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REPORT

ONCAT DataPilot Report: Trent University

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Table of Contents

- 03** Introduction
- 04** ONCAT's DataPilot Program
- 05** Data + Methods
- 06** Findings - Descriptive Statistics
- 08** Regression Analyses
- 12** Discussion
- 14** Bibliography
- 16** Appendix 1 - Data Limitations
- 17** Appendix 2 - Supplemental Data



Introduction¹

Canadian education researchers face notable challenges when trying to access student level data both nationally and provincially. Some of these challenges have been recently discussed and include a lack of both longitudinal and linked data on students, as well as data on various demographic background variables, most notably race (See Gallagher-Mackay, 2017; Pizarro Milian, 2022; Robson, 2021). While the Ontario government tracks students using the Ontario Education Number, there is currently no linkage infrastructure in place that can provide ready data access to postsecondary institutions to understand the various pathways that students take into postsecondary.

While the Ministry of Colleges and Universities has centralized student-level records that are submitted to them by the postsecondary institutions in the province, this data has not been made available to the public. This is challenging to institutions like ONCAT, that were created to help develop a mature and seamless transfer system; this challenge is compounded by a lack of linked data sources that can provide representative data on the pathways that students take into and out of postsecondary, along with an understanding of the early predictors of such behaviour contained in K-12 datasets. However, postsecondary institutions also make student administrative records available to Statistics Canada, who collect and store this information in the Post-Secondary Information System (PSIS) dataset, which can be accessed by researchers and analyzed at a research data centre (RDC). While the PSIS provides census level administrative data on postsecondary enrolment, mobility, and graduation, along with extensive demographic information, it has notable limitations which have been outlined in previous ONCAT [reports](#).

As an institution focused on improving the credit transfer and articulation system, ONCAT also has a vested interest in understanding access issues with transfer, since more and more new populations of students are accessing postsecondary (e.g. older students, first-generation, married); student pathways into postsecondary are also evolving with more students taking transfer pathways, taking breaks in between credentials, and working while pursuing their degrees (Davies & Mehta, 2018; Zarifa, Sano & Hillier, 2020)². Other underrepresented groups like those with disabilities are also more likely to be enrolled in Ontario colleges versus universities (McCloy & Henderson, 2017; Walters et al. 2021), thus making it important to understand the various opportunities for them to ladder into university programs.

¹Disclaimer: The views and interpretations expressed in this publication are those of the authors (approved by Trent University) and do not reflect those of the Government of Ontario, or any other affiliated entity.

²However, recent ONCAT funded studies looking at transfer flows into U of T have found that transfer students were more likely than direct-entry to be female, white, Canadian born, come from a higher socio-economic background, and more likely to identify as a sexual minority (see Davies & Pizarro Milian 2020).

ONCAT's DataPilot Program

In response to some of these data challenges in Ontario, ONCAT launched the DataPilot initiative in 2020 to help postsecondary institutions gather and consolidate discrete data on transfer students and import them into a single data file. Institutions are supported financially by ONCAT to gather important student level records; for example, institutions collect data on admitted Grade Point Averages (GPA) and total transfer credits awarded that are useful for answering questions like: how important are the number of transfer credits awarded in helping transfer students graduate? Answering questions like these has been a challenge without multiple years of student transfer records. There are students that take longer than 4 years to complete a degree, so additional years of student data are required to capture them. In addition, without comparable data on direct-entry students, we are unable to measure transfer student success against the most popular postsecondary pathways. Having data from which to compare transfer students with their direct-entry counterparts is a key component in understanding how to measure the impact of various student background indicators which have been shown to be important to issues of postsecondary access and outcomes (e.g., age, socio-economic status, race, disability). Currently, we only have a handful of institutions participating in the DataPilot, but it is our hope that we will have total participation that will allow us to develop comprehensive data on transfer and student mobility in the province of Ontario.

In phase 1 of the DataPilot, institutions provide ONCAT with their transfer student records over at least a five-year reporting period. Institutions have different reporting capacities, but we encourage them to provide us with several data fields, like previous institution, admitted program and GPA, total credits awarded, along with demographic variables like age and gender. Institutions provide ONCAT with a descriptive report on data collected in phase 1, which includes data dashboards and enrolment trends, segmented by various data fields like admitted GPA and previous institution. ONCAT provides in-kind regression analyses where possible, exploring key relationships like those between admitted GPA and graduation rates. If participants move on to phase 2, they provide ONCAT with comparable data for direct-entry students. We then merge this data to study comparable mobility patterns and outcomes. Part of participating in phase 2 is working collaboratively with ONCAT on a public-facing report. Trent University has graciously volunteered to be the first institution to make public some of the findings that have emerged from our collaboration. We thank them for their generosity in allowing us to report on these findings. We hope this will pave the way for more comprehensive reports which can detail system level features of transfer, as more colleges, universities and Indigenous institutes participate in the DataPilot.

Trent is a wonderful first test-case for phase 2, as they have historically been an institution that has admitted a higher proportion of transfer students compared to other universities.³ In addition to the high proportion of transfer students they enroll each year, Trent has developed a very strong credit transfer process⁴. Through their involvement in our [MapIt](#) project, we have learned that Trent has several key ingredients that contribute to their effective transfer system: strong leadership, information management systems that allow administrators to identify credit equivalencies easily, strong supports and recruitment practices for transfer students, amongst others. When we found that transfer students at Trent outperform direct entry students on several measures, we were not entirely surprised, as Trent has demonstrated an institutional commitment to credit transfer.

Data + Methods

Through ONCAT's partnership with Trent, we were able to use two decades of anonymized student level records to compare the academic performance and graduation rates of transfer students from Ontario colleges, universities, transfer students from another province or internationally, and direct-entry students. The data include students who received at least one transfer credit, whether they did that through an articulation agreement, policy pathway, or transferred their credits one course at a time. While we did not have access to cumulative GPA records, we focused on first-year academic performance. As such, we excluded any student record in the dataset whose reporting year did not match the year they were admitted to focus on first-year experiences. To estimate the effects of these various pathways on current student GPA, we used a linear regression model. Linear regression is an effective statistical technique for measuring the effect of one independent variable on a dependent variable, while holding constant several other variables or controls (Kremelberg, 2010). In linear regression models, the dependent variable--in this case, GPA--is a continuous variable which is recorded as a percentage grade.

³ONCAT receives yearly updates from the Ministry on the number of students at PSE institutions with a credit transfer flag. This flag identifies each enrolled student that has received at least 0.5 transfer credits at the receiving institution.

⁴As part of our [MapIt project](#), we work with a variety of postsecondary education stakeholders involved in the transfer process, from students, to transfer advisors and registrarial staff, to evaluate the efficiency and rigor of the process. As a participating institution, we have found that Trent does a lot of the key things to ensure an effective system that works for students.

First, we used a bivariate regression model to examine the relationship between type of pathway to university (C to U, U to U, Direct Entry) and current GPA. We then added two sets of controls. The first set is comprised of demographic characteristics which have been included in provincial transfer research to test for the presence of confounding variables (see Zarifa, Sano & Hillier, 2020; Pizarro Milian, Missaghian & Hon, 2022) and include the following: age, gender, immigration status, first-generation postsecondary education status and mother tongue. The second set include the following program level controls: average admitted GPA, field of study, degree type (i.e., 3 year or 4 year), semester admitted, and admitted credential.

To estimate the effect of various transfer pathways on students' likelihood of graduating, we used a series of logistic regression models in which the outcome variable was a binary indicator of whether a given student graduated (0=did not graduate 1=graduated). We again began by using a bivariate model to examine the relationship between pathway and graduation, then included the same controls that we used for the linear regression model.

Findings - Descriptive Statistics

Descriptive statistics reveal that the top sending institutions to Trent in the college sector are regional colleges (Fleming & Durham). This is not entirely surprising as international and provincial research has shown that parents and students in Ontario, particularly first-generation PSE entrants, prefer to stay closer to home for postsecondary (Aurini, Missaghian & Pizarro-Milian, 2020; Missaghian, 2021; Parker et al., 2016). However, given Trent's location in central Ontario it is also not surprising to find that sending institutions consist of a variety of places spread out across the GTA (e.g. Centennial, U of T), Southwestern Ontario (e.g. Guelph) and Southeastern Ontario (e.g. Loyalist, Ottawa & Carleton).

Table 1- Sending Institutions (Colleges and Universities) to Trent University

Previous Institution (Colleges)	2014	2015	2016	2017	2018	2019
Fleming College	119	146	175	181	198	177
Durham College	50	64	88	109	128	152
Centennial College	14	15	25	20	29	35
Loyalist College	9	14	26	26	31	15
Seneca College	9	8	19	20	14	26
Previous Institution (Universities)	2014	2015	2016	2017	2018	2019
University of Toronto	12	25	23	17	26	20
University of Ottawa	25	20	23	18	13	19
Carleton University	15	17	15	27	18	25
York University	11	13	11	14	19	23
University of Guelph	9	13	20	16	13	14

As Table 2 reveals, there are mean differences in the current (first-year) grade point average of students traveling different pathways into Trent. Students with the lowest first-year GPAs at Trent are direct-entry students. Recent provincial research has shown that high school graduates from the Toronto District School Board have higher average grades in high school than transfer students (see Davies & Pizarro Milian, 2020; Walters et al., 2021), but that prior achievement does not positively influence cumulative performance. When considering cumulative GPA performance for transfer students into the University of Toronto, Davies and Pizarro Milian (2020), found that university transfers (intra, inter and international) outperform direct-entry students, while college transfers had the lowest CGPAs. The results of our bivariate analyses looking at first year GPA shows similar trends, except that Ontario college transfer students at Trent slightly outperform direct-entry. One might expect that direct-entry students' strong high school performance would carry on into first-year studies at Trent and U of T. However, there are many variables that influence performance in the first year of postsecondary studies. For example, whether a student works, has a family, or can access student supports, are important data points that were not available to us in this analysis.

Table 2. Average GPA by Pathway ⁵

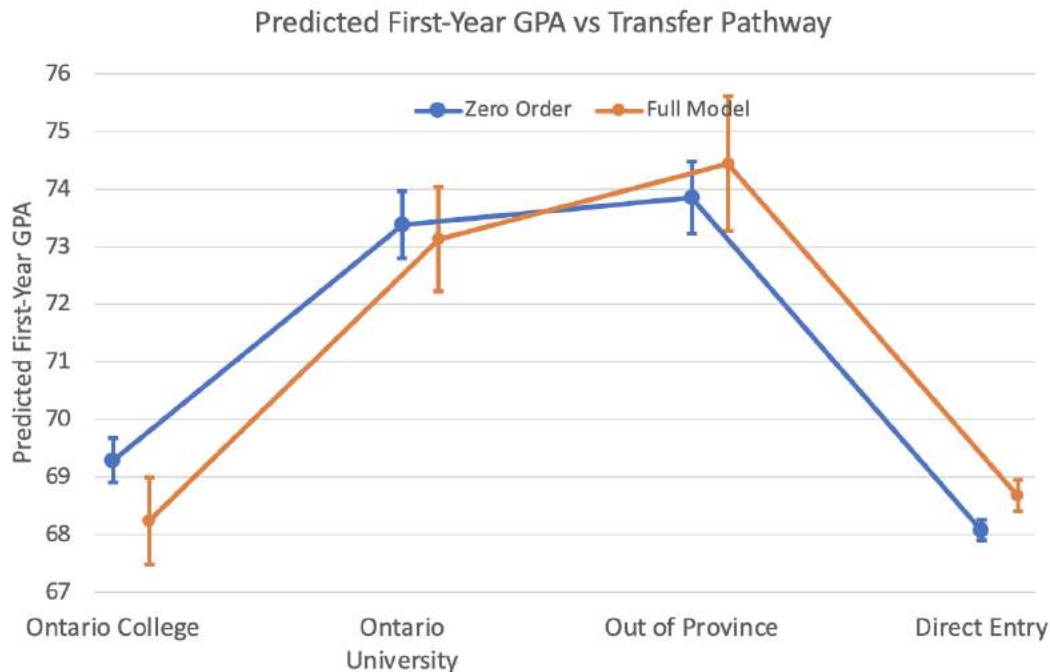
	Transfer students from Ontario colleges (n=4863)	Transfer students from Ontario universities (n=2137)	Transfer students from another province (n=1830)	Direct-entry students (n=23588)
Current GPA				
Mean	69.3%	73.4%	73.9%	68.1%
SD	14.0%	13.1%	13.4%	13.6%

Regression Analyses

As mentioned above, to assess whether the above-mentioned differences in average first-year GPA would persist after controlling for other student-level characteristics, we ran linear regression models to estimate the net relationship between first-year GPA and applicant pathways into university. Figure 1 represents the average GPA amongst students in each pathway predicted by the bivariate/zero-order model (in blue) and the full model which includes all the control variables listed earlier (in red)⁶. The graph also includes 95% confidence intervals of those predicted GPAs.

⁵Please refer to Appendix for additional descriptive data and regression outputs.

⁶The Out of Province Category here also included Canadian college transfers (n=108). We filtered out these students to test the effects on predicted GPA and noticed a slight increase in GPA for that category.

Figure 1 Predicted First-Year GPA by Pathway

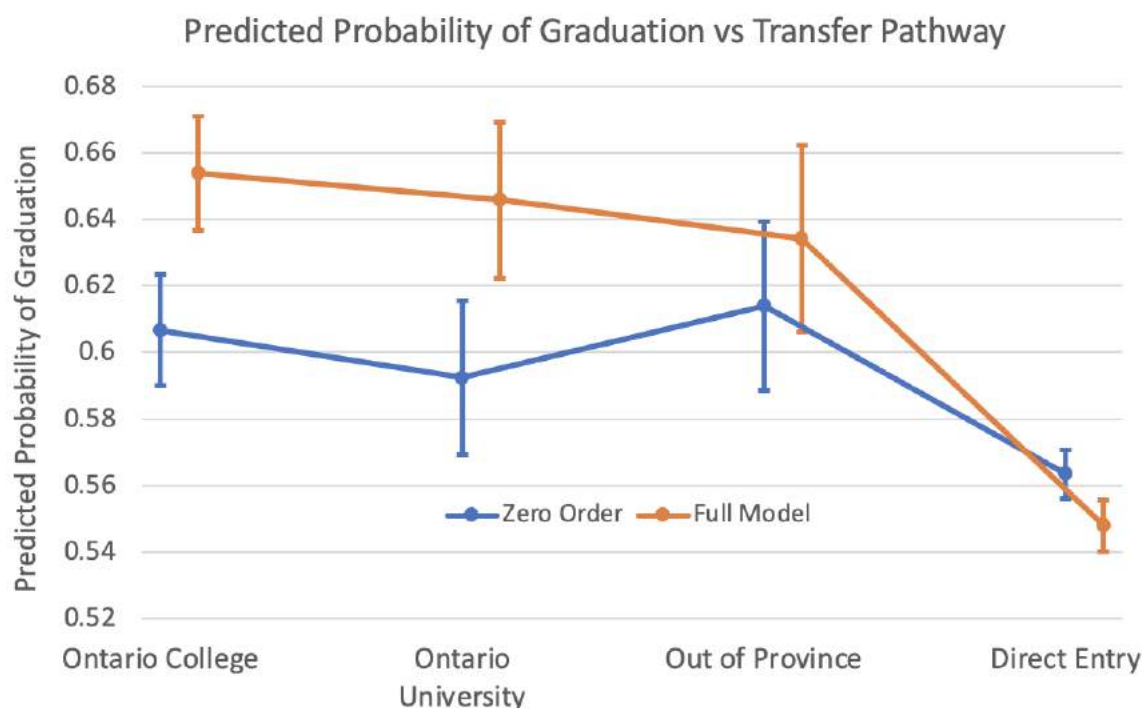
As with our descriptive analyses, the bivariate/zero-order model predicts that mean first-year GPA is lowest for direct-entry and transfer students from Ontario colleges, with direct-entry having slightly lower average first-year grades. However, after controlling for key demographic and program level indicators, we see that transfer students from college slightly overtake direct-entry for lowest first-year GPA. Our 95% confidence intervals are quite narrow, suggesting that our estimates are precise and less likely to be an outcome of chance. These findings are not entirely surprising given that direct-entry and college to university transfers are potentially experiencing a university environment for the first time. In contrast, one might expect that U-to -U transfer students have had the benefit of experiencing their first-year of university at a different institution.

As summarized in Figure 2, our bivariate analyses showed that on average, Out of Province University (Canadian and International) Transfers had the highest rate of graduation (63.9%). The same was found in an updated version of the TDSB-U of T linkage study; inter-provincial transfer students had the highest graduation rates as well (Davies, 2022). However, once we controlled for the set of student and program characteristics in our full model, we found that intra-provincial college to university transfer students had the highest graduation rates, followed very closely by intra-provincial university to university transfer students, followed by inter-province transfer⁷, and finally direct-entry students. The small differences between transfer pathway graduation rates were not statistically significant, whereas the relationship between college transfers and direct-entry was.

⁷Again, this category is mainly comprised of university transfers from other provinces and international students. There is a small group of inter-provincial college transfers in this category, whose exclusion only increases the mean predicted GPA.

These results are novel and contrast recent findings from ONCAT-funded research that has linked data between the TDSB, university administrative records and the PSIS (Post-Secondary Information System) (see Davies and Pizarro Milian, 2020; Walters et al., 2021). Those studies found that college to university transfers had the lowest graduation rates after controlling for all student and program level indicators. One explanation for why college to university transfers perform so well at Trent, could stem from the quality of “transfer experience” that students encounter at different PSE institutions in Ontario. The University of Toronto, in contrast does not have a high proportion of transfer students in comparison to overall enrollments. In fact, according to the credit transfer flag, an imperfect but useful measure of total transfer⁸ students at an institution, the University of Toronto has much lower proportional representation for transfer students when compared to other smaller universities with different strategic mandates. Therefore, articulated pathways into the University of Toronto may also be proportionally less than an institution like Trent, which depends more heavily on their transfer student population for enrolments. While we don’t have comparable data for the University of Toronto, we know that 16% of college to university transfer students at Trent travelled an articulated pathway, in comparison to less than a percent for both types of university-to-university transfers.

Figure 2 Predicted Probability of Graduation by Pathway Uptake

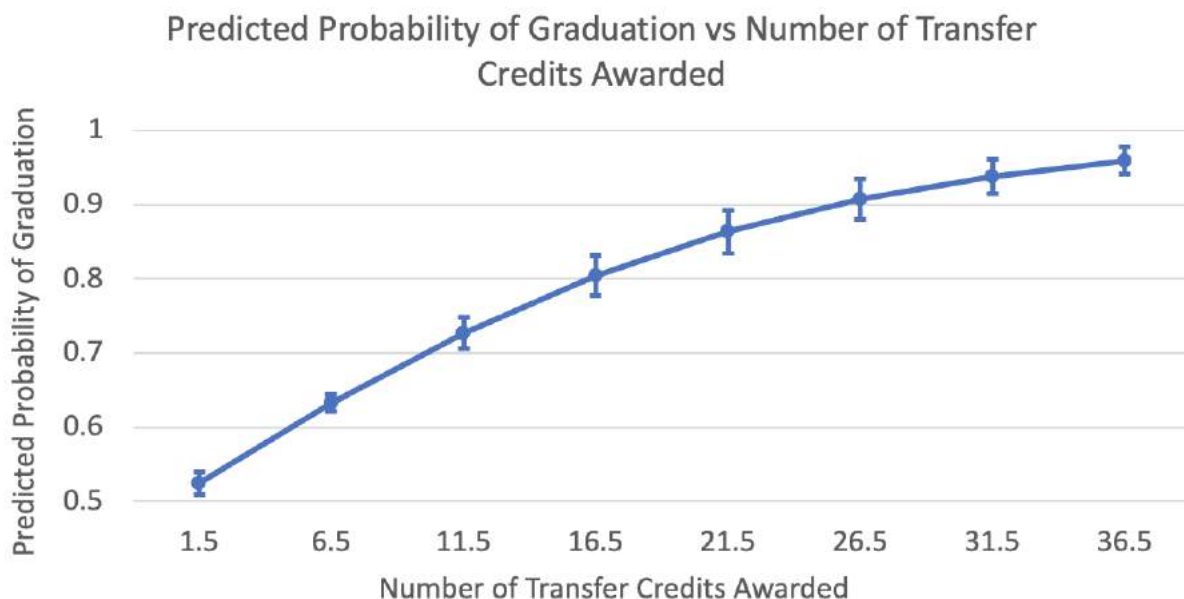


⁸As part of the CSER and USER data that PSE institutions report to the Ministry, students that receive at least 0.5 of credit from a previous institution at their current institution are ‘flagged’ and recorded as a transfer student. This is a limited measure as it does not account for mobile students that do not receive credit.

While we are missing information about articulated pathways from the University of Toronto study, we can compare the average number of transfer credits awarded for TDSB-U of T transfer students and those at Trent. When focusing on average amount of transfer credits awarded, we see that Trent's mean credits for college transfers (4.6) is considerably higher than the mean reported in the TDSB and U of T linkage report (2.57) (see Davies, 2022). For both Trent and U of T, a positive association was found between mean transfer credits awarded and graduation rates; this might help explain the high graduation outcomes for Trent's college transfers (see Figure 3). While university transfers at Trent had even higher mean transfer credits awarded (5.14), the proportional differences between means for college and university transfers in the U of T study were so much larger (51% versus 11.8%) that it provides a potential explanation for the better graduation outcomes of these students at Trent.

The Davies (2022) report was able to access high school GPA in grade 12 for various cohorts of students, and found that all things considered, college transfer students had lower academic achievement, and thus entered PSE less prepared. However, graduation rates rose significantly for college transfers if they had typical academic and demographic profiles as those of all students in the TDSB-U of T pathway. For transfer students at Trent, the higher percentage of articulated pathways (16%) could contribute to the higher graduation rates for college to university transfer; prior research has shown a relationship between prior degree completion, travelling articulated pathways, or completion of a block of core credits at the college level and improved graduation rates (Schudde, Bicak & Meghan, 2022; Shapiro et al., 201

Figure 3 Predicted Probability of Graduation by Number of Transfer Credits Awarded



Discussion

Comparative academic performance between transfer students and direct-entry students has important institutional and policy implications. At the institutional level, universities have a vested interest in ensuring that a small but sizeable minority of students (transfer students) can be successful. Trent University, according to a prior ONCAT report, found that 16% of their incoming students were transfer students from Ontario colleges (Kennett & Maki, 2014)⁹. These students take circuitous routes to postsecondary, and recent research has found that their high school academic achievement is lower in comparison to their direct-entry counterparts (Davies, 2022; Pizarro Milian, Missaghian & Hon, 2022).

At the level of provincial policy, understanding the specific times when transfer students might struggle (in high school, for example) and how they fare across time can help policy makers provide appropriately timed supports to institutions; these supports might include targeted advising services for first year transfers or the development of more articulated pathways, as these pathways have shown to improve graduation rates of transfer students (Spencer, 2019). However, as the comparison between Trent's transfer data and U of T demonstrates, different institutions may have different transfer priorities related to the proportion of transfer students they admit. Trent recently participated in ONCAT's [MapIt project](#), a transfer mapping exercise that sought to systematically understand the institutional resources and processes for credit transfer students. In that report, a few institutions, including Trent, were singled out for providing comprehensive student transfer services. Key ingredients to their success in transitioning transfer students include automatic transfer assessments for all applicants at the application stage, excellent advising services (as reported by students), and excellent information technology infrastructure that allows them to store syllabi in a centralized system. Thus, policy makers would be wise to understand the strategic intent behind cultivating systems that welcome transfer students. If it is the case that certain institutions depend on transfer enrolments more than others, then more resources can be allocated towards improving those institutions' transfer systems. However, the argument can also be made that all institutions that welcome transfer students should provide these necessary supports.

It would be helpful for future research to explore the institutional strategic mandate agreements for Ontario institutions to understand if transfer is included in any way as an institutional priority. Interestingly enough, a scan of Trent's 2017-2020 Strategic Mandate Agreement (SMA) sees a designated section on transfer students and the institution framing itself as a "transfer leader." Future research could also look at the role that class sizes play in helping transfer students succeed at smaller institutions like Trent.

⁹The current figure is 15% based off Trent enrolment data from 2000 to 2019.

In addition to smaller class sizes, things like the types of student services available and the role that the college system¹⁰ at some institutions plays in helping integrate students into campus life would contribute to a better understanding of how transfer students can succeed. While this type of data may not be available at institutions, qualitative research that explores the role these supports play in student integration would be helpful in understanding how they influence the student transfer experience.

As the government of Ontario shifts towards performance-based funding formulas, the importance of understanding student PSE outcomes become more important than ever. This makes it imperative to track transfer student progress, as identifying achievement gaps can lead to policy interventions that provide supports, such as targeted advising services. While we do not have high school grades for the various cohorts of transfer students examined with Trent University's data, we do know that Trent transfer students from colleges have comparatively lower first year GPA's than university transfers and direct entry students, after controlling for a set of socio-demographic student level indicators. However, a cumulative grade point average (CGPA) measure would help future studies understand more about how college transfers may or may not improve past their first year of admittance, given that their graduation rates were the highest. We suspect that they should demonstrate noticeable improvement after their first year.

What makes the Trent findings very interesting is that when exploring the graduation rates of transfer students, we see that while college transfers may comparatively struggle in their first year, after transferring, they graduate at the highest rates. This is the inverse of recent findings looking at the graduation rates of University of Toronto transfers (see Davies, 2022). Using data that indicates the total number of credits awarded for transfer, we found a strong positive bivariate relationship between this measure and graduation rates at Trent. College transfers receive on average 4.6 credits at Trent which is considerably higher in proportion, to the number of credits received by college transfer students at the University of Toronto. When we also consider that 16% of all college transfer students travel articulated pathways at Trent, more than any other transfer student, understanding the importance of this relationship can help policy makers support and promote the extension of articulated transfer agreements in the province. Currently, one of the major challenges to achieving further articulation is the differing amount of transfer credit that institutions award, and the lack of a centralized reporting mechanism where we can track, with representative data, the total number of articulation agreements in the province. As we collect this information in increments with the DataPilot, it is our hope that we can begin to understand the nuances of credit transfer, and how to best to support a variety of students that move between institutions in our province.

¹⁰The collegiate system at various Ontario universities offers student the unique opportunity to engage in the social and extra-curricular life of the university outside of the classroom. While this might be more obvious for students in residence, non-residence students are given a choice or assigned an affiliate college when they apply to an institution. In addition, many registrarial services are administered through the colleges.

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Appendix 1 - Data Limitations

One of the limitations of the current analysis is that we lacked a cumulative GPA measure. Davies and Pizarro Milian (2020) only looked at cumulative GPA, not grades in the first-year of studies at U of T. Other transfer research looking at the comparative grades of first-year transfer students to Brock University in Ontario has shown that students entering through direct-entry pathways have lower academic performance in comparison to transfer students (Stewart & Martinello, 2012). It would be useful for future studies to assess the mean differences between first-year and cumulative GPA to understand more about how students adjust academically after their first year. Nevertheless, the Trent data allows us to understand that college transfer students, who may have lower high school GPAs, have higher admitted GPAs than direct-entry students. This could stem from internal policies at Trent which select high-performing college transfer students for admittance into various Trent programs. It would also be useful to know the high school grades of transfer students into Trent, as we did with the TDSB-U of T linkage study (Davies & Pizarro Milian, 2020), as we could then hypothesize a potential relationship between high school academic achievement and first-year academic achievement. Nevertheless, college transfers into Trent have a slightly higher admitted GPA than direct entry students, and both types of students experience a first year of “transfer shock”^[1]. However, it is difficult to measure the relative differences between grades achieved at the high school level, and those at the college level as we are comparing two different systems; therefore CGPA is such an important measure, as it allows us to compare college transfer academic achievement directly with other pathways. It is also important to note that the academic requirements for admission for universities like Brock and Trent are lower than for universities like U of T, so direct-entry students to these universities may begin with weaker academic achievement scores in high school that carry over to first year. Across the above-mentioned provincial studies, university-to-university transfers outperform all groups; it will be important to reflect more deeply on why this finding keeps reappearing in the Ontario context.

¹¹Transfer shock refers to a decrease in grades from admitted GPA compared with first-year GPA. We observed a 9% dip in grades for CU students and an 11% decrease for DE.

Appendix 2 - Supplemental Data

2.1: Descriptive Data

	Ontario College 4,863	Ontario University 2,137	Out of Province 1,830	Non-Transfer 23,588
Graduated	56.0%	61.9%	63.9%	57.0%
Year of Admission				
2000	3.9%	4.0%	6.5%	3.1%
2001	3.6%	3.5%	3.2%	3.2%
2002	5.1%	4.6%	8.1%	4.5%
2003	3.9%	3.2%	6.5%	6.5%
2004	4.8%	5.5%	5.7%	4.3%
2005	5.4%	5.0%	4.3%	4.4%
2006	5.1%	4.0%	4.3%	4.7%
2007	3.8%	5.0%	5.0%	4.3%
2008	4.9%	5.2%	5.0%	4.5%
2009	4.9%	5.7%	5.4%	4.5%
2010	3.6%	3.6%	3.7%	4.7%
2011	5.2%	5.2%	4.5%	4.9%
2012	4.9%	5.2%	5.6%	5.1%
2013	4.9%	6.4%	4.6%	5.2%
2014	4.6%	5.9%	4.4%	5.0%
2015	5.8%	6.6%	4.8%	5.1%
2016	7.8%	7.0%	5.6%	5.7%
2017	8.3%	7.3%	5.9%	6.4%
2018	9.4%	6.8%	6.7%	6.7%
2019	0.4%	0.4%	0.3%	7.3%
Age				
Mean	24.6	23.1	23.2	18.4
SD	5.9	5.7	6.5	0.61
Gender				
Female	64.8%	69.4%	64.4%	67.4%
Immigration Status				
Canadian Citizen	97.0%	98.3%	68.3%	96.9%
Permanent Resident	1.9%	1.4%	4.6%	18.5%
Study Permit	1.1%	0.4%	27.1%	13.1%

Enrollment Status				
Full-Time	75.3%	76.0%	77.9%	96.4%
Part-Time	24.7%	24.0%	22.1%	3.6%
Credential				
3 Year Degree	21.4%	16.6%	23.6%	23.1%
4 Year Degree	78.6%	83.4%	76.4%	76.9%
Transfer Pathway				
Articulated	16.0%	0.5%	0.6%	
Current Grade Point Average				
Mean	69.3%	73.4%	73.9%	68.1%
SD	14.0%	13.1%	13.4%	13.6%
Admitted Grade Point Average				
Mean	78.2%	75.3%	79.4%	79.4%
SD	7.4%	7.1%	8.9%	7.4%
Field of Study				
Agriculture, agriculture operations and Natural resources and conservation	0.1%	0.7%	0.5%	0.2%
Area, ethnic, cultural, gender, and group	10.8%	4.2%	3.6%	3.0%
Communication, journalism and related pr	1.8%	3.2%	2.0%	1.0%
Computer and information sciences and support services	0.5%	0.8%	0.4%	0.9%
Personal and culinary services	1.5%	1.7%	1.3%	1.0%
Education	0.0%	0.0%	0.1%	0.5%
Family and consumer sciences/human science	0.5%	0.5%	1.7%	11.1%
English language and literature/letters	1.2%	0.2%	0.3%	0.4%
Liberal arts and sciences, general studies	2.8%	6.1%	4.6%	2.4%
Biological and biomedical sciences	23.8%	21.1%	26.7%	37.3%
Multidisciplinary/interdisciplinary stud	8.8%	11.7%	10.2%	5.8%
Parks, recreation, leisure and fitness	0.3%	0.3%	0.4%	0.5%
Philosophy and religious studies	0.2%	0.3%	0.0%	1.0%
Physical sciences	0.7%	1.0%	1.0%	0.5%
	1.4%	2.0%	3.1%	1.5%

Psychology	12.9%	13.0%	8.1%	5.6%
Security and protective services	0.3%	0.7%	1.2%	1.9%
Public administration and social service	6.2%	2.1%	1.5%	2.0%
Social sciences	8.0%	12.9%	11.6%	6.2%
Health professions and related programs	3.5%	4.9%	3.2%	6.2%
Business, management, marketing, and relations	12.4%	7.5%	14.3%	8.6%
History	2.0%	4.0%	3.5%	2.2%
French language and literature/letters	0.4%	1.2%	0.5%	0.2%

2.2 Regression Outputs

Current GPA Model - Overall

	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
Admitted_Grade_Point_Average	0.946127	0.014746	64.16	0	0.917223	0.975032
Pathway						
Ontario University	10.04058	0.55203	18.19	0	8.958524	11.12264
Out of Province	5.183353	0.653083	7.94	0	3.903218	6.463488
Non-Transfer	-1.79429	0.410418	-4.37	0	-2.59877	-0.98981
Gender						
Female	1.922735	0.229315	8.38	0	1.473245	2.372225
Immigration_Status						
Permanent Resident	-1.87828	0.702239	-2.67	0.007	-3.25476	-0.50179
Study Permit	-6.68413	0.877319	-7.62	0	-8.40379	-4.96446
FirstGenerationPSE						
Yes	-1.63703	0.278038	-5.89	0	-2.18202	-1.09204
credential						
DEG-YR4	0.189173	1.216042	0.16	0.876	-2.19444	2.572786
Age	0.300338	0.045433	6.61	0	0.211283	0.389393
MotherTongue						
French	0.395883	1.786509	0.22	0.825	-3.10593	3.897691
Other	-6.25971	8.068932	-0.78	0.438	-22.076	9.556535

admitsem						
Summer	1.715212	0.924421	1.86	0.064	-0.09678	3.527208
Winter	2.772723	0.750961	3.69	0	1.300735	4.244712
CIP2						
Natural resources and conservation	2.886231	1.734004	1.66	0.096	-0.51266	6.285123
Area, ethnic, cultural, gender, and group studies	1.690245	1.831589	0.92	0.356	-1.89993	5.280417
Communication, journalism, and related programs	-0.66356	1.888561	-0.35	0.725	-4.36541	3.038282
Computer and information sciences and support services	1.420029	1.842588	0.77	0.441	-2.1917	5.031761
Personal and culinary services	6.606425	2.096623	3.15	0.002	2.496749	10.7161
Education	1.589043	1.716624	0.93	0.355	-1.77578	4.953868
Family and consumer sciences/human sciences	2.084784	2.044421	1.02	0.308	-1.92257	6.092136
English language and literature/letters	-0.78359	1.771416	-0.44	0.658	-4.25582	2.688633
Liberal arts and sciences, general studies, and humanities	1.588732	1.703922	0.93	0.351	-1.7512	4.92866
Biological and biomedical sciences	3.394322	1.71177	1.98	0.047	0.039013	6.74963
Multidisciplinary/interdisciplinary studies	-2.02031	2.036339	-0.99	0.321	-6.01182	1.9712
Parks, recreation, leisure, and fitness studies	0.952696	1.882318	0.51	0.613	-2.73691	4.642304
Philosophy and religious studies	0.417222	2.021132	0.21	0.836	-3.54448	4.378924
Physical sciences	1.507953	1.807592	0.83	0.404	-2.03518	5.051088
Psychology	1.243667	1.71037	0.73	0.467	-2.1089	4.596232
Security and protective services	3.424927	1.848921	1.85	0.064	-0.19922	7.049072
Public administration and social service professions	2.038475	1.755641	1.16	0.246	-1.40283	5.479779
Social sciences	1.003613	1.711019	0.59	0.558	-2.35023	4.357451
Health professions and related programs	3.922162	1.731799	2.26	0.024	0.527593	7.31673
Business, management, marketing, and related support services	3.527792	1.713666	2.06	0.04	0.168765	6.886819
History	0.409021	1.772272	0.23	0.817	-3.06488	3.882924
French language and literature/letters	2.88631	2.330589	1.24	0.216	-1.68197	7.454593
estatus						
Part-Time	-5.0454	0.443385	-11.38	0	-5.9145	-4.1763

Admitted_Credential

DEG-YR4	-0.59512	1.399072	-0.43	0.671	-3.3375	2.147253
DIP	2.680952	3.26743	0.82	0.412	-3.72367	9.085573
<u>_cons</u>	<u>-13.5743</u>	<u>2.472588</u>	<u>-5.49</u>	<u>0</u>	<u>-18.421</u>	<u>-8.72771</u>

Graduation Model - Overall

	Coeff.	Std. Err.	z	P>z	[95% Conf. Interval]	
Current_Grade_Point_Average	0.067163	0.001236	54.33	0	0.06474	0.069586
category3						
Ontario University	-0.03499	0.060194	-0.58	0.561	-0.15297	0.082983
Out of Province	-0.08587	0.068093	-1.26	0.207	-0.21933	0.047593
Non-Transfer	-0.44368	0.045376	-9.78	0	-0.53262	-0.35475
Gender						
Female	0.031851	0.028143	1.13	0.258	-0.02331	0.08701
Immigration_Status						
Permanent Resident	-0.20968	0.090819	-2.31	0.021	-0.38768	-0.03168
Study Permit	0.413096	0.090671	4.56	0	0.235384	0.590808
credential						
DEG-YR4	-0.68772	0.038085	-18.06	0	-0.76236	-0.61307
Age	-0.03166	0.004275	-7.41	0	-0.04004	-0.02329
MotherTongue						
French	-0.79941	0.265021	-3.02	0.003	-1.31884	-0.27998
Other	-0.45803	0.083912	-5.46	0	-0.62249	-0.29356
admitsem						
Summer	0.122996	0.092067	1.34	0.182	-0.05745	0.303444
Winter	-0.34582	0.09264	-3.73	0	-0.52739	-0.16425
CIP2						
Natural resources and conservation Area, ethnic, cultural, gender, and group studies	0.550771	0.278325	1.98	0.048	0.005264	1.096278
	-0.09762	0.290897	-0.34	0.737	-0.66777	0.472523

Communication, journalism, and related programs	-0.19352	0.304747	-0.64	0.525	-0.79081	0.403774
Computer and information sciences and support services	-0.89985	0.297331	-3.03	0.002	-1.48261	-0.31709
Personal and culinary services	-1.52618	0.336968	-4.53	0	-2.18662	-0.86573
Education	0.733357	0.27564	2.66	0.008	0.193112	1.273601
Family and consumer sciences/human sciences	-1.29163	0.331011	-3.9	0	-1.9404	-0.64286
English language and literature/letters	0.34668	0.281056	1.23	0.217	-0.20418	0.89754
Liberal arts and sciences, general studies, and humanities	0.336256	0.273027	1.23	0.218	-0.19887	0.871379
Biological and biomedical sciences	0.131999	0.27519	0.48	0.631	-0.40736	0.671361
Multidisciplinary/interdisciplinary studies	0.40434	0.332851	1.21	0.224	-0.24804	1.056715
Parks, recreation, leisure, and fitness studies	-1.62092	0.322509	-5.03	0	-2.25302	-0.98881
Philosophy and religious studies	-0.53012	0.317678	-1.67	0.095	-1.15275	0.092523
Physical sciences	-0.18222	0.288816	-0.63	0.528	-0.74829	0.383848
Psychology	0.079811	0.275003	0.29	0.772	-0.45918	0.618807
Security and protective services	-0.81089	0.287419	-2.82	0.005	-1.37422	-0.24756
Public administration and social service professions	-0.81276	0.282671	-2.88	0.004	-1.36679	-0.25874
Social sciences	0.056834	0.27502	0.21	0.836	-0.4822	0.595864
Health professions and related programs	0.854117	0.277316	3.08	0.002	0.310588	1.397645
Business, management, marketing, and related support services	0.201673	0.274386	0.73	0.462	-0.33611	0.739458
History	0.236847	0.282587	0.84	0.402	-0.31701	0.790708
French language and literature/letters	0.393426	0.34655	1.14	0.256	-0.2858	1.072651
estatus						
Part-Time	-1.01287	0.05208	-19.45	0	-1.11494	-0.91079
_cons	-2.97225	0.304647	-9.76	0	-3.56934	-2.37515

Graduation Model - Direct Entry Students

	Coeff	Std. Err.	z	P>z	[95% Conf. Interval]
Current_Grade_Point_Average	0.0682578	0.00146	46.76	0	0.065397 0.071119
Gender					
Female	0.0668071	0.033413	2	0.046	0.00132 0.132294

Immigration_Status	-						
Permanent Resident	0.3680549	0.110425	-3.33	0.001	-0.58448	-0.15163	
Study Permit	0.0954341	0.134932	0.71	0.479	-0.16903	0.359895	
credential	-						
DEG-YR4	0.7098612	0.045756	-15.51	0	-0.79954	-0.62018	
Age	0.1390264	0.026461	5.25	0	0.087164	0.190889	
MotherTongue	-						
French	0.8054702	0.288111	-2.8	0.005	-1.37016	-0.24078	
Other	0.0118491	0.52598	-0.02	0.982	-1.04275	1.019053	
admitsem	-						
Summer	0.2654951	0.47705	-0.56	0.578	-1.2005	0.669506	
CIP2							
Natural resources and conservation	0.3502132	0.37257	0.94	0.347	-0.38001	1.080437	
Area, ethnic, cultural, gender, and	-						
group studies	0.1433827	0.390067	-0.37	0.713	-0.9079	0.621135	
Communication, journalism, and							
related programs	0.1211616	0.3956	0.31	0.759	-0.6542	0.896523	
Computer and information sciences							
and support services	-1.052256	0.400229	-2.63	0.009	-1.83669	-0.26782	
Personal and culinary services	-1.389387	0.416325	-3.34	0.001	-2.20537	-0.5734	
Education	0.8668083	0.367013	2.36	0.018	0.147476	1.586141	
Family and consumer							
sciences/human sciences	-1.104661	0.436344	-2.53	0.011	-1.95988	-0.24944	
English language and							
literature/letters	0.3009806	0.375372	0.8	0.423	-0.43473	1.036695	
Liberal arts and sciences, general							
studies, and humanities	0.4651296	0.365337	1.27	0.203	-0.25092	1.181178	
Biological and biomedical sciences	0.2182505	0.368439	0.59	0.554	-0.50388	0.940378	
Multidisciplinary/interdisciplinary							
studies	0.4309458	0.422163	1.02	0.307	-0.39648	1.25837	
Parks, recreation, leisure, and fitness							
studies	-1.406967	0.404556	-3.48	0.001	-2.19988	-0.61405	
Philosophy and religious studies	0.5390884	0.423526	-1.27	0.203	-1.36918	0.291006	

	-					
Physical sciences	0.0640196	0.383095	-0.17	0.867	-0.81487	0.686833
Psychology	0.1723542	0.368606	0.47	0.64	-0.5501	0.894809
	-					
Security and protective services	0.6997783	0.377345	-1.85	0.064	-1.43936	0.039805
Public administration and social service professions	0.3935045	0.377495	-1.04	0.297	-1.13338	0.346371
Social sciences	0.0718186	0.368221	0.2	0.845	-0.64988	0.793517
Health professions and related programs	0.914175	0.369085	2.48	0.013	0.190782	1.637568
Business, management, marketing, and related support services	0.2818714	0.367128	0.77	0.443	-0.43769	1.001429
History	0.2204988	0.375972	0.59	0.558	-0.51639	0.95739
French language and literature/letters	0.7953014	0.477928	1.66	0.096	-0.14142	1.732024
estatus						
	-					
Part-Time	0.8623154	0.089506	-9.63	0	-1.03774	-0.68689
_cons	-6.722089	0.630788	-10.66	0	-7.95841	-5.48577

Graduation Model - Transfer Students

	Coeff	Std. Err.	z	P>z	[95% Conf. Interval]	
Current_Grade_Point_Average	0.06664	0.002391	27.87	0	0.061954	0.071326
Gender						
Female	0.008319	0.054245	0.15	0.878	-0.098	0.114637
Immigration_Status						
Permanent Resident	-0.01324	0.163705	-0.08	0.936	-0.3341	0.307612
Study Permit	0.566007	0.116528	4.86	0	0.337615	0.794398
credential						
DEG-YR4	-0.42492	0.073725	-5.76	0	-0.56942	-0.28042
Age	-0.03331	0.004519	-7.37	0	-0.04217	-0.02446
MotherTongue						
French	-0.81366	0.672511	-1.21	0.226	-2.13175	0.504442
Other	-0.48921	0.087879	-5.57	0	-0.66144	-0.31697

admitsem						
Summer	0.129645	0.095461	1.36	0.174	-0.05746	0.316746
Winter	-0.43792	0.094503	-4.63	0	-0.62314	-0.25269
CIP2						
Natural resources and conservation	0.858336	0.423335	2.03	0.043	0.028615	1.688058
Area, ethnic, cultural, gender, and	0.000153	0.441579	0	1	-0.86533	0.865632
group studies						
Communication, journalism, and	-0.94421	0.514276	-1.84	0.066	-1.95218	0.063749
related programs						
Computer and information sciences	-0.6151	0.453257	-1.36	0.175	-1.50346	0.273271
and support services						
Personal and culinary services	-1.88092	1.340415	-1.4	0.161	-4.50809	0.746242
Education	-0.46533	0.487894	-0.95	0.34	-1.42159	0.490921
Family and consumer						
sciences/human sciences	-1.4784	0.512698	-2.88	0.004	-2.48327	-0.47353
English language and						
literature/letters	0.507335	0.429873	1.18	0.238	-0.3352	1.34987
Liberal arts and sciences, general						
studies, and humanities	0.059209	0.416328	0.14	0.887	-0.75678	0.875195
Biological and biomedical sciences	0.078982	0.418406	0.19	0.85	-0.74108	0.899042
Multidisciplinary/interdisciplinary						
studies	0.68446	0.615012	1.11	0.266	-0.52094	1.889862
Parks, recreation, leisure, and fitness						
studies	-3.26458	1.125116	-2.9	0.004	-5.46977	-1.0594
Philosophy and religious studies	-0.48746	0.487451	-1	0.317	-1.44284	0.46793
Physical sciences	-0.37195	0.447521	-0.83	0.406	-1.24908	0.505174
Psychology	0.034377	0.417199	0.08	0.934	-0.78332	0.852072
Security and protective services	-0.9361	0.507194	-1.85	0.065	-1.93018	0.057986
Public administration and social						
service professions	-1.34887	0.431249	-3.13	0.002	-2.1941	-0.50363
Social sciences	0.135097	0.418513	0.32	0.747	-0.68517	0.955367
Health professions and related						
programs	0.970773	0.436861	2.22	0.026	0.114542	1.827004
Business, management, marketing,						
and related support services	0.17828	0.417657	0.43	0.669	-0.64031	0.996873
History	0.415486	0.437134	0.95	0.342	-0.44128	1.272253
French language and						
literature/letters	-0.01393	0.508517	-0.03	0.978	-1.01061	0.982745
estatus						
Part-Time	-0.94172	0.06511	-14.46	0	-1.06933	-0.8141
_cons	-3.06245	0.460389	-6.65	0	-3.96479	-2.1601



<https://oncat.ca/en/resources>



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