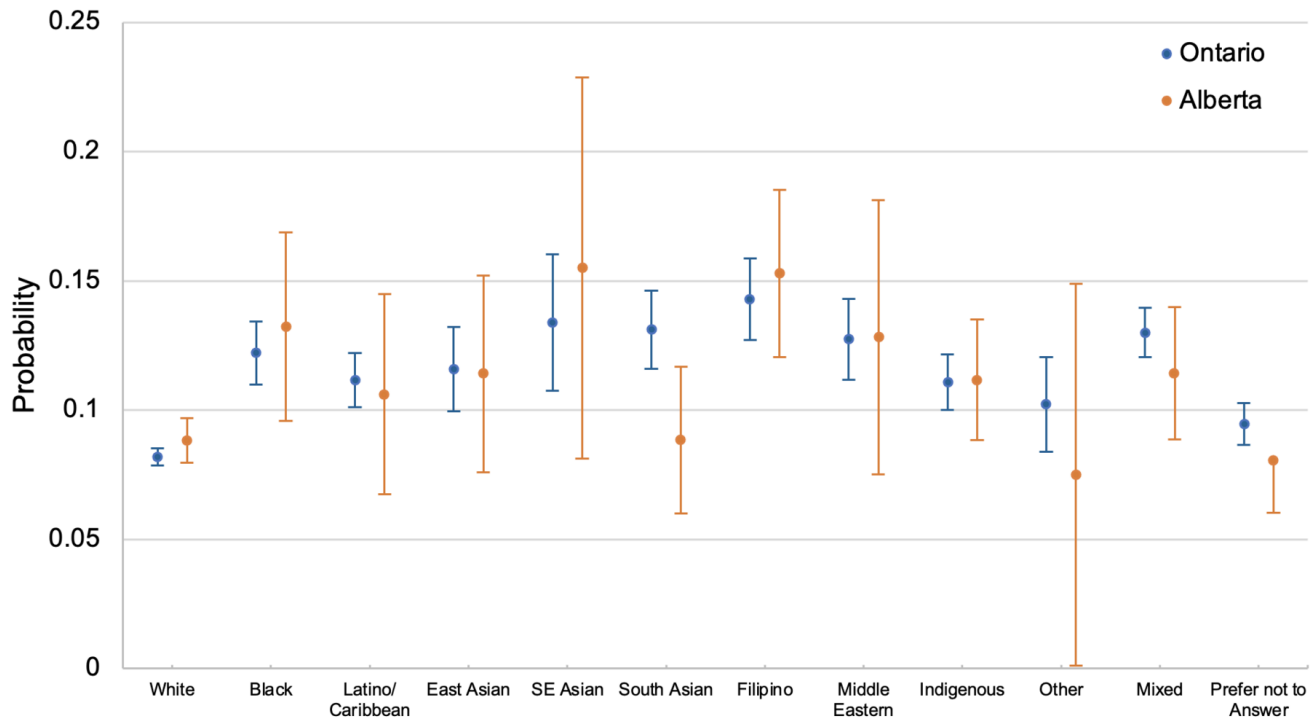
	(1)	(2)	(3)	(4)
Variables	Ontario	Alberta	Ontario	Alberta
Race				
Mixed	0.698*** (0.0445)	0.146 (0.127)	0.515*** (0.0477)	0.286* (0.138)
Prefer not to Answer	0.261*** (0.0493)	-0.268 (0.141)	0.158** (0.0513)	-0.0987 (0.146)
Demographics	No	No	Yes	Yes
Program/Application <sup>14</sup>	No	No	Yes	Yes
Pseudo R2	0.0128	0.0044	0.0592	0.0912
Log Likelihood	-22445	-3748	-21390	-3421
Observations	63,221	9,992	63,221	9,992

Robust standard errors in parentheses \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

<sup>14</sup>This model lacks controls for HS grades, but includes a variable capturing previous education, coded as 0 = H.S. Diploma or less, 1 = Incomplete PSE, 2 = College, 3 = University Undergraduate, 4 = Graduate Degree.

**Figure 2**

*Predicted Probability of Vertical Transfer Intent (2013-2017), including those applicants with previous PSE*



Expanding the analytic sample to include those individuals with previous PSE experience provides sufficient sample sizes for us to produce reliable estimates of ethno-racial differences in vertical transfer intent among applicants to Alberta colleges during the 2013-2017 period. This provides a first opportunity to contrast what we see in Ontario with trends in another province. Interestingly, through this first Alberta model we see only Filipino applicants differing from white applicants in their transfer intent by a margin that registers as statistically significant ( $p < .001$ ). Other groups—including Black, Southeast Asian, Indigenous, and Mixed respondents—have higher rates that register only at lower levels of statistical significance ( $p < .05$ ) and are thus more likely to be observed just by chance.<sup>15</sup>

Removing the sampling restriction on year of application to include only first-time applicants from the entire 2013-2022 period significantly increases the UCAS sample size for both Alberta and Ontario, as well as the rest of Canada (see Appendix, Table 4). This allows us to fit a model on first-time applicants to colleges in each of these regions. Doing this allows us to observe several notable patterns (see Figure 3).

<sup>15</sup>For the most part, the estimates for ethno-racial minorities in Alberta tend to be comparable to those in Ontario. However, since the sample size ( $n=9,997$ ) is smaller in Alberta during this period, these estimates tend to be less precise. This largely explains our failure to identify statistically significant differences in this initial Alberta model. Interested readers will find the regression models from which estimates in Figure 2 were derived in Table 2 within the Appendix.

First, observed ethno-racial disparities in Ontario persist when we include these additional survey years. All ethno-racial groups exceed the estimated vertical transfer aspirations of white college applicants in Ontario. Second, some significant white/ethno-racial minority differences (e.g., Black, East Asian, Filipino, Indigenous, Mixed) observed in Ontario replicate themselves in both Alberta and the rest of Canada. As such, ethno-racial disparities in vertical transfer intent appear to be far from an Ontario-specific phenomenon. Third, generally the highest observed levels of vertical transfer intent are found in Alberta and Ontario, with lower rates being observed in the rest of Canada sub-sample. For example, we see that white applicants in the rest of Canada group have lower predicted transfer intent than those in Alberta/Ontario. The same is true for Black, East Asian, South and South East Asian, and Indigenous groupings.

**Table 4**

*Logistic Regression of Vertical Transfer Intent (2013-2022), First-Time Applicants Only*

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Ontario	Alberta	ROC	Ontario	Alberta	ROC
Race						
Black	0.674*** (0.0527)	0.283* (0.119)	0.513*** (0.0825)	0.477*** (0.0582)	0.574*** (0.143)	0.414*** (0.0884)
Latino/Caribbean	0.557*** (0.0496)	-0.0272 (0.169)	0.521*** (0.0817)	0.388*** (0.0549)	0.156 (0.181)	0.471*** (0.0863)
East Asian	0.289*** (0.0742)	0.252 (0.145)	0.143 (0.0965)	0.365*** (0.0788)	0.561*** (0.163)	0.310** (0.102)
SE Asian	0.489*** (0.103)	0.0913 (0.212)	0.298 (0.153)	0.536*** (0.108)	0.434 (0.234)	0.311 (0.159)
South Asian	0.468*** (0.0501)	-0.134 (0.126)	0.237*** (0.0638)	0.390*** (0.0594)	0.0982 (0.149)	0.238** (0.0750)

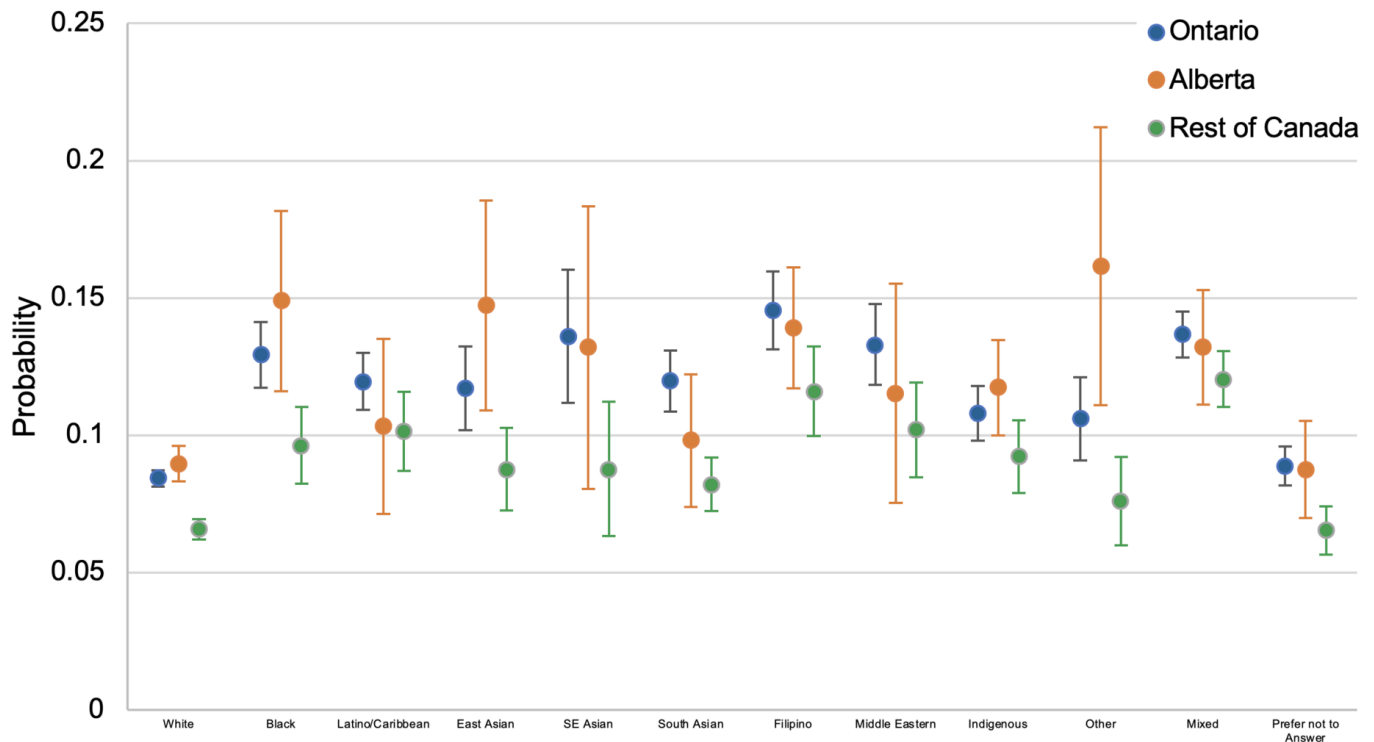


	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Ontario	Alberta	ROC	Ontario	Alberta	ROC
Filipino	0.823*** (0.0554)	0.440*** (0.0779)	0.742*** (0.0785)	0.614*** (0.0629)	0.495*** (0.107)	0.621*** (0.0877)
Middle Eastern	0.686*** (0.0636)	0.191 (0.182)	0.581*** (0.0948)	0.510*** (0.0686)	0.280 (0.205)	0.478*** (0.102)
Indigenous	0.335*** (0.0533)	0.246** (0.0833)	0.339*** (0.0820)	0.274*** (0.0551)	0.300*** (0.0890)	0.366*** (0.0846)
Other	0.279*** (0.0823)	0.429* (0.188)	0.171 (0.117)	0.253** (0.0843)	0.671*** (0.196)	0.154 (0.121)
Mixed	0.632*** (0.0382)	0.315*** (0.0924)	0.647*** (0.0540)	0.541*** (0.0413)	0.434*** (0.100)	0.664*** (0.0570)
Prefer not to Answer	0.150** (0.0464)	-0.205 (0.113)	0.00491 (0.0762)	0.0561 (0.0481)	-0.0257 (0.118)	-0.00787 (0.0787)
Demographics	No	No	No	Yes	Yes	Yes
Program/H.S. Grades/Application	No	No	No	Yes	Yes	Yes
Pseudo R2	0.0119	0.0045	0.0096	0.0540	0.0916	0.0478
Log Likelihood	-26162	-6630	-12489	-25045	-6050	-12009
Observations	74,254	17,468	41,367	74,254	17,468	41,367

Robust standard errors in parentheses \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Figure 3**

*Predicted Probability of Vertical Transfer Intent (2013-2022), first-time applicants only*



Finally, we re-fit our models on the entire set of college applicants during the 2013-2022 period (Table 5), including those with previous PSE experience in the three specified regions. As seen before, this tends to generally reduce the transfer intent of every ethno-racial group (Figure 4). Nevertheless, even within this broader sample of the UCAS we see that ethno-racial minorities consistently intend to engage in vertical transfer at higher levels than their white counterparts. It is also interesting to note disparities among white applicants in each of the three regions, with white applicants in Alberta having the highest predicted probability of aspiring to transfer, followed by white applicants in Ontario and then white applicant counterparts in the rest of Canada sample.

**Table 5**

*Logistic Regression of Vertical Transfer Intent (2013-2022), Including Those Applicants with Previous PSE*

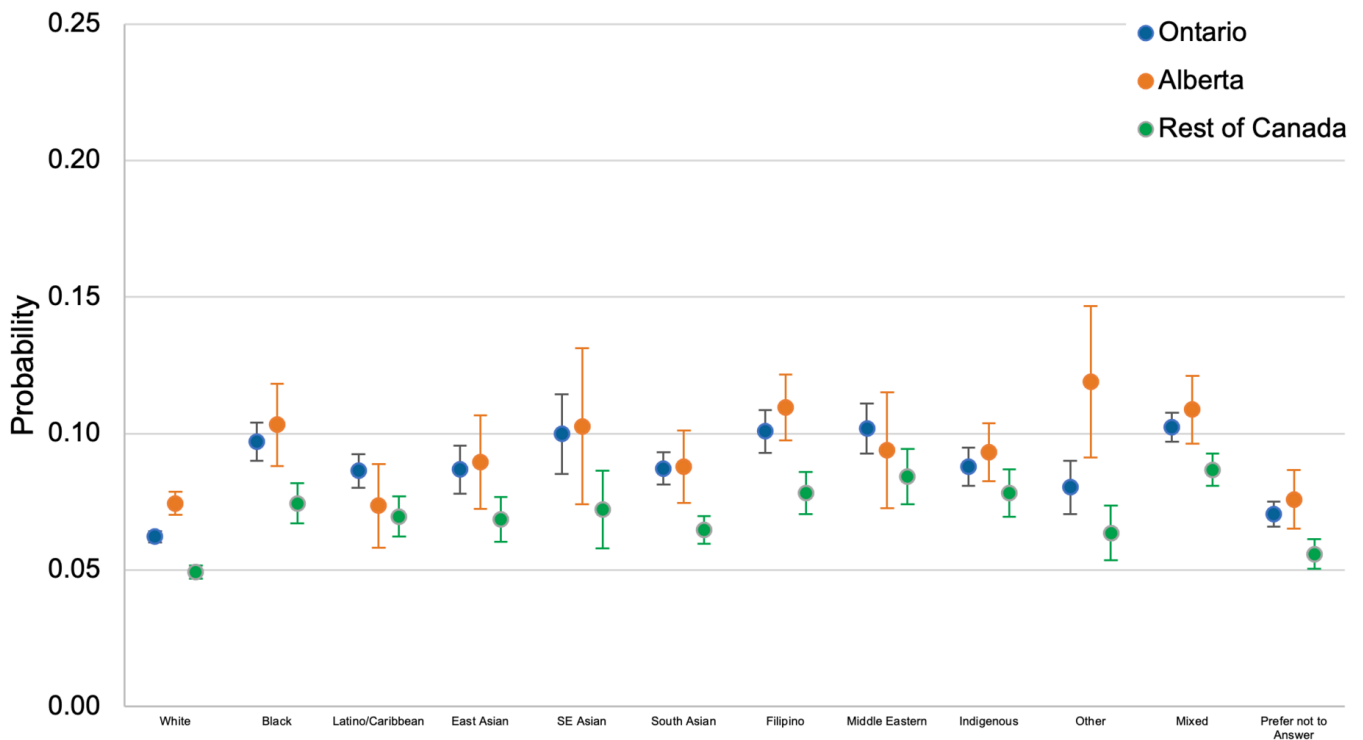
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Ontario	Alberta	ROC	Ontario	Alberta	ROC
<b>Race</b>						
Black	0.364*** (0.0401)	-0.107 (0.0756)	0.163** (0.0552)	0.483*** (0.0454)	0.359*** (0.0939)	0.442*** (0.0617)
Latino/Caribbean	0.329*** (0.0397)	-0.317** (0.112)	0.138* (0.0595)	0.355*** (0.0440)	-0.0125 (0.121)	0.369*** (0.0640)
East Asian	0.101 (0.0552)	-0.249* (0.103)	0.0546 (0.0655)	0.360*** (0.0597)	0.201 (0.115)	0.353*** (0.0713)
SE Asian	0.353*** (0.0817)	-0.0643 (0.151)	0.218* (0.107)	0.514*** (0.0853)	0.353* (0.162)	0.409*** (0.111)
South Asian	-0.0689 (0.0367)	-0.235** (0.0785)	-0.132** (0.0438)	0.366*** (0.0449)	0.181 (0.0942)	0.291*** (0.0529)
Filipino	0.467*** (0.0432)	0.199*** (0.0548)	0.324*** (0.0555)	0.525*** (0.0495)	0.426*** (0.0751)	0.495*** (0.0622)
Middle Eastern	0.520*** (0.0490)	0.0623 (0.118)	0.489*** (0.0661)	0.536*** (0.0540)	0.253 (0.132)	0.576*** (0.0720)
Indigenous	0.435*** (0.0436)	0.243*** (0.0610)	0.447*** (0.0614)	0.373*** (0.0450)	0.245*** (0.0648)	0.496*** (0.0633)
Other	0.146* (0.0666)	0.248 (0.133)	0.0779 (0.0858)	0.275*** (0.0690)	0.519*** (0.138)	0.273** (0.0887)
Mixed	0.512*** (0.0314)	0.212** (0.0656)	0.447*** (0.0421)	0.541*** (0.0341)	0.418*** (0.0716)	0.608*** (0.0448)

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Ontario	Alberta	ROC	Ontario	Alberta	ROC
Prefer not to Answer	0.0860*	-0.227**	-0.0645	0.135***	0.0215	0.135*
	(0.0370)	(0.0780)	(0.0542)	(0.0389)	(0.0822)	(0.0572)
Demographics	No	No	No	Yes	Yes	Yes
Program/Application	No	No	No	Yes	Yes	Yes
Pseudo R2	0.00623	0.00318	0.00512	0.0669	0.0883	0.0549
Log Likelihood	-42282	-13446	-23864	-39699	-12298	-22670
Observations	136,529	39,866	90,780	136,529	39,866	90,780

Robust standard errors in parentheses \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Figure 4**

*Predicted Probability of Vertical Transfer Intent (2013-2022), including those applicants with previous PSE*



**Table 6**

*Data Infrastructure for Tracking Student Pathways & Outcomes*

<b>Stage</b>	<b>Information</b>	<b>Type</b>	<b>Source/Facilitator</b>
<b>High School (Gr. 9-12)</b>	<b>Demographics:</b> Date of Birth; Gender; Postal Code; Health Conditions. <b>Education:</b> Schools/Boards Attended; Grades/course codes from annual report cards.	Administrative	EDU
<b>High School Graduation</b>	<b>Demographics:</b> Disability; Ethnicity; Parental Education; Race. <b>Education:</b> PSE plans; Occupational aspirations.	Survey	School Boards
<b>PSE Application</b>	<b>Demand:</b> Institutions/programs applied to.	Administrative	OCAS/OUAC
<b>PSE Application</b>	<b>Decision-making:</b> Key decision factors; information sources used; transfer intentions.	Survey	OCAS/OUAC or institutions.
<b>PSE Entry</b>	<b>Enrollment:</b> Institution/program entered. <b>Financial Aid:</b> OSAP usage.	Administrative	MCU
<b>First-year Experience</b>	<b>Experience:</b> Satisfaction with institution/programs.	Survey	Institutions
<b>PSE performance</b>	<b>Grades/Graduation</b>	Administrative	Institutions
<b>Graduate Survey</b>	<b>Labour Market Outcomes</b>	Survey	MCU

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