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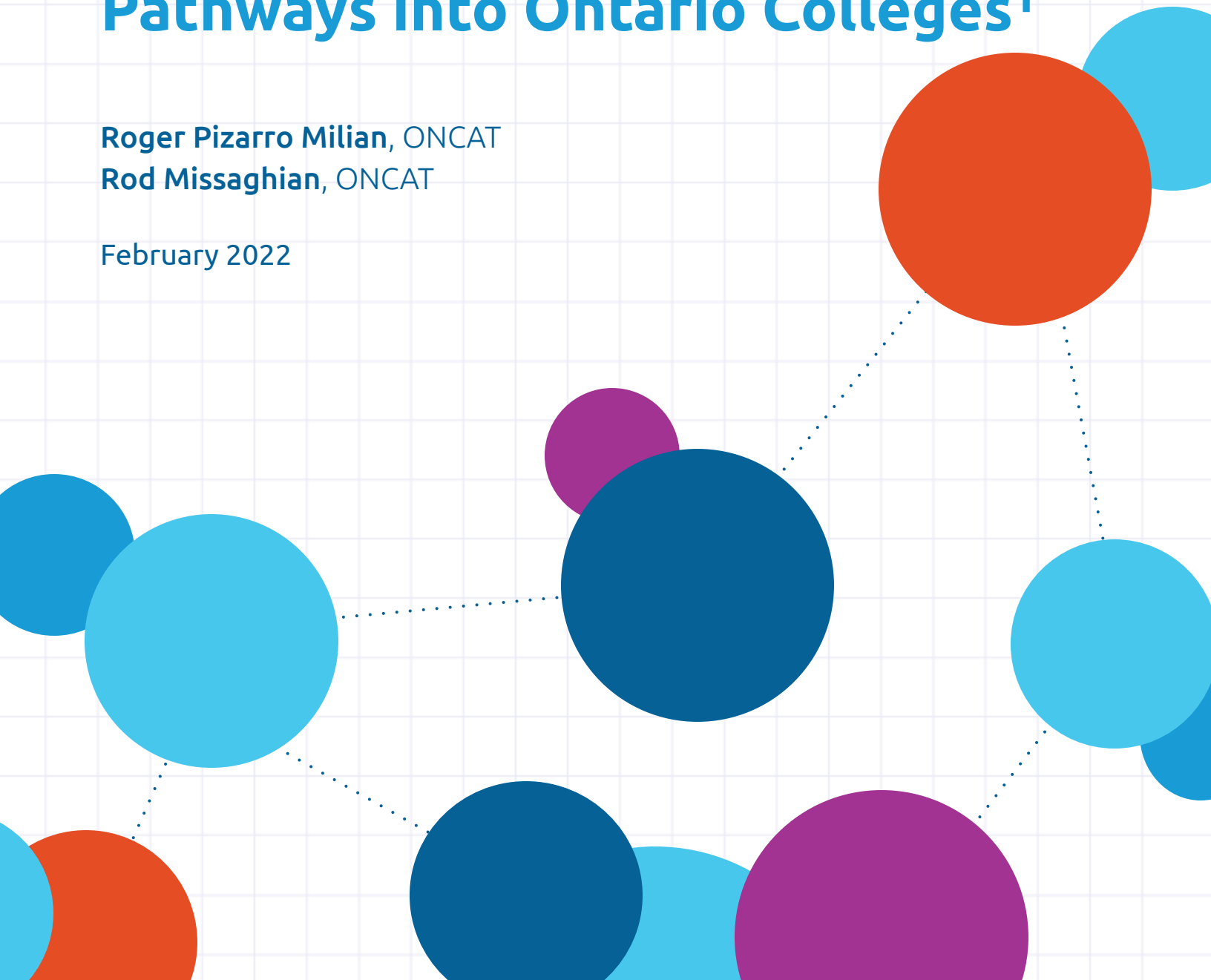
A Statistical Analysis of Transfer and Student Mobility
in Ontario: What the University/College Applicant Survey™ Tells Us

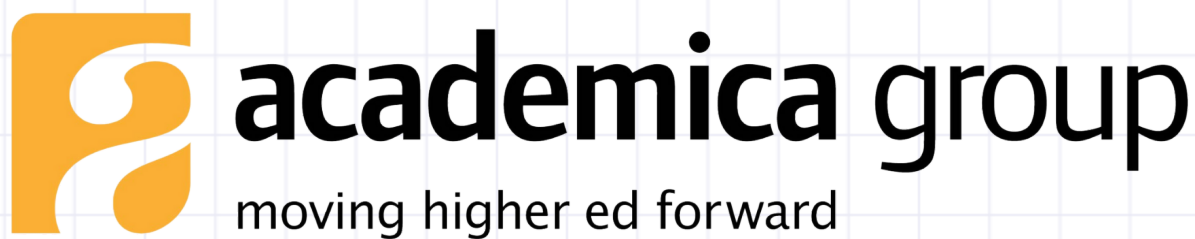
Brief 2: Does Socio-Economic Background Matter? A Look at Pathways into Ontario Colleges¹

Roger Pizarro Milian, ONCAT

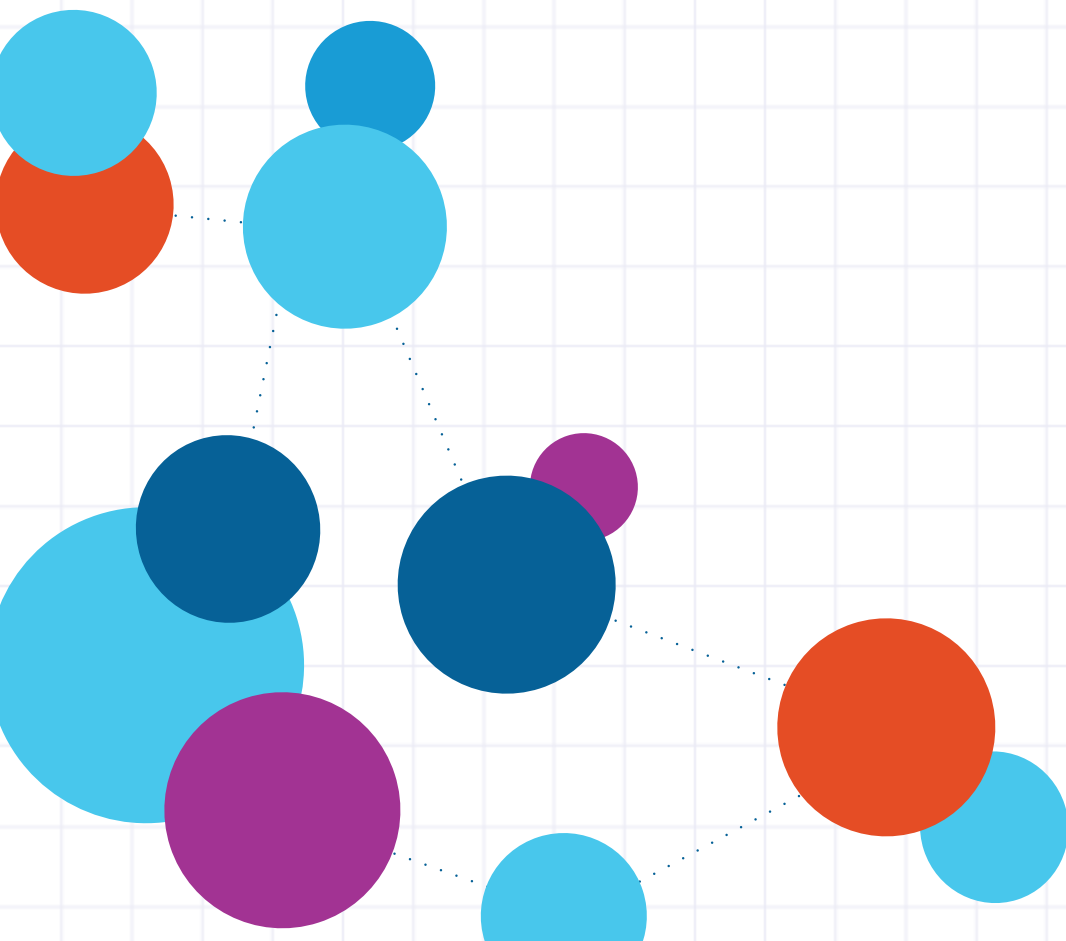
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February 2022





The authors wish to thank the Academica Group for providing them with access to the UCAS™



Foreword

Rod Missaghian, ONCAT

Postsecondary transfer research in Ontario – despite making significant strides in recent decades – continues to suffer from a lack of data sources that systematically capture patterns in student mobility. For this reason, ONCAT has been diligently working to find innovative data sources, potential new data-linkages, and other opportunities that allow us to extend our understanding of transfer and student mobility in Ontario.

In the spring of 2020, Academica Group graciously provided ONCAT with access to one of the richest and largest educational datasets in Canadian postsecondary education (PSE): The University/College Applicant Survey™ (UCAS). This proprietary data source provides impressive coverage of hundreds of data fields capturing postsecondary applicants' demographic characteristics, educational background and aspirations, usage of various information sources, decision-making, and other relevant topics. The UCAS™ has been conducted annually by Academica since the mid-2000s and has been fine-tuned over the years in consultation with PSE stakeholders to capture emerging topics of interest. During this period, the UCAS™ has been completed by hundreds of thousands of applicants to 100+ Canadian colleges, polytechnics, and universities. To date, the UCAS™ remains one of the most trusted data sources for institutional decision-makers across Canada.

ONCAT is now releasing a series of briefs and papers that outline the initial statistical analysis of transfer and student mobility in Ontario based on this UCAS™ dataset. The analysis presented in this series was developed by the ONCAT research team in partnership with researchers from across the sector and a cross-sector panel of external reviewers. This work builds on previous ONCAT-funded research (Henderson & McCloy, 2017) that also used UCAS™ data. This series contains an introductory paper followed by three briefs:

- **Situating the UCAS™ Dataset within the Ontario PSE Data Landscape**
- **Brief 1: Regional Disparities in Transfer Intent Among Ontario College Applicants: Insights from Academica's University/College Applicant Survey™**
- **Brief 2: Does Socio-Economic Background Matter? A Look at Pathways into Ontario Colleges**
- **Brief 3: Applicant Pathways into University: Do High School Grades Matter?**

It is our hope that this statistical research will advance transfer research and instigate useful discussions at multiple levels within policy and administrative circles.

Introduction

Given their traditional role as terminal or preparatory institutions (Brint & Karabel, 1989), few studies (e.g., Bahr, 2009; 2012) have sought to examine transfer flows *into* community colleges. This gap is particularly problematic in jurisdictions like Ontario, where “reverse” transfer – from university to college – occurs at comparable rates to more conventional forms of lateral or vertical transfer (Zarifa, Sano & Hillier, 2020). Through this brief, we address this gap by leveraging multiple waves (2014-2019) of the UCAS™ to examine applicant pathways into college. We focus specifically on two historically popular proxies for socio-economic status (SES) in social science research¹: parents’ educational attainment and household income. While existing studies have produced evidence that students from lower SES backgrounds are overrepresented in the college sector (Childs, Finnie & Martinello, 2017, p. 273; Drolet, 2005; Thiessen, 2009; Zarifa, Hango & Pizarro Milian, 2018), much less is known about the relationship between SES and the uptake of particular disaggregated pathways into college, including direct entry (DE), college-to-college (C2C), and university-to-college (U2C) routes. This is intelligence that could be vital to developing tailored supports for transfer students should it be discovered that – on average – they come from lower SES backgrounds.

Pathways into Ontario Colleges

Transfer student flows into Ontario colleges have attracted limited attention in comparison to the more voluminous literature focusing on college-to-university student flows (e.g., McCloy et al., 2017). One recent report by Colleges Ontario (2020) used data from the 2017-2018 Student Satisfaction Survey to estimate that nearly half (47%) of college students enrolled that year had some previous PSE experience. This figure is consistent with estimates (45%) produced through a project drawing on applicant and KPI survey data from four Ontario colleges presented via a recently published ONCAT report (Algonquin College, 2019). Meanwhile, earlier research by Durham College (2014), which drew on OCAS applicant data for 22 colleges, estimated that 30% of first year students in Ontario colleges had some previous PSE experience.

The abovementioned work exhibits several limitations. First, it has not contrasted the SES profiles of students traveling direct entry and transfer pathways into the college sector.

¹**Disclaimer:** The authors acknowledge the financial support provided by the Ontario Council on Articulation and Transfer (ONCAT), funded by the Ontario Ministry of Colleges and Universities, to develop this publication. The authors also wish to thank the Academica Group for providing them with access to the UCAS™. The views and interpretations expressed in this publication are those of the authors and do not necessarily reflect those of the Academica Group, Government of Ontario, or any other affiliated entity.

²For early uses of these metrics, see Blau & Duncan (1967), and Becker & Tomes (1979).

Disaggregating transfer pathways into the college sector – and isolating those that originate from a college or university – is an important exercise given the differential “filtering” and self-selection that occurs across these postsecondary pathways. On the institutional side, colleges and universities will apply contrasting admissions criteria to applicants. In Ontario, the former tends to apply higher grade “cut offs” to prospective applicants. On the individual side, students will also select programs and schools that they perceive as being a better “fit” given self-evaluations of competency, occupational goals, and parental advice. In both cases, self-selection and filtering processes prompt differentiation in the characteristics of students that will apply to transfer into college from different areas of the system. This conclusion is supported by recent research documenting the characteristics of various transfer types (e.g., Davies & Pizarro Milian, 2020; Walters et al., 2021; Zarifa et al., 2020). A second limitation of existing Ontario research on transfer student flows into colleges is that it employs primarily descriptive, as opposed to multivariate, methods.

Through this brief, we draw on the large sample size and rich demographic data of the UCAS™ to address this gap in the existing literature on pathways into Ontario colleges. We ask:

- 1) Are parental education or household income associated with the pathways students take into college?
- 2) Is there a statistically significant relationship between these SES proxies and applicant pathways, net of other applicant characteristics?

Data + Methods

Our analysis focuses on approximately 31,000 applicants to Ontario colleges in the UCAS™ dataset during the 2014-2019 period. The UCAS™ only started collecting household income in 2014, so this restriction drives us to exclude respondents from earlier years. Our analytical sample is made up of those individuals aged 40 or younger at the time of application, and who do not contain missing data across any of the predictor or outcome variables of interest.

To produce a disaggregated applicant pathways category, we utilize a variable identifying the type of institution an individual was enrolled in during the last calendar year (relative to when they were surveyed), including (1) high school, (2) college/polytechnic, or (3) university. Such variables allow us to compare direct entry students with a group of applicants seeking an immediate switch in educational tracks, and thus, those most likely (but not guaranteed) to be seeking transfer credit at the receiving institution.

We exclude all applicants with completed degrees from our analysis, as this group could be “contaminated” with those seeking entry to post-graduate college certificates. The latter would typically not be receiving transfer credit or traveling articulated pathways. However, it is important to note that our findings were robust to their inclusion/exclusion in the analytic sample.³

We analyze our data using multinomial logistic regression modelling. First, we estimate models with only parental education or household income included (along with a control for the year of application). Then, we run full/saturated models including all relevant control variables. To render our multivariate findings more interpretable, we estimate/graph predicted probabilities.

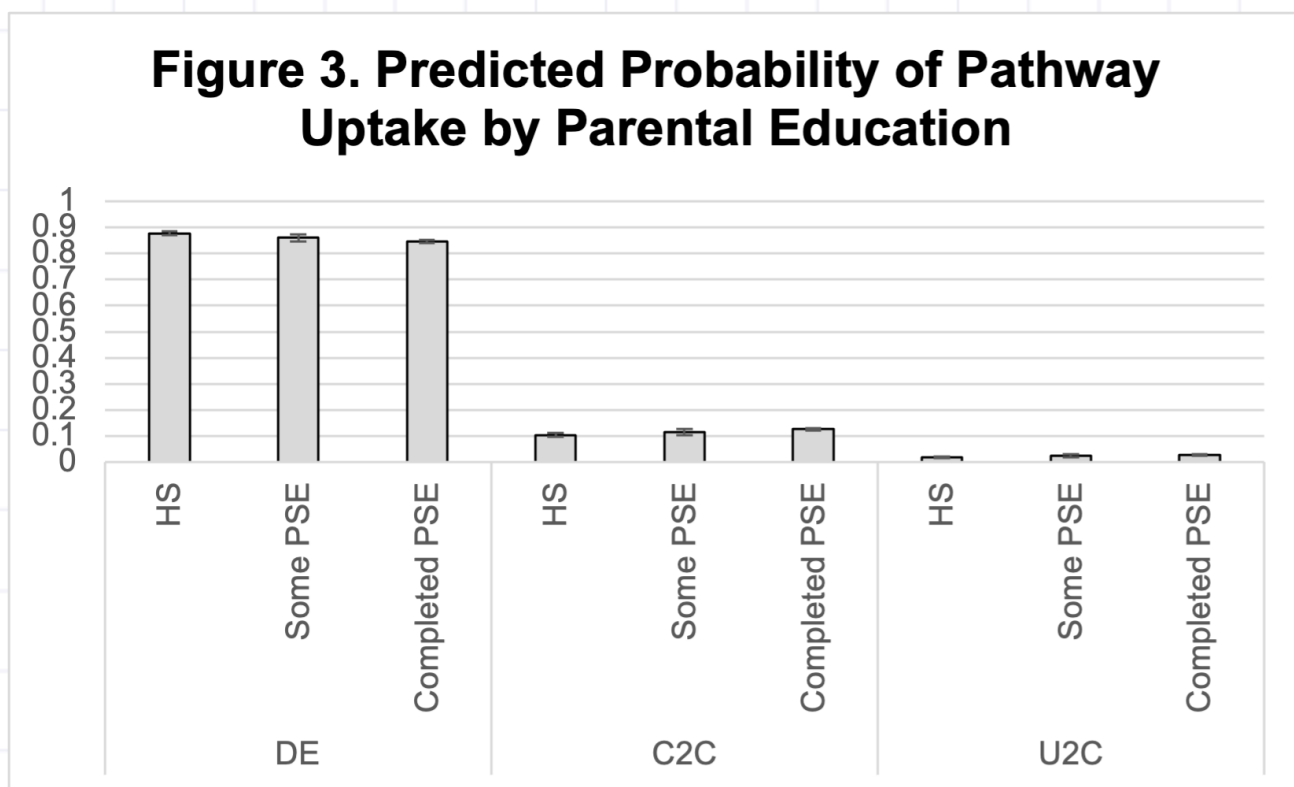
Findings

Our initial models show that children of parents with different levels of educational attainment differ only marginally with respect to their estimated probability of traveling the various available pathways into college (see Figure 1). Indeed, all groups have a roughly 77-79% chance of being direct entry, 17-20% chance of being college-to-college, and 3-4% chance of being university-to-college applicants.

Larger differences are observed with respects to pathway uptake across household income categories. Indeed, the predicted probability of being direct entry appears to increase from .72 to .81 as we move from the lowest to highest income category. When we shift our attention to the college-to-college pathway, we see that those in the lowest income group have a .23 probability of traveling this pathway. This probability gradually drops to .14 by the time we reach the highest income category. Meanwhile, there is only a marginal increase (.01) in the probability of traveling the university-to-college pathway from the lowest to highest income categories. It would thus appear that the bivariate relationship between household income and pathways into college is marginally stronger than for parental education. It is worth noting that, even in these initial models lacking extensive controls, our estimates are very precise, with our confidence intervals being barely noticeable in most cases.

³Including this group of roughly 2,000 respondents obviously reduces the percentage of individuals in our sample coming through direct entry pathways. However, the statistical relationship between our SES metrics and pathways was not affected.

Once we simultaneously introduce parental education and household income into our models, along with other available controls⁴, we see a reversal of some of the patterns observed above. The probability of direct entry is found to drop from .88 among applicants with a HS-educated parent to .84 for those with parents that had completed PSE. Meanwhile, there is a .3 rise in the probability of college-to-college pathway uptake as we move from the lowest (.10) to highest (.13) parental education groupings. Only a minor .01 difference exists in the probability of university-to-college application pathway across parental education groupings.



Adjusted estimates for the relationship between household income and pathway uptake are also reversed (see Figure 4). We see that the difference in direct entry probability drops from .86 in the lowest to .82 in the highest income group. Variation in the probability of college-to-college pathway uptake is compressed to .03 between the highest and lowest groups, with more affluent applicants being more likely to apply via this pathway. Variation in the probability of university-to-college (.02) pathways is generally unchanged by the introduction of controls⁵.

⁴Controls include the geographical region of residence, age, gender, ethno-racial group, disability, marital status, dependents, average in Grade 12, type of secondary school attended, whether they also applied to university, and the primary field of study applied to.

⁵A final set of robustness checks were conducted to test for independence of observations. We re-ran the saturated models for single application years to assess whether observed trends would remain consistent to the full model. We observed little change from full model when looking at specific years, although some years slightly modified results given their smaller sample sizes.

Discussion

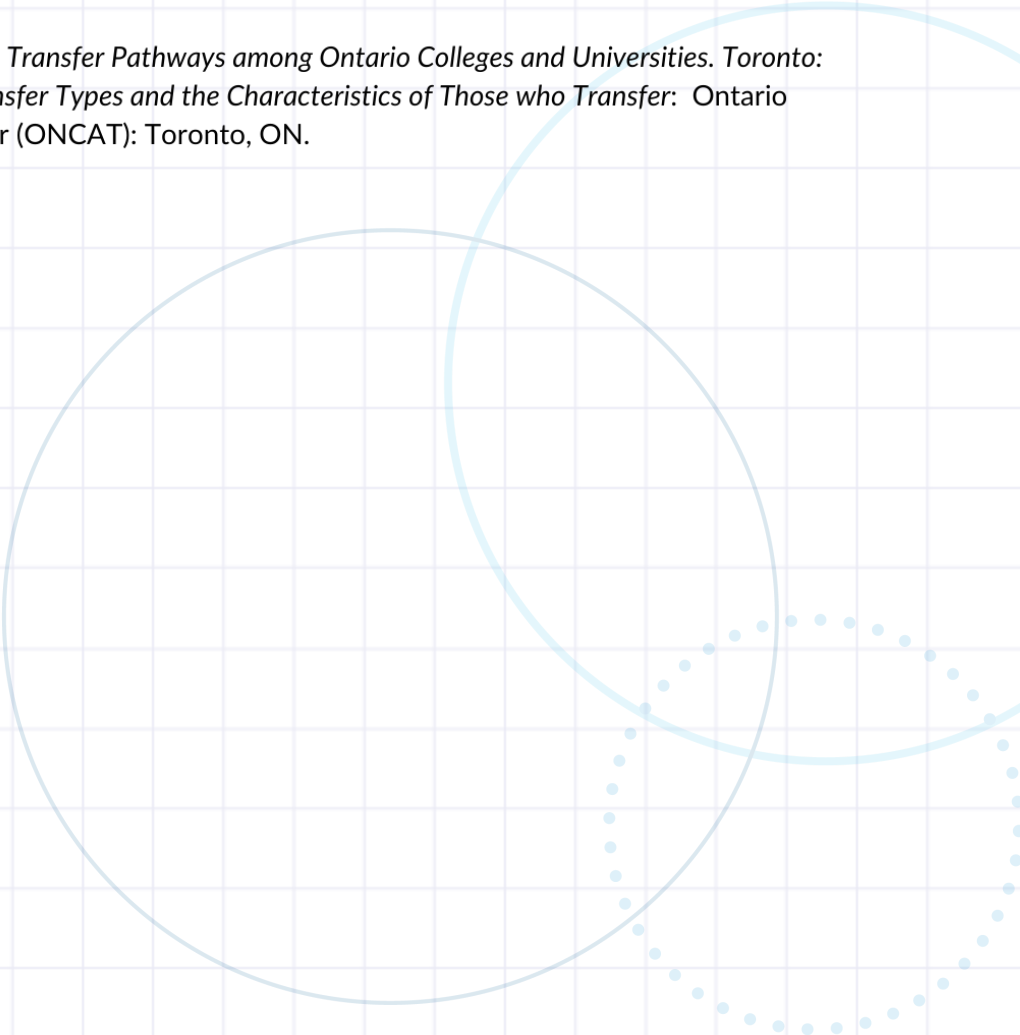
Our analyses of UCAS™ data focus on the statistical relationship between two common proxies of socio-economic status (SES) and applicant pathways. Our initial models show that the probability of direct entry increased (and transfer generally decreased) with parental education and household income, with the latter demonstrating a more pronounced relationship with applicant pathways. However, once we introduced further controls into our models, these observed patterns were generally reversed, and the strength of the relationship between both SES metrics and applicant pathways was markedly weakened. Indeed, all other things being equal – knowing an applicant's SES background is not a very useful piece of information when trying to predict what pathway they are taking into the college sector. These findings contrast those of Canadian studies which have found that SES is more strongly associated with overall PSE participation, selection of college or university, and graduation (Childs, Finnie, & Mueller, 2018; Robson, Maier, Anisef & Brown, 2019; Walters et al., 2021).

It is important to contextualize these findings. First, recall that we are only looking at the pathways taken by applicants, as opposed to their eventual outcomes. While there may be no SES-related disparities in application patterns, higher-SES applicants may get accepted at greater rates than their counterparts due to differences in their academic performance or preparation. This could be more common when it comes to competitive college programs, where there are far fewer seats than applicants. Future research, drawing on linkages between enrolment and applicant data, would be useful towards identifying these disparities. In addition, work focusing on early academic performance once enrolled (e.g., first term GPA), as well as persistence rates, seems warranted. Our data unfortunately do not speak to these dynamics.

What are the practical implications of our findings? For policymakers wishing to improve our transfer system, if we had found SES-based disparities, options like additional assistance in the form of scholarships, grants or other forms of financial aid targeted at prospective transfers from low-SES groups would have been considered. However, we found no sizable problems of this sort at the application stage. Even in the absence of large disparities, we may still wish to consider SES-conscious strategies to facilitate transfer, with a view towards avoiding potential downstream issues experienced by students from lower SES backgrounds. For example, we can continue to improve the visibility of information pertaining to articulation agreements and transfer credit opportunities. What colleges – and programs within them – will give students the largest amount of transfer credit? Having access to this knowledge *prior* to application could be particularly useful to lower-SES students that may struggle to navigate bureaucratic processes to obtain this information. It could also eventually expedite their timely completion of credentials and labor market entry.

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Established in 2011, the Ontario Council on Articulation and Transfer (ONCAT) was created to enhance academic pathways and reduce barriers for students looking to transfer among Ontario's public colleges, universities, and Indigenous Institutes.