# The impact of labour market and policy changes on university transfer: The case study of Early Childhood Education.

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# **Executive Summary**

Ontario colleges predominantly offer programming which leads to specific occupations in the labour market rather than further education. Nevertheless, students and graduates are enrolling in many college programs with the intention to transfer to a university degree. Early Childhood Education (ECE) is a two year diploma program that prepares graduates directly for the labour market but also historically has had a high transfer rate to university. Using the ECE program in Ontario as a case study, the interaction between the labour market and transfer to university was studied. Several changes have occurred in the ECE profession in Ontario that have the potential to alter a student's decision to transfer. These include the establishment of the College of Early Childhood Educators in 2008, the phase-in of full-day kindergarten (FDK) between 2010 and 2014, the reduced demand for certified teachers, and the introduction of ECE-related college degrees (starting in 2008). Therefore, the overarching research question for this study is: How have the recent labour market and policy changes affected transfer to university for ECE graduates? To answer this question analysis was performed on ECE graduates at a province-wide and at a college-level.

#### **Research questions: Provincial-wide (Ontario)**

- What are the labour market trends for recent ECE graduates in Ontario?
- What are the trends in transfer rates to university after graduation from college ECE programs?
- Why do ECE graduates transfer to university? Have these reasons changed recently?
- What institutions and programs are ECE transfers choosing? Has the pattern changed?

#### Research questions: Institutional-level analysis (Seneca)

- What is the profile of ECE entrants who aspire to transfer to university after graduation?
- What is the profile of ECE graduates who transfer to university?
- What are the outcomes after transfer?

**Methodology:** There were two phases to the study. One was a provincial (Ontario) analysis which included ECE diploma graduates between the years 2007 and 2014. The Graduate Satisfaction Survey, which is mandated and funded by the Ontario Ministry of Training, Colleges and Universities, was used to measure trends in employment, wages, transfer rates to university, and the transfer experience six months after graduation. The survey response rate was 70%, for a total sample of 18,165 respondents.

The second phase focussed on 1) Seneca's ECE students who entered the program between 2002 and 2014 and 2) Seneca's ECE graduates between 2007 and 2014. For entrants, the academic and sociodemographic profiles of those who aspired to university at entry and those who did not were compared. The entrants' sample size comprised of 5108 students. For graduates, the Graduate Satisfaction Survey responses were linked to Seneca's comprehensive student information system, enabling the tracking of students from high school to college entry, graduation, and transfer to university. The sample size used for analysis contained 1503 ECE graduates. The influence of sociodemographic and academic factors on the likelihood of aspiring to university and eventual transfer six months after graduation were assessed using both descriptive and regression models. Sociodemographic factors included citizenship, age, and first language; academic factors included language proficiency (placement), high school background, previous university attendance and Seneca GPA. In addition, a dataset developed previously containing all Seneca students who had also attended York University was explored specifically for ECE graduates to obtain a measure of outcomes after

transfer and mobility trends over time. This sample contained 472 ECE graduates who had attended York University before or after enrolling in ECE at Seneca College.

**Results:** In 2014, ECE graduates in Ontario had an unemployment rate of 8%, half of the provincial average. Hourly wages, when adjusted for inflation, have increased by 8% between 2007 and 2014 for ECE graduates, compared to a drop of 6% for non-ECE graduates. Concurrently, the transfer rate to university has dropped from 17% in 2007 to 6% for 2014 graduates.

At Seneca College, ECE entrants' plans for university after graduation have dropped considerably in recent years, from 59% in 2009-10 to 35% in 2014-15, with plans for employment increasing from 26% to 46%. Partially responsible for this result is a change in the composition of the students entering ECE. In recent years ECE students are more likely to be international, to be older and to have previously attended university. Regression analysis showed that, controlling for other characteristics and year of entry, younger students, those who had taken university preparatory courses in high school, and those who obtained lower marks in high school were more likely to aspire to go on to university.

Similar to the trend seen provincially, transfer rates to university for Seneca's ECE graduates dropped dramatically from 31% in 2007 to 6% in 2014. In addition to fewer entering students aspiring to transfer, the transfer rate for those who *did* aspire to go to university has also dropped. Regression analysis showed that, independent of a variety of characteristics, those with aspirations for university, younger students, and those with higher Seneca grades were more likely to transfer, whereas those with previous university, and those who graduated since 2010 were less likely. The independent effect of graduating year shows that the labour market and policy changes have had an effect in reducing transfer to university.

For ECE graduates from Seneca who continued on to York between 2007 and 2012, 94% received at least one year of credit. Between 2007 and 2011, 73% had already graduated or were in progress, with some of those who discontinued at York re-entering Seneca's Bachelor of Child Development degree (BCD). Recently, Seneca's BCD degree surpassed York as a degree destination for ECE graduates, with 14% of Seneca's 2011-12 ECE graduates continuing directly on to BCD, compared with 8% to York University.

On a provincial level, university transfers who graduated from ECE after 2010 were more likely to report that the program they transferred into was "very related" to their previous program, an increase to 54% from 45% in the 2007-2010 period. Similarly, university transfers since 2010 were also more likely to report receiving more than one year of credit. Post 2010, university transfers were less likely to cite "needed for professional designation" (-6.4%), or to pursue a "different field of study" (-3.6%) as reasons for transfer, indicative of both the regulatory changes in the field and an increase in alignment.

**Conclusions:** This paper demonstrates that a student's decision to progress from a professional program like ECE into university is not made in isolation from external factors. Labour market conditions, the regulatory environment, and competition from related college degree offerings can all influence a student's decision making. The results of this study suggest that, even when controlling for individual student characteristics that may influence transfer, transfer nevertheless declined as a result of, and concurrent with, the combined impact of changes to the ECE profession in Ontario.

# Introduction

Early Childhood Education (ECE) is the largest college program in Ontario, with well over 4000 graduates in 2014, a 47% increase since 2007. The role of ECE professionals in the economy and society is immense, with the responsibility to "plan, organize and implement programs for children between the ages of infancy and 12 years."<sup>1</sup> Statistics Canada notes that ECE professionals are employed in child-care centres, daycare centres, kindergartens, agencies for exceptional children and other settings.<sup>2</sup> Data from 2012 indicate that almost 80% of women in Ontario with a youngest child under 15 years of age participate in the paid workforce, resulting in over 826,000 children needing care (Friendly, Halfon, Beach & Forer, 2013).

The ECE program in Ontario is typically a two year college diploma, from which graduates either directly enter employment or, in some cases, transfer to a university for a degree. Historically, ECE graduates have experienced strong employment rates, but comparatively low wages (Beach, 2013). Despite the strong labour market demand and in some cases shortages, ECE graduates have had one of the highest rates of transfer to university of all college programs in Ontario (Decock, 2006; Decock, McCloy, Liu & Hui, 2011). However, changes to the ECE field in recent years are likely contributing to the increased number of ECE graduates who choose not to continue on to university, but to enter the labour market following completion of their college program. The largest change has been the regulation of the profession in Ontario. This occurred with the passing of the *Early Childhood Educators Act, 2007*, which established the College of Early Childhood Educators (the College) as the profession's regulatory body. Consequently, early childhood educators in Ontario must now meet specific education and experience standards.<sup>3</sup> Use of the title "early childhood educator" or "registered early childhood educator" is restricted to practitioners who meet the College's eligibility requirements.

Another major change occurred in 2010, when Ontario introduced full-day kindergarten for four- and five-year-olds, teaming together certified teachers and registered early childhood educators (Ontario Ministry of Education, 2010). The program was fully implemented across the province by the fall of 2014, contributing to an increased demand for registered early childhood educators (RECEs).<sup>4</sup> Ontario's early childhood educator/assistant workforce increased 9% between 2012 and 2014. The median hourly rate for RECEs is \$16.94 (EMSI, 2015), well below the rate for early childhood educators employed in full-day kindergarten programs.<sup>5</sup> In response to concerns that RECEs in licensed day cares earned less than their counterparts in the school system, the Ontario government announced in January 2015 an hourly increase of \$1 for RECEs earning below \$26.27 per hour.<sup>6</sup>

<sup>&</sup>lt;sup>1</sup> See Statistics Canada's description of the 2011 National Occupational Classification (NOC) code for Early Childhood Educators, available at:

http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=122372&CVD=122376&CPV=4214&CST=01012 011&CLV=4&MLV=4

<sup>&</sup>lt;sup>2</sup> Ibid.

<sup>&</sup>lt;sup>3</sup> See the College of Early Childhood Educators website at: https://www.college-

ece.ca/en/BecomeAMember/Pages/Who-is-Required-to-Join.aspx

<sup>&</sup>lt;sup>4</sup> See Seneca College website at http://www.senecacollege.ca/media/eceebackground.html

<sup>&</sup>lt;sup>5</sup> A recent Toronto District School Board job posting showed an hourly rate range of \$26.84 to \$31.92.

<sup>&</sup>lt;sup>6</sup> A review of Ontario's policy for wage subsidies for ECE workers can be found in Bird and Halfon, 2015, available at: http://childcarecanada.org/documents/research-policy-practice/15/04/piecemeal-solutions-get-piecemeal-results-addressing-wages-

Prior to these changes, the pathway from an ECE diploma to a university degree was an attractive option for ECE graduates seeking certification as an elementary or secondary school teacher. Most teacher education programs require applicants to have a degree or to transfer into concurrent or consecutive degree programs such as York University's Bachelor of Arts/ Bachelor of Education. However, interest in this pathway has likely waned because of the decreased demand for certified teachers in kindergarten to Grade 12 (K–12) and a reduction in the number of seats in these degree programs. Survey data from the Ontario College of Teachers show that in 2001, 70% of Ontario's teaching graduates obtained regular teaching jobs; by 2014, the rate had dropped to 19% (Ontario College of Teachers, 2015). Correspondingly, the number of applicants dropped from a peak of over 16,000 in 2007 to under 10,000 in 2014 (Ontario University Application Centre, 2015). Taken together, the data suggest there is reduced demand on the part of ECE graduates for the university transfer pathway that leads to teacher certification.

In 2008, Seneca College launched a degree program in Child Development, providing a pathway for ECE graduates to attain a related degree within Ontario's college system. Several other colleges soon followed suit, introducing degree programs in Child Development, Early Childhood Leadership, and Early Learning Program Development (Table 1). The introduction of these programs offers entering students the option of earning a degree in ECE without having to transfer to a university, and completion of a degree for ECE diploma graduates. Most of these programs<sup>7</sup> provide a one semester bridging program, followed by entry into third year, enabling students to complete a degree program in only four or five semesters.

				Total #
			Program Start	Graduates
MTCU Program Title	College	College Program Title	Date	by 2013-14
Bachelor of Applied Arts	Seneca	Bachelor of Child Development	2008	207
(Child Development)	Humber	Bachelor of Child and Youth Care*	2011	
Bachelor of Early	Fanshawe	Bachelor of Early Childhood	2010	27
Childhood Leadership		Leadership		
	George brown	Bachelor of Early Childhood	2010	26
		Leadership		
	Sheridan	Bachelor of Early Childhood	2010	80
		Leadership		
Bachelor of Early	Conestoga	Bachelor of Early Learning	2014	
Learning Program		Program Development		
Development				
Total # graduates				340
Note: Although Llumher's pro	anana haatka aanaa Ni	TCI I title and and a Concerta it is the	alv and listed without	+

#### Table 1. Ontario colleges offering ECE-related degree programs

Note: Although Humber's program has the same MTCU title and code as Seneca's, it is the only one listed without an ECE degree completion pathway since it is more closely aligned with the field of Child and Youth Worker.

<sup>7</sup> Information on these programs is available the these colleges websites:

http://www.sheridancollege.ca/academics/programs-and-courses/bachelor-of-early-childhood-leadership.aspx; http://www.georgebrown.ca/c301-2016-2017/; https://www.fanshawec.ca/programs-and-courses/program/ecl1bachelor-early-childhood-leadership/next-year#group\_more\_info In 2011, the Ontario government made enhanced mobility between the college and university sectors a priority, investing \$73.7 million over five years (2011-2016) in a credit transfer framework designed to increase alignment and reduce duplication of course work when qualified students move between postsecondary institutions (MTCU, 2011). This initiative places greater emphasis on partnership agreements and transfer advising services at colleges and universities. It doesn't focus specifically on measures to increase the number of transfers, but could positively affect the transfer experience.

Much of the research on transfer to university focuses on institutional factors such as articulation agreements, advising, and the provision of accurate information (Arnold, 2012). Other research, primarily American, has shown the effect of individual factors such as aspirations, sociodemographics, academic background, and language skill level on the propensity for transfer to university (Dougherty & Kienzl, 2006). High educational aspirations, both in high school and in postsecondary, have been shown to positively influence eventual educational attainment. Australian research showed that educational aspirations in high school were influenced by socioeconomic status, whereas the realization of aspirations was not (Homel & Ryan, 2014). Dougherty and Kienzl (2006) showed that two-year college students in the United States, who aspired at entry to transfer to four-year degree programs were much more likely to transfer, independent of social background and academic preparation. Crisp and Delgado (2014) showed that students enrolled in developmental language courses in two-year community college programs were less likely to transfer. Similarly, Engle and Tinto (2008) showed that only 18% of students who were both low-income and first-generation students transferred from two-year public colleges compared with 53% of those who were neither. Limited Canadian data from Ontario and British Columbia have shown that in comparison to other university students, university applicants who indicated they had transferred from a college were more likely to be of Aboriginal heritage, have a disability, come from a lower-income household, and/or have parents who had not completed postsecondary education (Kerr, McCloy & Liu, 2010).

Most studies on transfer to university do not focus on occupation-based programs. The study described here measures the cumulative effect of individual, sociodemographic and academic/education factors on whether students continue on to university from the ECE program. Although these background factors clearly have a role, they may have less influence in a professional/occupation-based field of study such as ECE, compared to a liberal or general arts field. Labour market and policy changes in the profession may have a profound impact on the type of student who is attracted to a program and their professional and further education aspirations. Therefore, this study will look at both the broader labour market environment at the provincial level, using the Ontario Graduate Satisfaction Survey (provides data on graduate outcomes) and at an institutional level to determine the effect of individual sociodemographic and academic factors on transfer to university.

The overarching research question for this study is: How have the recent labour market and policy changes affected transfer to university for ECE graduates, both at the provincial and institutional level?

Research questions include those at the provincial level and individual level of analysis.

#### Provincial-level analysis (Ontario)

- What are the trends in labour market participation, employment outcomes, and earnings for recent ECE graduates in Ontario?
- What are the trends in transfer rates to university after graduation from ECE college programs?
- Why do ECE graduates transfer to university? Have these reasons changed recently?

• What institutions and programs are ECE graduates choosing? Has the pattern in demand changed? Are ECE graduates entering programs that more closely align to their college credential? Has the amount of reported transfer credit changed?

#### Institutional-level analysis (Seneca)

- What are the trends in the entering ECE classes at Seneca? How many ECE students have previously attended university? How many plan to attend university after graduation from Seneca?
- What are the academic and sociodemographic backgrounds of Seneca ECE graduates who aspire to university?
- What are the academic and sociodemographic backgrounds of ECE graduates who transfer from Seneca to university?
- Controlling for student backgrounds and their potential changes over time, are transfer trends a consequence of a changing student profile, or are there other external factors at play?
- What are the outcomes after transfer? How much transfer credit did students receive? How did they perform academically?

To help understand what influences transfer and transfer outcomes, a framework was created to guide and interpret the analysis (Figure 1):

- A student's socioeconomic status (income and parental education), age, gender, academic background (high school (HS) performance, previous PSE, language and math skills) potentially affect how they perform at college, whether they aspire to university after college and follow through on those aspirations, and their success after transfer.
- Aspirations for university can directly and positively affect academic performance at college since the student is often highly motivated to meet admission standards set under transfer policies and agreements.
- External factors such as labour market conditions related to their college program, and enhanced institutional infrastructure (e.g. articulation agreements with universities, student advising on transfer options), and degree offerings at college can influence which type of student aspires to transfer, whether the student actually transfers, and post-transfer success and experience afterwards.



Figure 1. Influencers on student transfer and transfer outcomes: a framework

# **Methods**

The analysis was specific to the ECE program and was conducted at both a provincial (Ontario) and institutional level (Seneca College). Both these levels of analysis use the Graduate Satisfaction Survey, which is mandated and funded by the Ontario Ministry of Training, Colleges and Universities (MTCU). The institutional-level analysis uses data from this survey as well as comprehensive student-level data from the College's student information system.

# **Provincial analysis**

## **Graduate Satisfaction Survey**

The Graduate Satisfaction Survey is administered to all college graduates with an Ontario College Credential from a publically funded College of Applied Arts and Technology (CAAT).<sup>8</sup> It is administered approximately six months after graduation through telephone surveys conducted by an external service provider to whom the colleges provide contact information and graduate characteristics such as age, gender, and program of study. The MTCU uses the results to gauge the performance of colleges on three of the five Key Performance Indicators (KPIs) – graduate satisfaction rate, employment rate, and employer satisfaction rate – each of which are tied to a modest sum of performance funding and are made public. Additionally, the survey asks the graduate if they went on to further education. The survey had an average response rate of 67% between 2007 and 2014. Graduates who indicate they are working full or part time are asked several employment-related questions. Full time students are not asked any labour market questions.

This study uses the following variables from the Graduate Satisfaction Survey:

<sup>&</sup>lt;sup>8</sup> See the Ministry of Training, Colleges and Universities (2009). Framework for Programs of Instruction.

#### Labour market variables<sup>9</sup>

- Unemployment rate: Percent of respondents in the labour force who are not working. The labour force is defined as those who are available and are either looking for work or working.
- Status after graduation: A derived variable based on all survey respondents, comprising those who are: 1) studying full or part time, and not working; 2) working in a related field; 3) working in a partially related field; 4) working in an unrelated field; and 5) neither in school nor working, regardless of labour force status.
- Hourly salary: those employed full or part time and reporting an hourly wage of between \$2 and \$100.

#### **Further education variables**

- These include institution and credential type, program of study, and name of institution entered, and are reflective of a student's status during a specified reference week six months after graduating. This may lead to an underestimate of a transfer rate, particularly for students who graduate in the fall term since their reference week would be in June/July, a non-traditional enrolment semester.
- Transfer experience and perceptions: Includes reported amount of transfer credit; relatedness of university program entered to program of graduation; reasons for furthering their education. These questions are asked only of those enrolled in full-time programs.

More than 70% of graduates from Ontario's two-year ECE diploma program (MTCU code 51211) responded to the survey, for a total sampling of 18,165 respondents for the years 2007 to 2014.

## Institutional-level analysis

The institutional level of analysis focuses on Seneca College's ECE diploma program. It examines the impact of sociodemographic and academic factors on student transfer aspirations and transfers to university.

**Analysis sample:** Seneca offers several ECE-related diploma programs, two of which are excluded from the foregoing institutional-level analysis – the intensive, two-semester Early Childhood Education (program code ECEE)<sup>10</sup> and the three-year Child Development Practitioner (program code ECEF) – because of their unique points of entry. The two-semester program is for students who hold a bachelor of education degree (primary/junior specialization) upon entry; applicants are not required to complete an English placement test or the entering student survey. The Child Development Practitioner program is an apprenticeship program for those already working in the ECE field; applicants do not apply through OCAS and do not complete placement tests or the entering student survey. Since the graduate sample was restricted to those who had completed both the entering student survey and the Graduate Satisfaction Survey graduates of these two programs were excluded. For ECE entrants, the sample consisted of 5108 students who started between 2002 and 2014. Of ECE graduates, 81.4% completed the entering student survey, and 59% completed both, for a final sample size of 1503. This subset of graduate records was linked with Seneca's student information system, which contains data on high school performance, grades and enrolment status at

<sup>&</sup>lt;sup>9</sup> Variables derived from the MTCU Graduate Satisfaction Survey codebook and data set were used for labour market variables.

<sup>&</sup>lt;sup>10</sup> The ECEE program is not currently being offered.

Seneca, and postal code. The graduate's postal code was linked to the 2006 Census to determine neighbourhood income (Figure 2). A master ID was assigned to match as many records between the data sets as possible and to remove duplicates. This process entailed verifying a student's identity using a combination of first name, last name, date of birth, and postal code, as well as the alternate IDs already identified within the College's system. For details on the ECE sample used for analysis, see Appendix 1.





**High school records:** For every Seneca student who attended an Ontario high school, the College's student information system contains one record for every high school course the student took from Grade 9 through to Grade 12 (or Ontario Academic Courses, OAC<sup>11</sup>). The subset used for this study's analysis included only those students who had a minimum of six courses from Grade 11, 12, or OAC. The overall senior high school average was calculated from all Grade 11 and 12/OAC course grades. To get a sense of whether the student struggled in high school, the total number of Grade 11 or 12 courses failed was also calculated. Two variables were created to take into consideration whether a student took a mainly university preparatory or college preparatory course stream, defined as "mostly U" or "mostly C", respectively. The variable "mostly U" was defined as having a minimum of half of Grade 11 and 12 courses that were of the college preparatory type (C). For high school transcripts predating the double cohort, courses from the previous "Advanced" stream were considered university preparatory, while those from the "General" stream were considered college preparatory. Additionally, an "eligible for admission to an Ontario university" variable was created. For university admission, Ontario high school students are required to have at least six Grade 12 U or M

<sup>&</sup>lt;sup>11</sup>The former Ontario high school curriculum (OS:IS) contained a 5<sup>th</sup> year (OAC) which was phased out in 2002. The graduating class of the final phase-out year was labelled the "double cohort", since it comprised both 4 and 5 year graduates.

courses (or 6 OAC pre-2002), with the admission average at the discretion of the institution. A review of entrance high school averages reported by Ontario universities in Common University Data Ontario (CUDO)<sup>12</sup> indicate that the minimum reported secondary school average was approximately 70%. Therefore, high school students were considered to be eligible for university entrance if their high school average was at least 70% in their top six Grade 12 U/ M or OAC courses.

**Neighbourhood income:** For a proxy of each student's household income, the student's permanent postal code was matched to household income data from the 2006 census for students from Ontario only. Therefore, international students and students from outside Ontario were excluded from this analysis. For international students, even if they did have an Ontario "permanent" address on record, it would not reflect the income level of the neighbourhood in which they were raised. Using the six-digit permanent postal code in the College's student information system, students from Ontario were assigned to a 2006 Dissemination Area (DA) using the Statistics Canada postal code conversion file (PCCF). If a student's permanent postal code was missing or invalid, the Ontario high school postal code was used. A student's neighbourhood income group was derived by splitting the DAs<sup>13</sup> into terciles of low, medium and high income based on the average pre-tax household income for Ontario households.

**English-language placement testing:** Most entering students at Seneca, depending on the program, are required to complete an English-language placement test (comprising a short essay) to assess writing proficiency, and a standardized test (Accuplacer) to assess reading comprehension. Based on the test results, students are placed in one of the following English-language categories/programs:

- Non-credit English for English Language Learners (ELL). Courses offered at three levels of proficiency below college-level English.
- Non-credit English for native-English speakers. Below college level.
- College-level English (credit). Required for all certificate/diploma programs.
- Degree-level English. Required for some degree programs.
- Exempt from college-level English.

For the purposes of this study, three categories of English-language proficiency were created including: 1) below college-level English – ELL; 2) below college-level English (native English speakers); and 3) at or above college-level English.

**Entering-student survey:** During the mandatory placement testing, all Seneca students must complete a background survey. This survey inquired into the following variables:

- University aspirations upon entry to the College: "After graduation from my program, I plan to..."
- Previous university: "The last school I attended was..."
- First language: "The language I learned first was..."
- Whether either parent has attained a university degree: "The highest level of education completed by my father/guardian is..." (includes a separate question for mother)

<sup>&</sup>lt;sup>12</sup> See the Common University Data Ontario website at http://cudo.cou.on.ca/

<sup>&</sup>lt;sup>13</sup> In Ontario, the average DA comprises 236 economic families.

In cases where two or more complete surveys exist, the earliest record was used to reflect a student's true entering status. The parental education question was initiated in 2006, and therefore was not used in the regression analysis, however descriptive results are provided. The "previous university" variable is limited because entering students are only asked about the last school they attended and not whether they have ever attended university or have completed a credential.

**College performance:** Full transcripts of all Seneca students who had ever registered in ECE programs were extracted from the College's student information system. Overall GPA was calculated from the average of all courses ever taken at Seneca which had a credit value. GPAs were grouped into three categories including <3.0, 3.0 to 3.5, and greater than 3.5. A GPA of less than a 3.0 was chosen since it is the cut-off for transfer to most university programs. Since the focus of this study is on transfer to university, courses that may have been taken prior to the ECE credential were included in the overall GPA, because they remain a part of the student's transcript when applying. Seneca courses that were completed after graduation from ECE were not included.

**York-Seneca database:** York University, Seneca's largest transfer partner, collaborated with the College on a project to link all students who attended both institutions between 2001 and 2012. Details on the creation of the data set and derived variables are available in a forthcoming report (Smith et al., forthcoming). This data set was used for the current project, specifically for ECE graduates who attended York between 2001 and 2012 and had graduated from Seneca's ECE program between 2007 and 2012. Measures obtained included status at York as of 2012 (graduated, in progress, discontinued), number of transfer credits provided by York, and York GPA (converted to percentage). In total, the data set comprises 472 Seneca ECE graduates who had attended York either before or after graduating from ECE.

# **Analytic methods**

Descriptive results are presented for the key variables in the analysis, including sociodemographic and academic characteristics of ECE entrants who aspire to university, as well as for those who graduate and ultimately transfer. To control for the independent effects of each variable, regression models were run with the binary outcomes of: 1) whether or not a student aspired to university at entry, and 2) whether or not the graduate transferred to university (degree and non-degree) or 3) whether or not the graduate transferred to a degree at college or university. Multiple models were run with various subgroups included to avoid multicollinearity. For example, high school grades and Seneca grades are highly correlated and therefore were entered in the same regression analysis. Both ordinary least squares (OLS) and PROBIT regressions were conducted (evaluated at the mean) and proved to be sign consistent and very comparable in magnitude – therefore only OLS regression results are shown.

# Results

# **Provincial analysis**

## **Provincial ECE labour market trends**

Figure 3 shows the education and labour market status of all ECE graduates for the years 2006–07 to 2013–14. The results show a steady increase, particularly since 2010, in the percentage of ECE graduates working in a related field, and a concurrent decline in the percentage of those furthering their education. The percentage of graduates working in a related field rose from 56% in 2010 to 68% in 2014,

whereas the percentage of graduates furthering their education fell from 22% to 16% over the same period. Based on this data, when taking into account the increase in the number of graduates, it is estimated that almost 1200 new graduates were employed in ECE-related jobs between 2007 and 2014, whereas the number furthering their education held constant (data not shown).





Figure 4 shows that relative to other college graduates, ECE graduates continually have had strong employment, a trend which has held despite much larger numbers of graduates entering the labour force rather than returning to school, as described above, and despite the 2008-09 recession. In contrast, non-ECE graduates have struggled since the 2008–09 recession, with more than twice the unemployment rate as ECE graduates.

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Figure 4. Unemployment rate for Ontario ECE graduates, 2007–2014

Note: Unemployment rate was calculated as the percent of respondents who indicated they were available and looking for work in the reference week. It is the inverse of the MTCU's KPI employment rate.

ECE graduates have maintained strong employment and made major gains in starting wages. Figure 5 shows that hourly wages have approached those of non-ECE graduates, increasing by 22% unadjusted for inflation since 2007, versus an increase of only 7% for non-ECE graduates over the same period. When adjusting for inflation,<sup>14</sup> hourly wages have increased by 8% since 2007, compared to a drop of 6% for non-ECE graduates. The increase in hourly wages of ECE graduates has outstripped the inflation-adjusted hourly wage for Ontarians aged 15 and over, which has increased by 3% since 2007.



Figure 5. Average hourly wages, ECE and non-ECE Ontario college graduates, 2007–14

<sup>14</sup> Calculated using the Ontario CPI, in 2007 dollars.

#### Provincial trends in ECE transfers to university

Figure 6 shows that the provincial transfer rate to university for ECE graduates dropped sharply during the period of study. It fell from 17% in 2006–07 to 6.2% in 2013–14, with much of the change occurring as of 2010. In contrast, the decrease in the provincial non-ECE transfer rate was much less, from 7.5% to 5.6%, with much of the change occurring recently between 2011-12 and 2013-14. Between 2006-07 and 2010-11, ECE had the highest volume of transfers to university of any Ontario college program. However, by 2013-14, it had fallen to a fifth-place ranking (analysis not shown). Even with this large decline, the transfer rate to university for ECE programs continues to be higher than the system wide non-ECE average.



# Figure 6. Percentage of ECE and non-ECE Ontario graduates transferring to university, 2006–07 to 2013–14

Since the Graduate Satisfaction Survey asks about the graduate's activity during a specific reference week six months after graduation, fall graduates in particular are less likely to be enrolled in university over the summer months. As the share of fall and summer ECE graduates comprise a significant portion of the total graduates (13% and 17% respectively), it is important to break out the transfer rates by term. The results clearly show a higher transfer rate for winter graduates, who can follow a more traditional university enrolment pattern of a fall entry point (Table 2).

Table 2. Percentage of ECE and non- ECE Ontario graduates transferring to university, by term o
graduation, 2006–07 to 2013–14

Term graduated	Program	2007	2008	2009	2010	2011	2012	2013	2014
Summer	Non-ECE	6%	6%	5%	5%	5%	5%	4%	4%
	ECE	8%	12%	11%	8%	6%	5%	5%	4%
Fall	Non-ECE	3%	2%	3%	3%	2%	2%	3%	2%
	ECE	2%	2%	2%	2%	3%	3%	1%	2%
Winter	Non-ECE	9%	8%	9%	8%	8%	8%	8%	7%
	ECE	21%	21%	20%	20%	16%	13%	11%	8%

## Institutional-level analysis: Seneca as a case study

#### **Characteristics of entering ECE students at Seneca**

Because the decline in transfer rate is likely occurring as a result of changing class composition as well as external factors, the study examined how aspirations to university, and previous university experience, have changed among Seneca entrants. The entering classes from 2002–03 to 2014–15 were analyzed. Figure 7 shows a continual increase since 2008 in the percentage of Seneca's ECE students who indicated their last school was university, from 6% to 18%. Some of this increase is due to the increase in international students entering ECE, who often have previous university experience<sup>15</sup>, with 37% of international students having attended university previously, compared to 7% of non-international students. That said, the share of non-international entrants with previous university has also increased, doubling from 5.5% to 11% since 2009.





Over the same time period, the rate of entering students with plans to attend university after graduation dropped dramatically, accompanied by a large increase in the rate of those with plans to enter the workforce (Figure 8). The effect of the double cohort is clearly evident in 2003–04, when the rate of graduates planning to attend university increased from 57% to 71%, before dropping back to 62% the following year. Likely these are students who either chose the college-to-university transfer route, or were not accepted directly to university. Between 2004 and 2009, approximately 60% of the entering class had aspirations for university after graduation, which then steadily dropped to 35% by 2014. The share of those interested in employment after graduation increased dramatically from 26% to 46%. A

<sup>&</sup>lt;sup>15</sup> The share of international students entering ECE increased dramatically, from 2% in 2002 to 19% in 2014, with most of the increase occurring in 2013 and 2014.

large share of entrants also had plans for a Seneca degree, however this does not compensate for the decrease in aspirations for university.



Figure 8. Plans for post-graduation, percentage of entering ECE students, Seneca students, 2002–03 to 2014–15

To determine whether the large increase in ECE graduates with previous university was responsible for the decrease in aspirations for university, the study compared two groups of entering students – those with previous university and those with none (Figure 9). As expected, those with previous university were far less likely to plan for further university. However, the large increase in plans for employment and the associated decrease in plans for university still hold for the group with no previous university.

Note: Categories not shown include other college programs and "other" plans.





#### Who aspires to university?

Figures 10 and 11 show the profiles of all entering ECE students with plans for university for the years 2002 to 2015. Younger students, Canadian citizens, and those who report English as their first language were more likely to plan to transfer to university, whereas parental education and income level were similar for those who aspired and those who did not. In addition, those who were placed in below college-level English for non-native English speakers had lower aspirations for university. Entering students with high school grades under 70% and those who had failed any high school courses were more likely to plan to attend university than those with high school grades over 70% and those with no high school failures. An explanation for this is evident. The group with a stronger high school performance are also more likely to have already attended university, and are thus less likely to be interested in returning.

Of the group with no previous university, 48% of those who aspired to university took mainly university prep courses in high school, compared to 35% of those who did not aspire to university. GPA played a role: 57% of those who aspired had a high school GPA of less than 70%, compared to 51% of those who did not aspire. These findings suggest that for some ECE students, aspirations started in high school, but academic performance prevented them from attending university.



Figure 10. Sociodemographic characteristics of entering Seneca ECE students with plans for university, 2002–03 to 2014–15

Note: Parental education was collected only for ECE students who entered the College after 2006; neighbourhood income was reported only for domestic students with an Ontario permanent address.





Note: High school information only for those with Ontario HS records, with a minimum of 6 Grade 11 or 12 courses.

#### **Regression analysis: aspirations for university**

To examine factors that contributed to entering students' aspirations for university, an OLS regression was performed (Table 3). To look at the effects of high school grades and neighbourhood income, only students from Ontario with Ontario high school records were included in this analysis. The results showed that older students and those whose first language was not English were less likely to aspire to university when they began their program. Entrants who had taken university preparatory courses in high school were 11% more likely to aspire to transfer. Conversely, entrants with higher grades in high school were less likely to aspire to transfer.

In terms of a time trend, the effects have been variable. The effect of the double cohort is seen in the increase in entrants' aspirations in 2003 relative to 2002.<sup>16</sup> The 2008 and 2009 entrants had significantly higher university aspirations compared to the 2002 entrants, with the 2013 and 2014 entrants having a significantly lower aspiration rate.

<sup>&</sup>lt;sup>16</sup> The 2002-03 high school graduates in Ontario comprised the double cohort, the year that the fifth year of high school was phased out. Therefore, this group faced increased competition for university entry, and therefore planned to attend college first and then transfer to university rather than go directly to university.

Reference Group	Variables	
Ref: non-CDN	CDN Citizen	-0.028
citizen		(0.031)
Age at Entry (Ref:	20-24 y	-0.160***
Under 20 y)		(0.020)
	25+ y	-0.452***
		(0.032)
Ref: ELL	English first language	-0.041**
		(0.017)
Census	Mid Income	0.005
neighbourhood		(0.018)
income (Ref: Low	High Income	0.013
income)		(0.019)
English Placement	Placed below –non ELL	0.016
(Ref: College		(0.016)
English)	Placed below -ELL	-0.065
		(0.037)
Ref: Not Univ.	Last school university	-0.081
		(0.042)
Ref: Mostly college	HS mostly univ. prep	0.105***
prep		(0.016)
High School avg.	70-80%	-0.043***
(Ref: < 70%)		(0.016)
	>80%	-0.110***
		(0.030)
Year Entry (Ref:	2003	0.152***
2002)		(0.046)
	2004	0.080
		(0.045)
	2005	0.084
		(0.043)
	2006	0.078
		(0.044)
	2007	0.084
		(0.043)
	2008	0.126***
		(0.044)
	2009	0.091**
		(0.044)
	2010	0.053
		(0.044)
	2011	0.067
		(0.044)
	2012	-0.041
		(0.043)
	2013	-0.110**
		(0.045)
	2014	-0.092**
		(0.047)
Constant		0.631***
		(0.052)
Observations		4,035
R-squared		0.097

#### Table 3. Regression model: influencers on aspirations for university, at entry (2002-2014)

Note: Robust standard errors in parentheses; \*\*\* p<0.01; \*\* p<0.05; International students excluded to enable analysis of HS records and neighbourhood income.

#### Academic outcomes by aspirations

A detailed analysis of the effect of university aspirations on final grades and on whether a student graduates is beyond the scope of this study, and therefore a preliminary descriptive analysis was performed. Demonstration of a link between aspirations and academic performance is somewhat problematic since the group with previous university also has higher high school grades and performs better at Seneca, but is less likely to aspire to university. Additionally, older students have lower university aspirations, independent of other factors. Therefore, this preliminary descriptive analysis is restricted to students who started the program when they were under 20 years of age. The results show the following: of these younger entrants, 43% of those with aspirations for university obtained a GPA above 3.0, compared with 36% of those without aspirations (Table 4). Those with aspirations for university were slightly more likely to graduate from ECE.

	<b>Seneca GPA</b> (% of row total)			Graduation Rate (%)
	<3.0	3.0–3.5	>3.5	Graduated within 4 years
Did not aspire to university	63.6	20.8	15.6	59.5
Aspired to university	57.4	26.2	16.4	63.7
Total	59.6	24.2	16.1	62.4

#### Table 4: Relationship between aspirations for university, grades, and graduation rate, Seneca College

Notes: Seneca GPA results are for all entrants between 2002 and 2014, however only entrants between 2002 and 2010 were included for graduation rate analysis, to allow for four years to graduate (2x standard program duration of 2 years). Both sets of results are for ECE graduates who entered at less than 20 years of age.

#### Transfer to university: From aspirations for university to reality

Figure 12 shows the share of the graduating ECE class who had plans for transfer when they started their studies and whether they followed through on their initial intention. Overall, the percentage of ECE graduates from Seneca who transferred to university has fallen, from 31% in 2007 to 6% in 2014. This decrease is a result of declining aspirations for university in the entering student class, as well as a reduced transfer rate to university for those who initially aspired to university. For the 2006–07 graduating class, 28% of all graduates had both planned to attend university at entry and followed through by enrolling in university within six months. This rate dropped dramatically by 2014; only 4% of the graduating class both initially planned to transfer and followed through on those plans.



Figure 12. Percent of Seneca ECE graduates who transfer to university, by initial aspirations, 2007–14

Table 5 shows the transfer outcome based on whether the graduate had initially planned to transfer or not, broken down by semester of graduation. Whereas in the graduating class of 2007, 42% of those who had planned to attend university actually did so, only 10% of graduates from each of the 2012–2013 and 2013–14 classes converted their aspirations. The rate has been consistently low (in the 2% of graduating class range) for those who upon entry had not planned to transfer but ultimately did so. Focusing on the traditional term for graduation (winter), 54% of the graduating class of 2007 who had planned to transfer did so within six months, dropping dramatically to 13% in 2014.

		2007	2008	2009	2010	2011	2012	2013	2014
SUMMER	% with aspirations who went	36%	69%	40%	16%	16%	14%	23%	5%
	% without aspirations who went	20%	0%	0%	0%	12%	0%	0%	3%
FALL	% with aspirations who went	10%	10%	4%	3%	0%	11%	3%	8%
	% without aspirations who went	0%	0%	4%	5%	0%	6%	3%	0%
WINTER	% with aspirations who went	54%	45%	42%	50%	37%	24%	10%	13%
	% without aspirations who went	9%	16%	9%	8%	4%	9%	4%	8%
ALL TERMS	% with aspirations who went	42%	37%	33%	31%	25%	19%	10%	10%
	% without aspirations who went	8%	9%	6%	6%	4%	7%	3%	4%

Table 5. Transfer to university by initial aspirations, 6 months after gradua	tion, by semester, 2007-
2014	

#### Who transfers to university?

Figures 13 and 14 show differences in transfer rate by various characteristics, and across time. The transfer rates for the graduating classes of 2007–2010 were combined and compared with those of the

2011–2014 graduating classes, based on several academic and sociodemographic characteristics. For both time periods, older students and international graduates were far less likely to transfer. Graduates who had at least one parent with a degree were somewhat less likely to transfer. Before 2011, graduates from higher-income neighbourhoods were more likely to transfer, a result that disappeared post-2010. The decline in transfer rates is uniform across most of the socio-demographic groups, resulting in approximately more than halving of the rate across each subgroup when pre-2011 graduates are compared to their post-2010 counterparts.



Figure 13. Transfer rate by sociodemographic characteristics, 2007–2010 vs 2011–2014 graduating classes

Note: Parental education was collected only for those students who entered Seneca College after 2006. Neighbourhood income was reported only for domestic students with an Ontario permanent address.

In terms of academic background, high school performance had no apparent influence on who transferred (Figure 14). Those who placed below college-level English for English language learners had a much lower transfer rate. As expected, students with previous university attendance were far less likely to continue on to university after graduation. Aspirations upon entry played a large role, particularly in the pre-2011 period. Graduates with a Seneca GPA below 3.0, the minimum required for many articulation agreements, were less likely to transfer. As seen previously with the sociodemographic characteristics, the dramatic time-effect was similar across all subgroups.



Figure 14. Transfer rate by academic background and plans for university, 2007–2010 vs 2011–2014 graduating classes

## **Regression analysis: transfer**

To determine which of the individual factors independently influence the propensity for transfer to university or to a degree program at college or university, multiple regression models were run (Table 6) for the Seneca student population. The explanation and results for each model are as follows:

1. All ECE graduates (Model 1). Since high school grades and neighbourhood income terciles of students who originated from outside Ontario were incompatible with students from Ontario, a model was run that included all ECE graduates without those characteristics. The results showed that once other factors were taken into consideration, being an international student did not have an independent effect on transfer, probably because international students have lower university aspirations for transfer. However, the descriptive analysis also showed that being younger, not having attended university previously, and achieving a Seneca GPA greater than 3.0, each independently increased the likelihood of continuing on to university. Graduates 26 years of age and older were 7% less likely to transfer to university than graduates under 22 years of age. The year of graduation also had a strong independent effect, with all graduating cohorts after 2010 having a significantly lower transfer rate, even when controlling for any potential cohort changes in the graduating class's composition.

- 2. Models 2 and 3. These models exclude international and non-Ontario Canadian students, but include neighbourhood income. To test for potential endogeneity of aspirations and other variables, models were run for those with (model 2) and without (model 3) the aspiration variable. The significant factors remained the same for both, and the coefficients changed only slightly, indicating that much of the effect of aspirations on transfer is largely independent of other individual characteristics in the model. Importantly, neighbourhood income did not affect transfer, and the rest of the academic and demographic results were similar to those described for model 1. As well, similar conclusions to those for model 1 regarding an independent time effect can still be drawn.
- 3. Since many researchers believe that the analysis of transfer rates should focus on the group that aspires to university, additional models were run using the same population, but with separate models for those who aspired to university and those who did not (results not shown). Within the group who did not aspire to university, placement in an ELL class, previous university, and graduating in the winter semester were the only significant factors. Unlike in all the other models, year of graduation, Seneca grades, or age had no effect. Within the population with plans to attend university, all the significant factors were the same as in model 3, with age being the one exception, which was insignificant. Those who had previously attended university were 14% less likely to continue on after graduation. Seneca grades also were a large determinant of who transferred; those with a GPA between 3.0 and 3.5 were 11% more likely, and those with a GPA greater than 3.5 were 16% more likely, compared to those with a GPA of less than 3.0. These coefficients are larger than those in model 3. As well, the year of graduation and term of graduation had very strong effects, with all years post-2010 yielding significant estimates. Summer and winter graduates were much more likely than fall graduates to be attending university in the reference week.
- 4. Model 4. This model tests the effect of high school grades on transfer rates. High school grades were not included in a model with Seneca grades as they are highly correlated and may cause interpretation problems. Model 4 showed that high school grades and high school course stream did not affect transfer rates, unlike the strong effect of college grades seen in the other models. All other factors in the model were similar to those found in previous models, with the one exception being that previous university was no longer significant. This is likely the case since this model, unlike the ones previously mentioned, controls for academic background required for university entry. Some of the variation in transfer outcomes is being picked up in differences across students' high school characteristics.
- 5. Model 5. In contrast to all of the models described previously, model 5 takes into account the creation of college degrees. Instead of asking, "Did the student transfer to university?" model 5 asks, "Did the student transfer to a college or university degree program?" Similar to the outcome found in the other models, students with aspirations for university, older students, and those with higher grades were all more likely to continue on to a degree, with the effect size similar to that of graduates going on to any university. Interestingly, those from a high-income neighbourhood were 5% more likely than those from a low-income neighbourhood to continue on to a degree. This result could be spurious, or there could be variation in the type of credential that people of different socioeconomic backgrounds select into. Controlling for the same individual characteristics as in model 2, there is a statistically significant time effect from 2011 onward. This means that those graduating in recent years are still less likely to transfer, even

when taking into account the introduction of college degree programs. However, the size of time effects is diminished under this specification, which indicates that some of the decline observed in transfer to university is likely being absorbed into college degree programs.

6. Other models. Since age group and Seneca GPA were both such strong influencers of the transfer rate, the robustness of the results was tested by running the models for domestic students separately for each age group and Seneca GPA group (Table 7). The results show that although aspirations remain significant across age groups and GPAs, they have a higher influence in the younger group of students who were under 22 years of age, and in the group of students whose GPAs were higher than 3.5. Aspirations had less of an effect in the oldest age group and in the group with the lowest grades. For the oldest age group (26 years old and over), the models were fairly weak, as most of the estimates were statistically insignificant, including year of graduation, college grades, and previous university attendance. These results indicate that on its own, being an older graduate leads to a lower transfer rate. Similarly, for those graduating with a college GPA of less than 3.0 (considered the cut off for many universities), only aspirations and year of graduation had an influence, and the model itself had a  $R^2$  of only .097. Largely, these models confirm this study's earlier findings regarding the significance of time and aspirations on eventual transfer to university, and demonstrate that these factors matter more for two groups who transfer, those with higher grades and younger graduates than for their counterparts.

		All students*	dents* Seneca ECE graduates from Ontario					
Reference Group	Variables		Transfer to a	any university		Transfer to any degree		
· · · ·	Regression Model	(1)	(2)	(3)	(4)	(5)		
Ref: Non-int'l	International	0.004						
		(0.029)						
Ref: No plans	Plans for university	0.163***	0.164***		0.157***	0.151***		
for univ.		(0.018)	(0.019)		(0.021)	(0.019)		
Age (Ref: under	22-25	-0.024	-0.018	-0.044	-0.039	-0.031		
22 yrs)		(0.023)	(0.023)	(0.024)	(0.025)	(0.025)		
	26+	-0.073***	-0.066***	-0.136***	-0.054	-0.077***		
		(0.024)	(0.025)	(0.025)	(0.031)	(0.027)		
Ref: ELL	English first language	-0.024	-0.025	-0.028	-0.018	-0.016		
		(0.022)	(0.023)	(0.023)	(0.026)	(0.023)		
Census	Mid income		-0.004	-0.014	0.006	0.020		
neighbourhood			(0.027)	(0.027)	(0.031)	(0.027)		
income (Ref:	High income		0.027	0.027	0.035	0.055**		
low income)			(0.027)	(0.027)	(0.031)	(0.026)		
English	Placed below – non ELL	-0.030	-0.028	-0.020	-0.034	-0.014		
placement (Ref:		(0.022)	(0.022)	(0.023)	(0.025)	(0.023)		
College English)	Placed below – ELL	-0.060	-0.059	-0.064	-0.062	-0.054		
		(0.031)	(0.034)	(0.034)	(0.044)	(0.033)		
Ref: Not Univ.	Last school university	-0.089***	-0.105***	-0.119***	-0.071	-0.049		
		(0.026)	(0.030)	(0.031)	(0.045)	(0.035)		
Seneca GPA	3.0-3.5	0.082***	0.080***	0.075***		0.068***		
(Ref: <3.0)		(0.022)	(0.023)	(0.023)		(0.023)		
	3.5+	0.109***	0.120***	0.113***		0.101***		
		(0.026)	(0.027)	(0.027)		(0.028)		
Ref: Mostly HS	Mostly HS univ. prep				0.007			
college prep	70.00%				(0.024)			
High school avg.	/0-80%				-0.015			
(Ref: < 70%)	. 000/				(0.024)			
	>80%				-0.044			
Veen and usted	2000	0.004	0.012	0.012	(0.038)	0.025		
(Pof: 2007)	2008	-0.004	-0.012	-0.012	-0.050	-0.035		
(Ref. 2007)	2009	-0.036	(0.045)	_0.039		(0.044)		
	2003	(0.046)	(0.046)	(0.048)	(0.052)	(0.021		
	2010	-0.048	-0.047	-0.046	-0.069	-0.071		
	2010	(0.044)	(0.045)	(0.046)	(0.050)	(0.044)		
	2011	-0.103**	-0 104**	-0 107**	-0 141***	-0.083		
	2011	(0.042)	(0.043)	(0.044)	(0.048)	(0.044)		
	2012	-0.109***	-0.106**	-0.110**	-0.145***	-0.103**		
		(0.042)	(0.043)	(0.044)	(0.048)	(0.043)		
	2013	-0.182***	-0.185***	-0.202***	-0.229***	-0.102**		
		(0.039)	(0.040)	(0.041)	(0.045)	(0.043)		
	2014	-0.138***	-0.151***	-0.173***	-0.194***	-0.120***		
		(0.039)	(0.040)	(0.041)	(0.046)	(0.041)		
Term graduated	Summer	0.117***	0.129***	0.133***	0.140***	0.115***		
(Ref: Fall)		(0.026)	(0.028)	(0.028)	(0.031)	(0.029)		
	Winter	0.160***	0.170***	0.168***	0.206***	0.152***		
		(0.018)	(0.019)	(0.019)	(0.021)	(0.020)		
Constant		0.063	0.041	0.178***	0.120**	0.028		
		(0.048)	(0.053)	(0.052)	(0.058)	(0.054)		
Observations		1,486	1,406	1,407	1,195	1,406		
R-squared		0.175	0.175	0.138	0.158	0.133		

## Table 6: Regression models for university or degree attendance after ECE graduation

Note: Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05; \*Includes Seneca's ECE graduates from Ontario and elsewhere.

			Age			Seneca GPA	
Reference Group		Under 22	22 to 25	Over 25	GPA <3.0	GPA 3.0 to 3.5	GPA > 3.5
Ref: No plans	Plans for university	0.192***	0.145***	0.087**	0.088***	0.171***	0.214***
for univ.		(0.033)	(0.029)	(0.040)	(0.029)	(0.040)	(0.046)
Age (Ref: Under	22-25	1			0.044	-0.075	-0.046
22 yrs)					(0.033)	(0.043)	(0.058)
	26+	1			0.042	-0.140***	-0.060
					(0.044)	(0.050)	(0.071)
Ref: ELL	English first language	-0.003	-0.045	-0.024	0.060*	-0.062	-0.113**
		(0.039)	(0.037)	(0.030)	(0.034)	(0.046)	(0.057)
Census	Mid Income	-0.025	0.017	-0.006	-0.022	0.028	0.035
neighbourhood		(0.052)	(0.043)	(0.028)	(0.047)	(0.051)	(0.069)
income (Ref:	High Income	0.033	0.032	0.008	-0.024	0.050	0.111
Low income)		(0.050)	(0.042)	(0.033)	(0.045)	(0.051)	(0.068)
English	Placed below –non ELL	0.023	-0.117***	-0.004	-0.014	-0.010	-0.040
Placement (Ref:		(0.036)	(0.036)	(0.035)	(0.038)	(0.044)	(0.047)
College English)	Placed below -ELL	-0.136**	-0.117	-0.042	0.021	-0.043	-0.108
		(0.066)	(0.063)	(0.035)	(0.063)	(0.075)	(0.158)
Ref: Not Univ.	Last school university	-0.229	-0.141**	-0.037	0.055	0.078	-0.117**
		(0.136)	(0.059)	(0.033)	(0.167)	(0.124)	(0.056)
Seneca GPA	3.0-3.5	0.129***	0.045	-0.034			
(Ref: <3.0)		(0.038)	(0.035)	(0.027)	1		
	3.5+	0.160***	0.105**	0.040	1		
		(0.045)	(0.047)	(0.035)			
Ref: Mostly	Mostly HS univ. prep				0.028	0.036	-0.121**
college prep					(0.034)	(0.043)	(0.056)
High School avg.	70-80%				0.041	-0.083	-0.092
(Ref: < 70%)					(0.038)	(0.043)	(0.056)
	>80%				0.035	-0.075	-0.180**
					(0.072)	(0.070)	(0.074)
Year Graduated	2008	-0.010	-0.027	0.166**	-0.077	0.013	-0.041
(Ref: 2007)		(0.075)	(0.065)	(0.079)	(0.095)	(0.081)	(0.085)
	2009	-0.021	-0.046	0.011	-0.131	0.047	-0.059
		(0.078)	(0.069)	(0.025)	(0.096)	(0.086)	(0.097)
	2010	0.050	-0.094	0.078	-0.094	0.005	-0.112
		(0.078)	(0.065)	(0.046)	(0.093)	(0.078)	(0.098)
	2011	-0.109	-0.105	0.055	-0.134	-0.085	-0.146
		(0.072)	(0.064)	(0.041)	(0.090)	(0.077)	(0.091)
	2012	-0.149**	-0.071	0.063	-0.177**	-0.059	-0.146
		(0.072)	(0.066)	(0.034)	(0.087)	(0.080)	(0.095)
	2013	-	-0.114	0.009	-0.207**	-0.193**	-0.243***
		0.259***					
		(0.065)	(0.065)	(0.023)	(0.085)	(0.076)	(0.083)
	2014	-	-0.144**	0.059	-0.193**	-0.124	-0.160
		(0.070)	(0.062)	(0.020)	(0.096)	(0.079)	(0.090)
Term Graduated	Summer	0.170***	(U.U03) 0 197***	-0.019	(U.U0D) 0 115***	0.076)	(U.U09) 0 222***
(Ref: Fall)	Julillei	(0.040)	(0.042)	-0.010	(0.040)	(0.054)	(0.022)
	Winter	0.049	0.042)	0.033	0.040	0.202***	0.002)
	vv////Cl	(0.028)	(0 032)	(0.020	(0.035)	(0.038)	(0.044)
Constant		-0.155	0.032)	-0.026	0.032	0.119	0.275**
Constant		(0.086)	(0.076)	(0.020	(0 100)	(0.096)	(0 127)
Observations		583	570	253	422	465	308
R-squared		0.215	0.140	0.121	0.102	0.167	0.272

## Table 7: Regression models for university attendance after ECE graduation, by age group and GPA

Note: Robust standard errors in parentheses; \*\*\* p<0.01; \*\* p<0.05

#### After transfer: student experience and success

Outcomes of ECE graduates moving between Seneca College and York University As described in a forthcoming report on the movement of students between York and Seneca over the years 2000 to 2012, students' pathways are complex and varied (Smith et al., forthcoming). Smith and others created a linked York/Seneca administrative database that contained any student who had transferred between the two institutions in either direction between 2000 and 2012. In order to determine whether a Seneca ECE graduate had previously attended York or subsequently transferred to York after graduation, records were matched for Seneca's ECE graduates who completed ECE during the years 2007 to 2012. Graduates from ECE who had continued on to Seneca's BCD program were also analyzed since, as described in the introduction, a contributing factor in the decline in transfer to university was the introduction of related college degree programs in child development.

Table 8 and Figure 15 show the number and percentage, respectively, of each ECE graduating class that had ever enrolled in a York University degree program or in Seneca's BCD program. As seen previously in the survey data, the transfer rate of ECE graduates to York University has been dropping dramatically, whereas the rate for students with prior York experience has been increasing. Over one third of Seneca's ECE 2007 graduating class continued on to York by 2012, with the vast majority transferring directly (Table 9). By 2012, only 8% of the graduating class had continued to York directly after graduating. With the introduction of the BCD program in 2008, a significant share of ECE graduates opted to transfer into that program rather than continue on to York to complete a degree. Additionally, the merging of the two institutions' data sets show that there were 23 ECE graduates who transferred to York subsequently returned to Seneca's BCD program during the 2007 to 2012 time period. Results clearly show the sharp decline in the numbers of ECE graduates continuing on to York, relative to the increase in numbers continuing on to Seneca's degree program.

		Seneca ECE Graduating Year							
		2007	2008	2009	2010	2011	2012		
Transfer in	Attended York pre-ECE	11	20	18	18	20	28		
Transfer	Seneca BCD	4	20	26	14	25	46		
post ECE	York (any degree)	87	80	57	53	40	27		
	Seneca ECE- York -BCD	2	8	5	4	3	1		
	Total # transfers	93	108	88	71	68	74		
Non-	Not observed at York or	161	194	176	192	207	233		
transfer	BCD								
	# ECE graduates	265	322	282	281	295	335		

Table 8. Transfer of Seneca's ECE graduates into and from degree programs at York University and Seneca College by 2012, 2007–12 graduates

Note: As described in methodology; excludes apprenticeship ECE (ECEF) and Intensive ECE (ECEE); graduates who are not observed at York or Seneca's BCD program could have transferred to another university or college, or another non BCD program at Seneca.

	Seneca ECE Graduating Year									
	2007	2008	2009	2010	2011	2012				
Direct to York	27%	24%	18%	19%	11%	8%				
Transferred to York 1 or more years later (by 2012)	7%	3%	4%	1%	3%	0%				

Table 9. Percentage of ECE graduates transferring directly versus non-directly to York University by2012

Figure 15. Percentage of ECE graduates transferring to York University and/or Seneca's BCD program by 2012, 2007–12 graduates



To determine whether the trend of ECE graduates entering BCD continues beyond the time period of the York-Seneca data set, transfer rates from ECE to BCD by fall of 2014 were calculated (Table 10). Results show that the trend of a high rate of transfer to the degree program has continued.

Table 10. ECE graduates transferring to Seneca's Bachelor of Child Development degree program	by
fall 2014, 2007–14 graduates	

	2007	2008	2009	2010	2011	2012	2013	2014
# entering BCD by Fall 2014	7	28	32	20	31	52	49	52
# ECE graduates	265	322	282	281	295	335	354	411
% BCD by Fall 2014	3%	9%	11%	7%	11%	16%	14%	13%

Note: Includes those who entered a different program prior to attending ECE

The York-Seneca data set was used to analyze the amount of credit provided to ECE graduates who had graduated between 2007 and 2012 and transferred by 2012 (Table 11). The articulation agreement for Seneca ECE graduates continuing on to York University is 30 credits (the equivalent of one year), provided their Seneca GPA is a minimum of 3.0. Table 12 shows that, overall, this agreement has been followed, with 87% of transfer students receiving the prescribed 30 credits, 7% receiving more, and 7% receiving less.

# of credits provided	% of transfer students
none	4.9
1 to 15	1.6
16-29	0
30	86.7
31 -40	3.0

3.8

Table 11. Number of transfer credits provided to Seneca ECE graduates transferring to York, 2007	'_
2012	

Table 12 shows the status of Seneca ECE graduates who continued at York by fall of 2012. Excluding those who entered York in 2012, 27% had discontinued their studies at York, 50% had graduated, and 23% were still enrolled. However, of the 87 students who discontinued at York, 19 returned to Seneca in the BCD program. Therefore, if those who switched to the BCD program were reclassified as continuers, the percentage of those who discontinued drops to 21%.

Table 12. Number of Seneca ECE graduates (2006–07 to 2011–12) who transferred to York by 2012, I	by
entry year at York	

Entry			In progress as of Fall	
year	Discontinued	Graduated	2012	Total
2006	2	3	0	5
2007	26	47	1	74
2008	30	59	2	91
2009	12	26	7	45
2010	13	22	32	67
2011	4	3	33	40
2012	0	0	45	45
Total	87	160	120	367

Note: 2006 data year includes only those who graduated from Seneca in August 2006

Table 13 shows that Seneca grades, as expected, are related to grades achieved after transfer. Graduates who transferred with a Seneca GPA of less than 3 attained a 63% average at York, compared with 69% and 73% averages for those with GPAs of 3.0–3.5 and >3.5 respectively.

>40

				In progress as of	
Seneca GPA		Discontinued	Graduated	Fall 2012	Total
<3.0	mean	51.0	70.0	70.0	62.8
	SD	18.7	5.6	7.0	15.4
	n	23	19	19	61
3.0-3.5	mean	63.5	71.8	70.0	69.4
	SD	8.6	6.0	6.4	7.5
	n	33	74	38	145
>3.5	mean	56.3	77.4	75.5	73.2
	SD	27.4	7.6	5.0	15.4
	n	19	67	18	104
Total	mean	57.8	73.9	71.3	69.4
	SD	18.7	7.3	6.6	12.8
	n	75	160	75	310

Table 13. Grades at York (%) for ECE graduates, by York status and Seneca GPA

Note: Excludes those whose first year of enrolment at York was 2012

In addition to achieving lower grades after transfer, ECE graduates with lower Seneca (sending) GPAs were less likely to graduate. Figure 16 shows that 42% of those with a Seneca GPA below 3.0 discontinued their studies compared to 21% of those with a GPA above 3.5. In contrast, 63% of ECE graduates with a Seneca GPA above 3.5 graduated from York in the time frame studied. However, it is interesting to note that a sizable percentage (29%) of ECE graduates with Seneca GPAs below 3.0 graduated from York.



Figure 16. Graduation status of ECE graduates who transferred to York University, by Seneca grades

Note: Excludes those who first year of enrolment at York was 2012

## **Provincial analysis: post-transfer pathways and experience**

In addition to data on graduates' labour market and further education outcomes, the Ontario Graduate Satisfaction Survey provides information on where the graduate was studying and in what program, six months after graduation. As well, the survey asks them about their reasons for continuing to further education, their perceived affinity with their current program and college program of graduation, and the amount of transfer credit they received.

#### **Transfer by institution**

Overall, the percentage of ECE graduates entering university degree programs has dropped sharply, while entry into college degree programs has increased (Figure 17). In the 2007–2010 period, 5% of all Ontario ECE graduates continued on to York, far outstripping the transfer rate to Ryerson, the next largest receiver of ECE graduates. By 2010, however, the transfer rate to York had dropped to 2%, a similar percentage as Ryerson's.<sup>17</sup> The growth of colleges as receiving institutions for ECE-related degree programs is evident; between 2011 and 2014, colleges received 1.3% of all ECE graduates in Ontario (15% of the total movement), compared with 0.6% in the 2011-2014 period.





<sup>&</sup>lt;sup>17</sup> George Brown College and Ryerson University have a consecutive diploma-to-degree program by which a student enters the program at George Brown, graduates with a diploma after two years, and continues directly into the third year of the Ryerson degree program. This articulation agreement partially explains why the drop in Ryerson's transfer rate is lower than those of other universities.

#### Transfer by program

The Graduate Satisfaction Survey asks graduates what program they entered after graduation, whether they consider it to be related to their college program, and how much transfer credit was provided. This study compared the survey results for the pre-2011 and the post-2010 periods. Figure 18 shows that ECE graduates continue to enter related programs in child studies, education, social sciences and the humanities. However, since 2011, graduates are more likely to continue into programs directly related to the study of children. The percentage of ECE graduates who reported continuing into education fields has plateaued, likely because of the continued weak demand for K-12 educators, the reduction in seats for teacher-education programs throughout Ontario, and a shift in focus from humanities/social sciences to more specialized child-related studies. Figure 19 further demonstrates this effect; the percentage of graduates reporting that their programs were "very related" increased from 45% to 54% over the two time periods. This tighter match aligns with the increase from 36% to 43% receiving greater than one year of credit (Figure 20).



Figure 18. University program area entered by ECE graduates (%), 2007–2010 vs 2011–2014 graduates



Figure 19. Reported relatedness of university program entered to early childhood education (%), 2007–2010 vs 2011–2014 graduates

Figure 20. Reported amount of credit received (%), 2007–2008 vs 2013–2014 graduates



Note: For this question, only the graduate survey years of 2007, 2008, 2013 and 2014 were available.

## **Reasons for transferring**

Graduates who transferred to university were asked about their reasons for doing so. Table 14 shows the motivations for the 2007–2010 and 2011–2014 periods. Although the major reasons have stayed the same, the 2.2% point drop in the reason "potential for higher income" aligns with the wage increases for ECE professionals discussed earlier. Most predominant, however, is the 6.4 percentage point drop in "needed for professional designation" as a reason for transfer. This latter finding aligns well with

changes in the ECE environment during this time period, i.e., regulation of the profession, and with the 3.6 percentage drop in "interest in pursuing a different field of study" as reason for transfer.

	2007-	2011-	% point
	2010	2014	change
More opportunities for career advancement	98.8	97.9	-0.9
To get diploma/certificate/degree	96.5	95.6	-0.9
Gain theoretical knowledge/ broader education	95.1	94.2	-0.8
Upgrade/improve skills	95.7	94.3	-1.4
Interest in further/ more in-depth training in field	92.5	93.8	1.3
Potential for higher income	94.3	92.1	-2.2
Needed for professional designation	82.6	76.2	-6.4
Encouragement from others (family members, friends, faculty)	78.0	77.6	-0.4
There was a formal transfer agreement between your previous and	69.4	70.6	1.2
your current program			
Interest in pursuing a different field of study	67.3	63.7	-3.6
No work/ job available in your field of study	39.7	39.0	-0.7
Company required/paid for it	19.0	16.4	-2.6

#### Table 14: Reasons for transferring to university, 2007–2010 vs 2011–2014 graduates

Note: Population includes ECE graduates who entered full-time university within 6 months after graduation

# Discussion

Early Childhood Education college programs have historically had one of the highest transfer rates to university in Ontario. However, provincial regulation of the profession in 2008, combined with Ontariowide implementation of full-day kindergarten, have served to make entry into the labour market a more appealing prospect for ECE graduates. Concurrent with these changes in the profession is a decrease in ECE transfers to university and an increase in demand by ECE graduates for related degree programs at colleges. Rather than disentangle the influence of each of these changes, this study evaluates their combined impact on the student profile and on graduates' pathways and experiences at both the provincial and institutional level.

# **Provincial level**

This study provides evidence of how changes in the ECE landscape have affected the labour market outcomes of ECE graduates at the provincial level. Between 2007 and 2014, there was a steady increase in the share of ECE graduates who found jobs related to their study program, a decrease in the number who returned to school (particularly university), and an increase in the ECE hourly wage. These trends were particularly evident since 2010. Motivations for university transfer have changed as well, aligning with regulatory changes in the profession and the labour market's response. Survey data show that students are less likely to cite "need professional designation" and "potential for higher income" as reasons for continuing on to university. In addition, the creation of related college degree programs has contributed to an influx of ECE graduates seeking an alternative degree-completion pathway.

Despite a large drop in the percentage of ECE graduates transferring to university, the provincial-level analysis suggests that other gains are being made, possibly as a result of Ontario's five-year investment

(initiated in 2011) to improve college-university partnerships, articulation agreements, and student advising services related to transfer.

## Institutional level

The provincial-level analysis provides a contextual overview of the impact of ECE changes on student transfer and the transfer experience. However, the isolation of underlying factors at an individual level requires more comprehensive data and analysis. This part of the study uses a variety of linked data sets at Seneca College and data from York University, Seneca's largest university partner. The institutional-level of analysis focuses on factors that may contribute to student aspiration for transfer, as well as factors that influence who transfers. Table 15 provides a summary of the significant influences on aspirations for university and transfer for the Seneca ECE entrants and graduates.

#### Influences on aspirations

Aspirations were studied since they are an important factor on who continues on in education and where. This study shows that ECE graduates with aspirations for university are more likely to be younger, to have achieved lower grades in high school, and to have enrolled in mainly university preparatory courses in high school. This may indicate that for a subset of students, aspirations for university began in high school when the required courses for university entrance were selected; however, these students' academic achievement levels were below that required for direct entry to university. Contrary to the results reported in other studies, this study showed that income level did not have an impact on who aspired to university. Other findings showed that graduates whose first language was English were more likely to aspire to university, but that English-language proficiency was not a factor.

An analysis of entering students showed an obvious drop in the share of students planning to attend university, particularly since 2010. However, when controlling for student composition changes, the regression analysis showed a decline only in the last two years of entering students. This finding demonstrates that the changing profile of entering students (older, with previous university experience), rather than external changes, was partially responsible for the decline. On the other hand, the share of aspirants who eventually transferred after graduation has dropped dramatically, indicating that they were likely influenced, while in their ECE program, by the expanded opportunities brought about by the changes within the ECE profession.

#### Influences on transfer

Even when controlling for sociodemographic and academic factors, the transfer rate to university for Seneca's ECE graduates has dropped significantly since 2010, relative to the rate for 2007 graduates. Although the introduction of related degree programs in Ontario colleges contributed somewhat to the decrease in transfer to university, its effect was minimal. The timing of the decrease coincided with the changes to the ECE profession in the late 2000s and was partially a consequence of the changing composition of ECE entrants. ECE has been progressively attracting older students with previous university experience, and these new entrants are more likely to aspire to enter the workforce after graduation than to attend university. Younger students and those without previous university continued to enter ECE with aspirations for transfer, but in recent years have been changing their intentions after entry, deciding to enter the labour force after graduation instead of transferring. Overall, aspirations for university after graduation and graduating since 2010, independent of demographic characteristics, were the most important influencers of transfer to university (Table 15). Higher college GPA increased the likelihood of transfer, but neighbourhood income, high school grades, and course selection were insignificant influencers.

Student characteristics	Aspirations for university (entrants from 2002-2014)	Transfer to university (graduates from 2007-2014)
Age < 26	Higher aspirations	Higher transfer
Status in Canada	No effect	No effect
Neighbourhood Income	No effect	No effect
HS GPA >70%	Lower aspirations	No effect
HS course type- univ prep	Higher aspirations	No effect
Previous university	No effect	Lower transfer
Language placement	No effect	No effect
First language is English	Lower aspirations	No effect
Aspirations for university		Higher transfer
Seneca GPA >3.0		Higher transfer
Year of graduation (recent)	Lower aspirations	Lower transfer

Table 15.	Significant	influencers of	on asp	irations a	nd transfer,	Seneca ECE	entrants an	d graduates

Note: Only significant results from the regression analysis shown.

#### **Post-transfer outcomes**

The third major piece of the institutional level analysis was to use a student-level data set (comprised of ECE graduates who had moved between York and Seneca) to track students who had either attended York before or after enrolling in Seneca's ECE program. This part of the study showed that over the years studied, between 4% and 8% of ECE graduates have previously attended York, a share that has increased over time. As with the Graduate Satisfaction Survey data, the administrative data show a sharp decline in transfer to York, but a large increase in those entering Seneca's Bachelor of Child Development program. ECE graduates who went on to York for the most part received the prescribed amount of credit, and performed well academically, particularly those who had performed well at Seneca.

# Conclusion

Ontario's college system overwhelming provides programming to prepare students for specific occupations, rather than to further their education.<sup>18</sup> Despite this, many students enter these programs with plans to transfer to a university degree. In response, institutions, students and governments have made the creation of a more seamless transfer system in Ontario a priority. In order to study the interaction of the labour market and the desire to transfer to university, ECE was used as a case study. ECE was an ideal choice since it is an occupational program with a high rate of university transfer, is the largest college program in Ontario, and is offered in all 24 colleges.

This paper has demonstrated that a student's decision to progress from a professional program like ECE into university is not made in isolation from external factors including labour market conditions and related college degree program offerings. Students respond to external events, and these events are typically complex and dynamic. The results of this study suggest that, even when controlling for

<sup>&</sup>lt;sup>18</sup> In a forthcoming report by the authors, it was found that only 10% of Ontario's college graduates are from programs classified as preparatory.

individual student characteristics that may influence transfer, transfer nevertheless declined as a result of, and concurrent with, the combined impact of changes to the ECE profession in Ontario (e.g. regulatory, implementation of full-day kindergarten). That said, labour market trends should continue

to be monitored to determine whether job prospects plateaued following the roll-out of full-day kindergarten across Ontario, and whether historic low wages for ECE practitioners in licensed day cares will improve as a result of provincial efforts to bring them closer to those of their counterparts in the public school system.

One of the major policy implications of this report is the difficulties involved with measures of transfer success. ONCAT, in concert with MTCU and others in the sector, is currently working on metrics for Ontario's Credit Transfer Accountability Framework to determine how well the transfer system is working. In the meantime, College Transfer Institutional Grants are distributed to colleges on the basis of the number of their graduates transferring to university in the current year. The results of the current case study, focused on ECE, demonstrate a limitation of this approach. Whereas, the vision of Ontario's credit transfer framework is to improve alignment and reduce duplication, this does not necessarily imply that an institution needs to increase its transfer rate to demonstrate progress. As was demonstrated in the case of ECE over the last few years, alignment appears to have improved, while transfer rates have declined dramatically, and labour market opportunities increased. Therefore, the decline in transfer was likely indicator of improved outcomes for students rather than a decrease in the performance of ECE transfer partnerships.

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## Appendix 1: Seneca College, ECE sample used for analysis

Total number of Seneca ECE graduates (exclude ECEE, ECEF)	2545
Entering student survey completions	2071
Graduate Satisfaction Survey respondents	1977
Respondents of both entering survey and graduate survey	1503
Missing one or more fields from BDAT	17
Missing/Invalid postal codes	38
Sample used in regression analysis I	1448
International students	56
Sample used in regression analysis II	1392
Those with incomplete high school records	211
Sample used in regression analysis III	1181