Postsecondary Education Participation of Under-Represented Groups in Ontario: Evidence from the SLID Data

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Section 1: Introduction

Access to postsecondary education is a central policy issue in Ontario. Postsecondary education (PSE) participation is beneficial both to individuals and society as a whole. Therefore, ensuring equitable access to PSE for individuals from all backgrounds is important. A large body of research has shown that participation in PSE varies among individuals with different socio-economic and demographic backgrounds (Finnie, Childs & Wismer, 2011; Frenette, 2003). There are a number of under-represented student groups that are disadvantaged in terms of accessing PSE. Recent literature has found that the PSE participation rate is lower for students from low-income families and students with parents who never attended PSE. Knighton and Mirza (2002), for example, used the Survey of Labour and Income Dynamics (SLID) data and found that both parental education and household income are strong determinates of PSE participation, especially university participation. While the literature has shown that family income and parental education are indeed significant factors, there are other demographic and socio-economic factors (such as immigrant status and family type) that need to be taken into consideration to gain a better understanding of PSE participation decisions.

Few data sources at the national and provincial level provide information on both individuals' socio-economic backgrounds and their PSE participation decisions. In recent years, the Youth in Transition Survey (YITS) has been used extensively for research on PSE access and persistence. Other than the YITS, the SLID is the only other longitudinal survey that allows for the tracking of youth into their PSE years. The longitudinal aspects of the YITS and the SLID allow researchers to examine the impact of belonging to each of the under-represented groups on subsequent PSE outcomes.

The purpose of this study is to build on previous work in the literature to examine access to PSE among students from different backgrounds in Ontario using the SLID data. This study will provide new evidence on under-represented youth groups' PSE participation in Ontario. In particular, the PSE participation rates of the following under-represented groups will be examined:

- those from low-income families;
- those from families with no history of attending PSE (i.e., 'first generation' students);
- those living in rural areas;
- those whose mother tongue is French;
- immigrants;
- those from single-parent (or other 'non-traditional') families; and
- those of Aboriginal or First Nations ancestry.

The research questions for this project are:

1. Which youth groups are underrepresented in postsecondary education in Ontario?
2. How does the trend change over the last decade?

The remainder of this report is organized as follows: Section 2 summarizes findings from relevant literature on PSE participation. Section 3 describes the data on which this report is based and discusses the feasibility of using SLID data. Section 4 presents results from the longitudinal data analysis for Panel 4 of the SLID data. Section 5 presents results from the cross-sectional data from 1999 to 2009 and is further divided into two subsections: summary statistics and regression analysis. Section 6 concludes and provides policy recommendations based on findings from this study.

Section 2: Literature review

Knighton and Mirza (2002) used the first panel of SLID to examine the effects of parental education and household income on postsecondary participation. They followed a sample of 1,640 Canadians aged 13 to 16 in 1993 for six years. They found that household income had a positive relationship with university participation but was not associated with college participation. Young Canadians in the highest income quartile families were more than twice as likely than those in the lowest income quartile to attend university (39% versus 17%). They also concluded that parental education had a larger influence than family income on students' pursuit of postsecondary studies, especially university participation.

Drolet (2005) used two panels of the SLID data to investigate whether the participation pattern by parental income and parental education changed between 1993 and 2001. His results upheld the long-standing pattern that university participation rates are higher among youth from higher income families; the pattern changed very little between 1993 and 2001. Similar to Knighton and Mirza's (2002) conclusions, Drolet also found that university participation rates are more strongly associated with level of parental education than with parental income.

A number of studies were funded by the Higher Education Quality Council of Ontario (HEQCO) to conduct research on the PSE participation rates of under-represented groups. By using YITS-A data, Finnie et al. (2011) analyzed access to PSE among under-represented groups in Ontario. They found that having a family history of PSE attendance is much more important than being from a high-income household. However, the parental education effects are stronger in Ontario than in the rest of Canada, while the family income effects are smaller. They also found that those who self-identify as Aboriginals, as having a disability, or those living in rural communities are significantly underrepresented in PSE in Ontario, particularly in university.

By combining student-level data from the Ontario University Application Centre (OUAC), school-level data from Ontario high schools, and neighbourhood data from the 1991 to 2006 Censuses, Card, Payne and Sechel (2011) found that the gender gap in application to university had widened between 1994 and 2006. Neighbourhood characteristics explain a small proportion of the widening gap in university applications, while high school course selection was found to be of greater importance for explaining the gender gap.

Section 3: Data and methodology

Conducted annually since 1993, the SLID is a longitudinal survey that collects information from all members of a household and follows the individuals in that household for six consecutive years. The SLID data have considerable advantages that make them useful for studying Ontario youths' access to PSE. The data:

- provide complete and reliable information on family background, including parents' socio-economic status and family structure;
- provide detailed demographic information;
- provide information on PSE participation including time of registration, institution type, level and program of study; and
- are longitudinal, providing the ability to track PSE participation.

The main drawback of using SLID data for the purpose of this project is the small sample size at the provincial level, making it difficult to confidently identify patterns for some population sub-groups.

The SLID sample is composed of two panels. Each panel consists of roughly 17,000 households and about 34,000 adults who are surveyed for a period of six consecutive years. A new panel is introduced every three years, so there are always two panels that overlap (Figure 1). Eleven years of SLID data from 1999 to 2009 are used for this research. The SLID panels covered in the time period stated include Panels 2, 3, 4, 5 and 6. The period of data used for this project is highlighted in yellow in Figure 1.

Figure 1. Overlapping design of SLID sample[1]
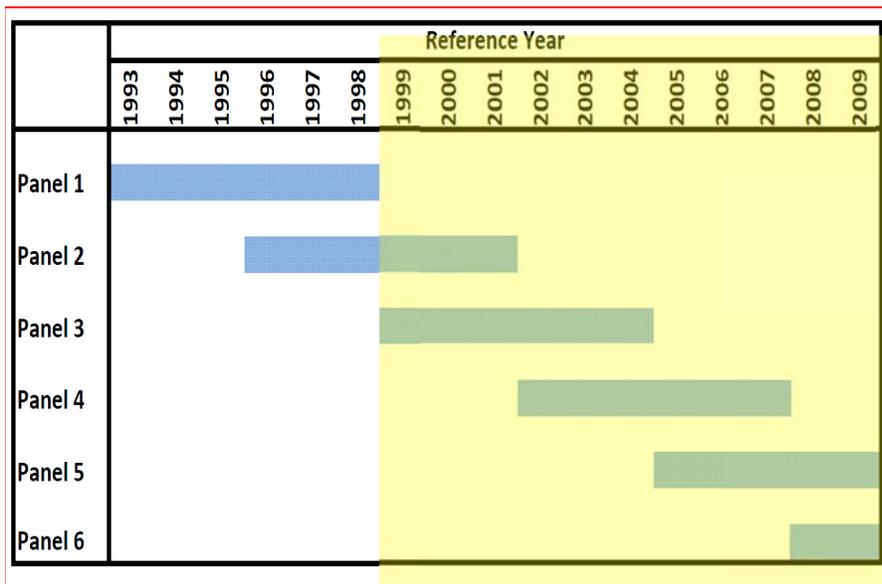
The SLID data can be used both as longitudinal and cross-sectional data. This project includes two parts to the analysis: 1) longitudinal data analysis using Panel 4 of the SLID data (2002 to 2007), and 2) cross-sectional data analysis using 11 years of data from 1999 to 2009. The longitudinal data allow us to track a youth for a maximum of six years. Therefore, it is possible to assess a cohort of students and their transition from high school to PSE. However, the sample size is too small for any in-depth analysis. The

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[1] Source: *Survey of Labour and Income Dynamics: 2009 Survey Overview*.

advantage of using cross-sectional data for the analysis is that they give us a much bigger sample size and reveal the trends of PSE participation of Ontario youth during the 11-year period.

Due to small samples, only summary statistics were calculated for the longitudinal data. Both summary statistics tables and regression analysis were conducted on the cross-sectional data. The regression models used are logistic models given that the dependent variables are binary (participation in university/college/PSE).

The focus of this paper is accessibility, not persistence to PSE. The dependent variables are 'ever enrolled' in college and 'ever enrolled' in university but not highest level of educational attainment. The PSE participation rate is defined as the number of individuals 'ever enrolled' in a university or in college (including a community college, business school, trade or vocational school) divided by the total number of respondents included in the final sample. In cases where an individual had enrolled in both a university and a non-university PSE institution, he or she is included in the calculation of the university participation rate to avoid double counting.

Section 4: Longitudinal data analysis results

Panel 4 of the SLID data (2002 to 2007) was used for the longitudinal analysis since it is the latest complete panel during the period of reference. For the sample selection of this project, all individuals in the sample who were 18 to 21 years of age in 2007 and no longer attending high school were identified. This age group was chosen because the sample size for a single-year age cohort is too small for reliable analysis.[2] The second step was to match these individuals to their reported demographic and socio-economic characteristics when they were 16 years of age. For 18-year olds, this means going back two years in the SLID data, for 19-year olds going back three years, and so forth. A respondent's demographic information including family income at age 16 was used because this is when PSE decisions are likely being made. Please refer to Table 1 for a visual demonstration of the sample selection process.

Table 1. Sample selection of longitudinal data analysis, SLID Panel 4, Ontario

Survey year	2002	2003	2004	2005	2006	2007
Age	13	14	15	16	17	18
	14	15	16	17	18	19
	15	16	17	18	19	20
	16	17	18	19	20	21

reference year demographic information was used

reference year participation rates were examined

The third and final step was to note which individuals aged 18 to 21 reported attending PSE in any period since the age of 16. The final sample for the longitudinal analysis includes Ontario youth 18 to21 years old in 2007 who were not enrolled in high school in 2007 and with family income information at 16 years old. The final sample consists of 550 unweighted respondents, which translates into 504,766 observations when the longitudinal weight was applied.

Table 2 presents PSE participation rates for a number of demographic and socio-economic characteristics. The nine categories are gender, family income, parental education, Aboriginal identity, disability status, immigration status, language group, geography and family status. Overall, 69% of Ontarians who were 18 to 21 years old in 2007 had enrolled in some form of PSE. The larger portion of this group (42%) had enrolled in university, while 27% had enrolled in college.

The groups in the SLID data with relatively low participation rates are: males, those from families with income in the 1st and 2nd quartiles, those whose parents have no PSE, Aboriginals, those with a disability and those from single-parent families.

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[2]Over 90% of first-year entrants to Ontario universities are under 21 years old (Application statistics, COU); the figure for Ontario colleges is over 60% (OCAS).

Table 2. PSE participation rate of 18-21 year olds, SLID Panel 4, Ontario
Data: Panel 4 of SLID data, 2002-2007, youth 18-21 years old in 2007

| | | | Participation Rate = % ever enrolled in… | | | |
| | | | College | | University | |
Label		Total N	N	%	N	%
Total		504,766	136,504	27.04	212,880	42.17
Age in 2007						
	18	47,585	4,613	9.70	12,211	25.66
	19	155,569	33,476	21.52	70,116	45.07
	20	143,690	47,878	33.32	63,352	44.09
	21	157,922	50,537	32.00	67,201	42.55
Gender						
	Male	245,056	76,134	31.07	76,728	31.31
	Female	259,710	60,370	23.25	136,152	52.42
Family income at age 16						
	1st quartile	111,367	20,654	18.55	33,890	30.43
	2nd quartile	127,086	37,095	29.19	33,611	26.45
	3rd quartile	141,898	47,920	33.77	72,037	50.77
	4th quartile	124,415	30,835	24.78	73,342	58.95
Aboriginal						
	No	480,223	131,246	27.33	203,976	42.48
	Yes	24,544	5,258	21.42	8,904	36.28
Immigrant						
	No	440,160	126,331	28.70	174,812	39.72
	Yes	64,606	10,173	15.75	38,068	58.92
Mother tongue						
	English	366,405	101,540	27.71	147,052	40.13
	French & other	119,546	34,964	29.25	63,830	53.39
Disability						
	No	399,752	105,959	26.51	181,161	45.32
	Yes	105,014	30,545	29.09	31,719	30.20
Family composition at age 16						
	Couple, children	413,501	123,299	29.82	172,494	41.72
	Lone parent	80,411	13,204	16.42	37,093	46.13
Urban/ rural at age 16						
	Urban	451,562	114,099	25.27	199,558	44.19
	Rural	53,204	22,405	42.11	13,322	25.04
First generation						
	No	189,819	43,675	23.01	111,603	58.79
	Yes	288,437	89,122	30.90	99,280	34.42
Father's education						
	Less than high school	89,760	27,981	31.17	23,914	26.64
	Completed high school	112,223	40,263	35.88	40,266	35.88
	Non-university certificate or diploma	137,582	39,068	28.40	47,202	34.31
	Bachelor's	48,490	5,797	11.95	35,912	74.06
	University above Bachelor's	77,283	18,914	24.47	55,801	72.20

		Participation Rate = % ever enrolled in…			
		College		University	
Label	Total N	N	%	N	%
Mother's education					
Less than high school	62,239	8,844	14.21	5,381	8.65
Completed high school	180,350	65,213	36.16	76,328	42.32
Non-university certificate or diploma	129,230	40,715	31.51	46,294	35.82
Bachelor's	63,887	7,833	12.26	53,585	83.87
University above Bachelor's	37,783	9,349	24.75	26,041	68.92

Longitudinal weights were applied

Source: Survey of Labour and Income Dynamics, Panel 4, 2002-2007

The data show that gender is an important factor in explaining PSE choices, as 76% of females in the SLID sample had enrolled in PSE compared to 62% of males. Females were notably more likely than males to enroll in university (52.4% compared to 31.3%), while males were slightly more likely than females to attempt other types of PSE – referred to in the analysis as 'college' (31.1% compared to 23.2%).

In the longitudinal part of the study, family income was grouped into quartiles. The results show that family income is a significant factor for overall PSE participation, especially for university participation. More than half of youth in the SLID sample from the lowest income quartile had not attempted PSE compared to just 16% of youth from the highest quartile. This is the largest gap for any of the groups in the SLID sample. In addition, the university participation rate of youth in the highest income quartile families is nearly twice that for youth in the lowest quartile. One notable pattern is that youth from the second income quartile are slightly more likely to attend PSE than those from first income quartile families, while the PSE participation rate is almost identical for those from the third and fourth income quartiles.

The results closely mirror the literature on the link between family income and university participation. The SLID data also show that the effect of family income on college enrollment is less relevant when compared to enrollment in university. The percentage of SLID respondents choosing college rises from the first to the third family income quartile but falls notably for the highest income quartile.

Other than family income, parental education is also relevant for educational choices. Sixty-five percent of youth whose parents had not completed any PSE opted for higher education compared to 82% of youth with at least one parent with some PSE. The university participation rate for the latter group is also much higher than the former – 59% compared to 34%.

A PSE participation rate gap exists between Aboriginals and non-Aboriginals. Fifty-eight percent of Aboriginals reported participating in PSE compared to 70% of non-Aboriginals. However, the gap between the two groups in terms of university participation rate is much smaller than the gap seen in the literature. Given the small sample of Aboriginal respondents included in the SLID sample used for this study, the results may not be robust.

In the SLID data, a respondent is assigned a disability status if he or she has a physical or mental condition or a health problem that reduced the amount or kind of activity he or she was able to carry out. The SLID results show that disability status matters for university participation, but does not matter much for college participation. College participation rates for youth with and without a disability are almost identical (27% compared to 29%). However, the university participation rate of those without a disability was higher than those with a disability (45% compared to 30%).

Immigrants are much more likely to attend universities than are non-immigrants (59% compared to 40%), while non-immigrants are more likely to choose college than are immigrants (29% compared to 16%). Overall, immigrants have a slightly higher PSE participation rate than non-immigrants.

The results for participation by mother tongue display a similar pattern to that for immigrant status. Youth with a language other than English as a mother tongue have a higher university participation rate than youth with English as their mother tongue. The population with a non-English mother tongue likely overlaps the immigrant population.[3]

Urban youth are more likely than rural youth to participate in university (44.2% compared to 25%), while rural youth are more likely to choose college than are urban youth (42.1% compared to 25.3%).

Finally, SLID respondents from single-parent families were slightly more likely to choose university than college (46.1% chose university, 16.4% chose college).

In sum, the results from the longitudinal SLID data analysis confirm the accessibility picture found in the literature. There are some small variations to be sure, but these can generally be explained by differences in age groups and in how population characteristics are defined. The next section of this paper presents results from the cross-sectional data analysis.

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[3] Due to the small sample size of the SLID data, it was not possible to create a separate group for Francophones for the mother tongue variable.

Section 5: Cross-sectional data analysis results

5.1 Summary statistics

Eleven years of cross-sectional SLID data from 1999 to 2009 are used for this part of the analysis. Included within these observations are youth aged 18 to 24 years old who lived in Ontario during the reference year. An observation is excluded from the sample if the youth:
- attended high school in the reference year, and/or
- had a family income less than $100 (real dollars) in the reference year.

Table 3 presents the sample sizes for the cross-sectional data analysis. Appendix Table A shows the distribution of population by characteristics for the cross-sectional data. Table 4 and Table 5 present university and college participation rates by characteristics.

Table 3. Sample sizes of cross-sectional data, SLID Ontario, 1999-2009, weighted

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
All 18-24 year olds*	1,050,592	1,076,211	1,104,453	1,131,529	1,157,089	1,176,073	1,192,868	1,201,539	1,215,122	1,229,429	1,239,191
Standardized weight	1,813	1,857	1,906	1,953	1,997	2,030	2,059	2,074	2,097	2,122	2,139
Final sample*	858,166	879,359	893,679	952,556	976,410	1,015,739	997,560	1,026,633	1,054,285	1,041,659	1,054,279
Standardized weight	1,488	1,524	1,549	1,651	1,693	1,761	1,729	1,780	1,828	1,806	1,828

cross-sectional weight were applied

Source: Survey of Labour and Income Dynamics, 1999-2009

Table 4. University participation rate, cross-sectional data, SLID Ontario, 18-24 year olds, 1999-2009, weighted

		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total		36.0%	36.1%	36.0%	33.6%	37.1%	40.1%	35.9%	36.5%	39.2%	39.7%	38.0%
Gender												
	Male	32.5%	33.5%	31.6%	28.8%	32.8%	34.3%	30.7%	29.9%	29.4%	33.9%	31.0%
	Female	39.5%	38.7%	40.2%	38.4%	41.5%	46.0%	40.8%	43.0%	49.0%	45.3%	44.9%
After tax family income, 2002 real $												
	0-25,000	29.1%	23.0%	32.8%	37.8%	35.1%	33.3%	31.7%	30.6%	29.6%	33.1%	29.4%
	25,000-50,000	29.2%	31.7%	30.5%	23.4%	30.5%	33.7%	28.3%	30.4%	32.7%	31.6%	30.2%
	50,000-75,000	37.4%	35.1%	30.8%	27.6%	34.9%	44.8%	32.2%	30.3%	35.5%	36.2%	33.3%
	75,000-100,000	39.2%	42.9%	43.6%	33.3%	42.0%	43.6%	40.6%	40.5%	45.8%	44.5%	47.5%
	Over 100,000	49.1%	56.5%	47.4%	49.1%	49.4%	51.1%	50.6%	56.6%	55.0%	55.7%	56.8%
Aboriginal												
	No	36.3%	36.4%	36.2%	33.8%	NA	40.7%	36.6%	37.4%	39.8%	39.8%	38.6%
	Yes	18.2%	22.7%	26.3%	21.1%	NA	17.0%	16.4%	17.1%	24.6%	34.4%	21.3%
Immigrant												
	No	33.8%	34.6%	34.8%	31.7%	35.0%	37.4%	32.1%	34.8%	37.2%	36.8%	36.1%
	Yes	49.4%	46.6%	45.1%	44.3%	48.3%	53.1%	53.5%	44.0%	48.4%	52.0%	47.4%
Mother tongue												
	English	36.4%	37.1%	35.9%	32.2%	37.3%	36.4%	36.1%	37.9%	39.7%	41.2%	40.3%
	French	35.6%	32.2%	36.3%	25.3%	29.3%	39.2%	27.4%	32.8%	39.3%	52.4%	43.2%
	Other	48.8%	43.6%	45.1%	45.0%	46.7%	55.4%	50.5%	45.2%	50.2%	49.4%	48.2%
Disability												
	No	36.5%	37.5%	37.0%	34.7%	37.8%	40.9%	36.6%	37.2%	40.1%	41.3%	39.9%
	Yes	29.7%	14.0%	23.2%	19.1%	28.7%	28.2%	29.9%	31.2%	32.4%	25.3%	23.1%
Family composition												
	Independent	26.0%	21.0%	26.5%	31.8%	29.5%	31.6%	29.7%	30.9%	31.0%	29.1%	28.5%
	Living with parents	41.3%	44.2%	42.0%	36.2%	42.5%	45.8%	41.3%	41.5%	44.1%	46.5%	45.1%
	Living with lone parent	35.0%	35.1%	35.1%	27.2%	33.0%	36.6%	27.6%	28.7%	33.7%	31.9%	28.6%
Urban/ rural at age 16												
	Urban	38.1%	37.1%	37.2%	35.8%	38.5%	42.1%	36.6%	36.8%	40.2%	41.0%	39.6%
	Rural	19.5%	28.8%	27.8%	16.5%	26.5%	23.7%	28.6%	32.8%	30.2%	26.3%	25.2%
Highest level of parental education												
	University	68.8%	66.9%	64.6%	55.9%	63.4%	67.3%	61.4%	63.4%	66.2%	68.8%	65.4%
	College	42.3%	38.9%	36.4%	28.6%	32.8%	29.6%	38.3%	36.7%	35.2%	40.4%	37.8%
	High school or less	20.7%	21.6%	21.5%	26.6%	28.0%	29.2%	26.6%	25.5%	28.3%	26.8%	23.7%
Age												
	Less than 21	31.1%	33.4%	31.2%	25.7%	33.4%	37.8%	33.1%	34.5%	37.3%	36.6%	32.6%
	21 and older	38.7%	37.5%	38.2%	37.6%	39.1%	41.5%	37.6%	37.7%	40.3%	41.4%	41.7%

Data: SLID data, cross-sectional, 1999-2009, Ontario youth 18-24 years old in reference year

cross-sectional weights were used to produce estimates for the reference year

Table 5. College participation rate, cross-sectional data, SLID Ontario 18-24 year olds, 1999-2009, weighted

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	32.8%	34.5%	33.7%	31.7%	31.3%	30.6%	29.8%	31.0%	31.3%	28.0%	27.6%
Gender											
Male	31.8%	34.4%	35.1%	33.7%	33.4%	31.6%	31.2%	34.9%	37.4%	29.4%	28.7%
Female	33.8%	34.6%	32.3%	29.7%	29.2%	29.7%	28.4%	27.1%	25.2%	26.6%	26.5%
After tax family income, 2002 real$											
0-25,000	30.6%	34.5%	29.1%	32.9%	28.5%	28.5%	28.2%	29.4%	30.9%	29.4%	24.8%
25,000-50,000	30.8%	35.5%	34.1%	31.4%	31.7%	27.9%	30.8%	29.8%	34.6%	28.8%	25.8%
50,000-75,000	35.4%	34.1%	42.0%	34.3%	33.6%	32.8%	34.8%	39.1%	31.6%	29.8%	33.8%
75,000-100,000	36.8%	36.9%	32.1%	30.9%	36.0%	36.0%	30.2%	30.6%	30.9%	30.5%	29.5%
Over 100,000	30.5%	31.1%	31.1%	27.2%	28.7%	30.6%	24.6%	24.6%	28.2%	21.3%	23.6%
Aboriginal											
No	32.7%	34.4%	33.6%	31.4%	30.8%	30.1%	29.3%	30.7%	30.7%	27.7%	27.4%
Yes	36.5%	38.9%	37.4%	44.5%	56.5%	52.4%	42.3%	36.4%	44.8%	36.2%	32.5%
Immigrant											
No	33.5%	35.5%	34.0%	33.2%	32.7%	32.1%	32.2%	31.9%	31.6%	29.8%	28.5%
Yes	28.3%	28.0%	31.1%	23.4%	24.0%	23.5%	18.3%	26.8%	29.8%	19.9%	23.1%
Mother tongue											
English	35.7%	37.2%	36.1%	36.3%	36.1%	35.3%	35.9%	34.4%	34.3%	33.6%	33.2%
French	44.8%	34.6%	38.2%	50.8%	51.1%	44.2%	36.6%	42.1%	50.4%	30.7%	40.0%
Other	31.1%	36.8%	36.7%	29.1%	28.2%	24.0%	21.7%	28.9%	29.5%	21.4%	20.5%
Disability											
No	32.3%	34.1%	33.6%	31.0%	30.9%	29.9%	28.8%	29.7%	31.0%	25.4%	25.9%
Yes	38.7%	41.0%	35.3%	40.7%	36.9%	42.3%	37.5%	40.6%	33.7%	50.2%	41.4%
Family type											
Independent	33.8%	35.6%	33.4%	33.4%	30.3%	31.3%	32.4%	31.0%	32.0%	32.1%	31.0%
Living with parents	33.6%	33.8%	34.2%	31.2%	32.2%	32.4%	29.7%	32.2%	31.7%	26.0%	26.3%
Living with lone parent	25.5%	35.1%	32.6%	30.1%	29.8%	22.2%	26.0%	27.0%	28.8%	28.6%	27.1%
Urban/ rural											
Urban	32.0%	34.0%	33.9%	30.9%	30.5%	29.4%	29.4%	30.7%	30.4%	27.0%	26.6%
Rural	38.7%	38.8%	32.5%	38.0%	36.8%	40.8%	33.4%	34.0%	39.4%	37.8%	36.0%
Highest level of parental education											
University	21.0%	24.6%	22.7%	24.6%	23.2%	20.0%	22.3%	23.2%	25.0%	19.8%	19.0%
College	38.1%	42.0%	40.4%	46.3%	44.9%	45.1%	37.0%	37.5%	36.2%	34.4%	40.5%
High school or less	42.4%	41.6%	42.7%	35.5%	38.1%	36.3%	40.4%	40.1%	39.8%	38.0%	33.9%
Age											
Less than 21	28.1%	31.1%	29.2%	27.6%	25.7%	26.5%	24.6%	25.5%	27.7%	25.2%	22.7%
21 and older	35.4%	36.3%	35.8%	33.9%	34.3%	33.1%	32.9%	34.6%	33.6%	29.5%	30.9%

Data: SLID data, cross-sectional, 1999-2009, Ontario youth 18-24 years old in reference year

cross-sectional weights were used to produce estimates for the reference year

Figure 2 and Figure 3 present university and college participation rates by gender for Ontario youth aged 18 to 24. Consistent with the findings from the longitudinal data analysis, females were more likely to enrol in universities but not in colleges. The university participation gap between female and male youth

in Ontario also increased slightly during the period of reference.

Figure 2. Ontario youth aged 18-24 <u>university</u> participation rates by gender, SLID data, 1999-2009

Figure 3. Ontario youth aged 18-24 <u>college</u> participation rates by gender, SLID data, 1999-2009
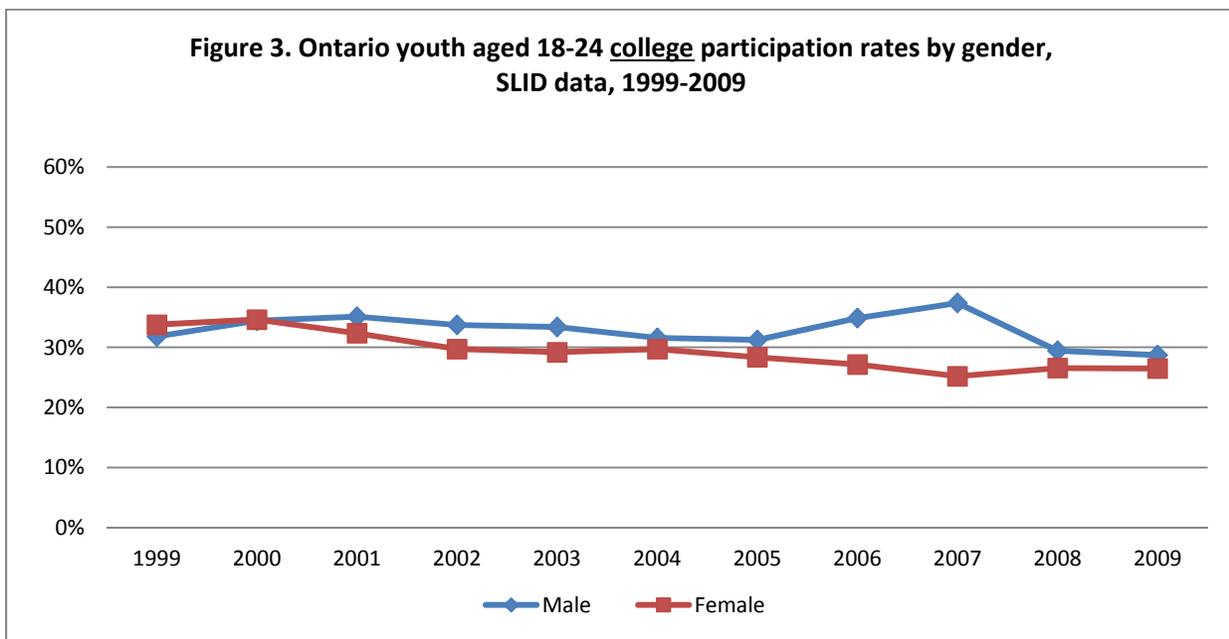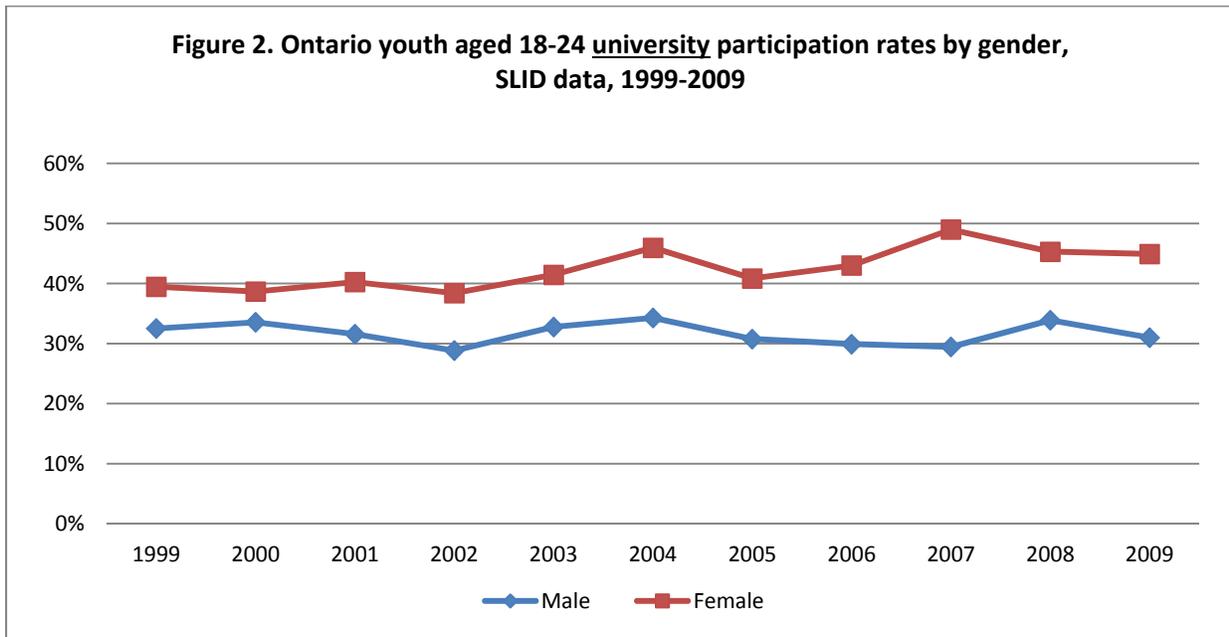
Figure 4 presents the university participation rates of Ontario youth aged 18 to 24 by family income group. In the cross-sectional analysis portion of this research, family income is grouped differently than was done for the longitudinal data analysis. Here, family income is divided into five groups using $25,000 increments. The reason for the different definitions is to check the robustness of the family income effect

on PSE participation.[4] Figure 4 shows that the university participation rate of youth in the highest family income group ($100,000+) is nearly twice that of youth in the two lowest income groups ($0-25,000 and $25,000-50,000). The university participation rate gap between the highest and the lowest income groups are presented in Figure 4 as bars. The bars show that the university participation gap increased slightly between 1999 and 2009, especially between 2002 and 2009. These results are consistent with the findings from the longitudinal data analysis as well as the literature.

Figure 4. Ontario youth aged 18-24 <u>university</u> participation rates by family income group, SLID data, 1999-2009
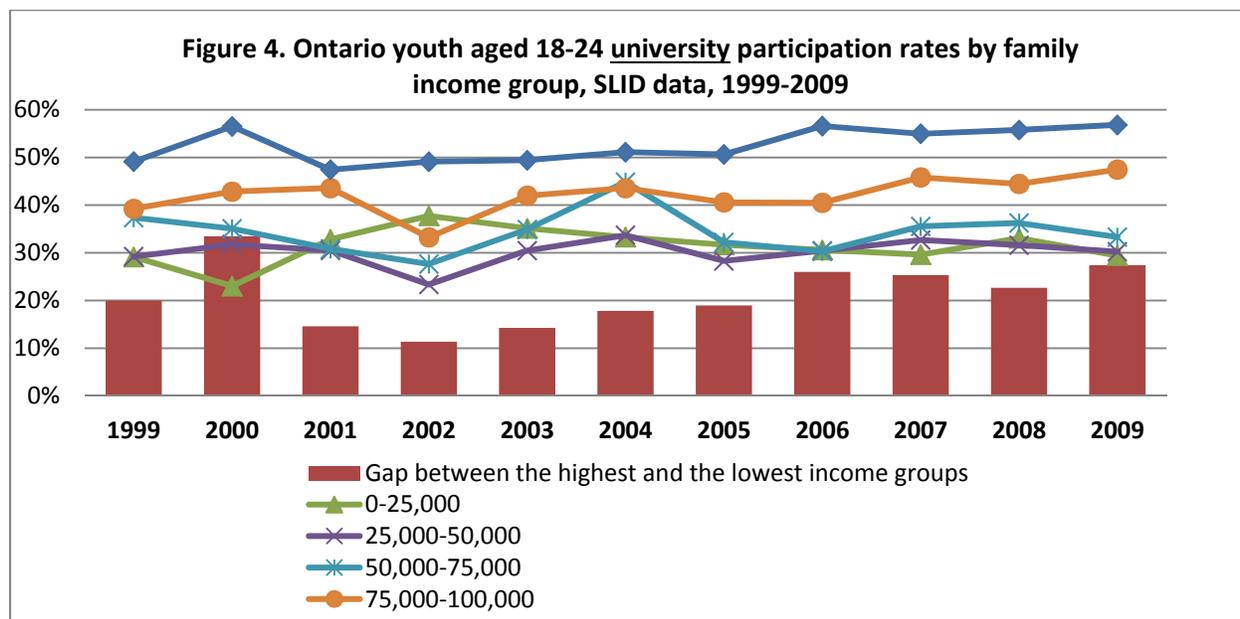
Figure 5 presents the college participation rates of Ontario youth aged 18 to 24 between 1999 and 2009 by family income group. Figure 5 shows that family income does not have any obvious effect on college participation rate, and this pattern is consistent across all years between 1999 and 2009.

Overall, PSE participation rates are higher among youth from higher income families. The PSE participation rate gap between the highest and the lowest income group is around 20%.

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[4] Note that one of the limitations for the cross-sectional data analysis portion of this study is using family income from the survey reference year. Family income level changes over time, so using family income from the reference year is not a perfect measure to capture a youth's socioeconomic status a decision was made about participating in PSE decision (usually by age 16). In addition, by the age of 18 to 24, some youths have left home to live independently. Those living with parents may appear to have higher levels of income than those who live independently. A 'family type' variable is added into the regression models to control for the type of family the youth was living with.

Figure 5. Ontario youth aged 18-24 <u>college</u> participation rates by family income group, SLID data, 1999-2009
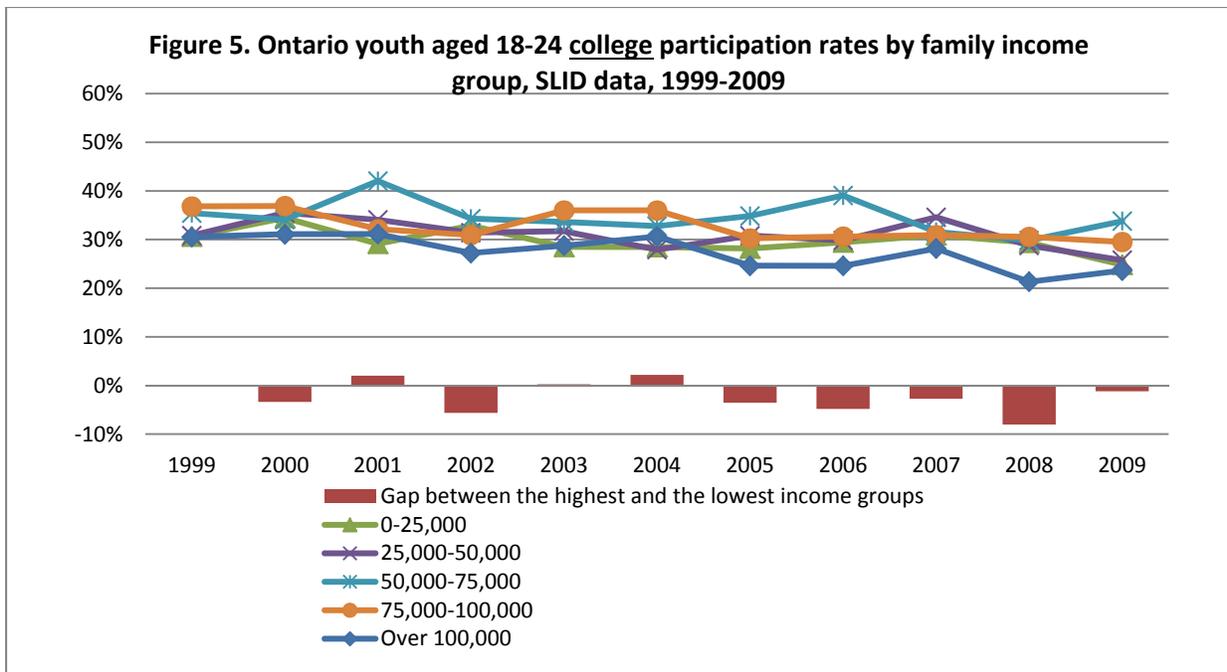
Figures 6 and 7 present university and college participation rates by highest level of parental education. Youth with at least one university-educated parent are much more likely to participate in university, but not in college.

Figure 6. Ontario youth aged 18-24 <u>university</u> participation rates by highest level of parental education, SLID data, 1999-2009

Figure 7. Ontario youth aged 18-24 <u>college</u> participation rates by highest level of parental education, SLID data, 1999-2009
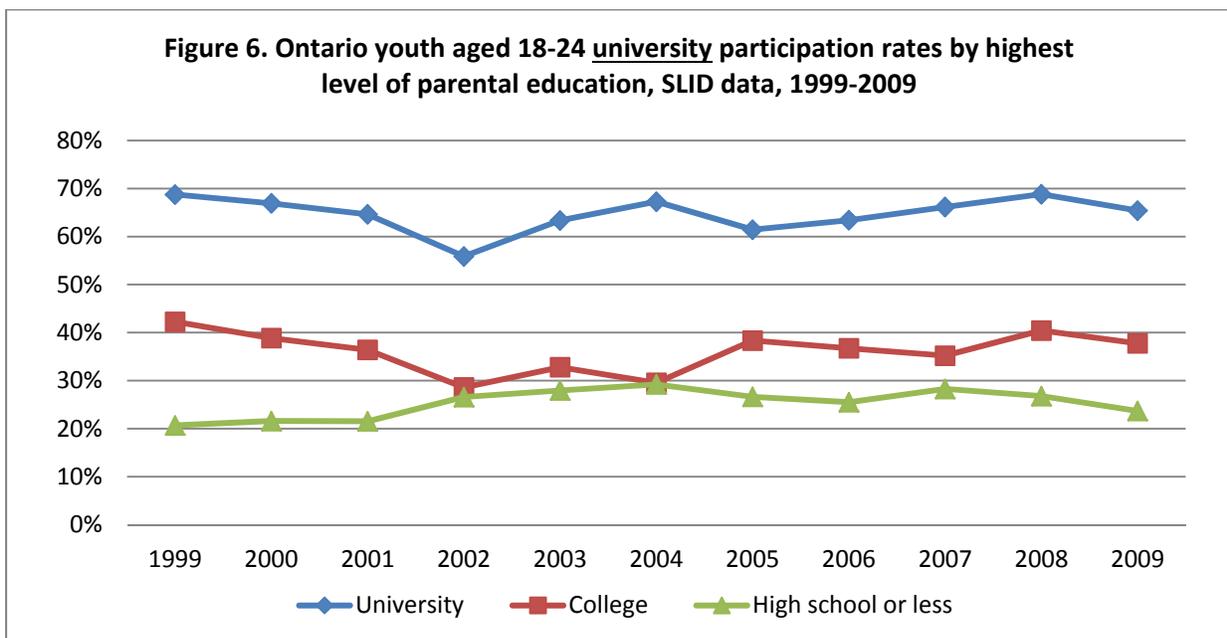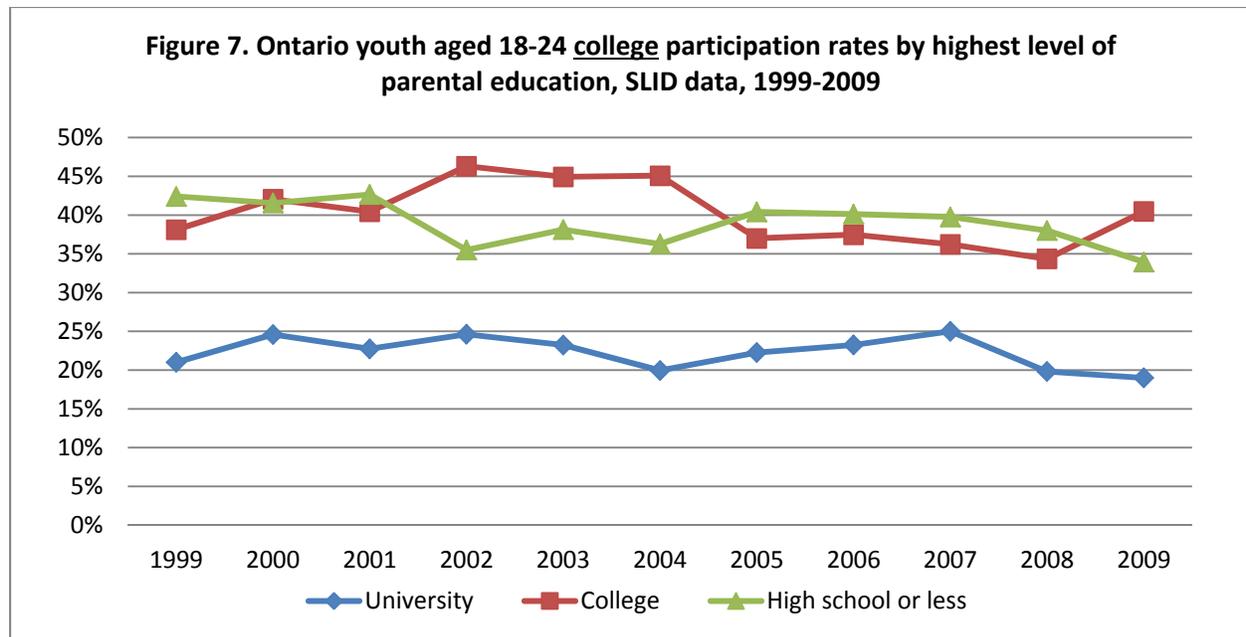
5.2 Regression results

A number of logit regression models were conducted to examine the dynamics between each of the characteristics and university/college participation rates. As in the summary statistics, university and college participation rates were examined separately. The outcome variables in the two models presented are participation in university and college and the independent variables are students' characteristics as listed in the summary statistics in Tables 4 and 5. All of the regression results (coefficients) presented in the tables below are marginal effects.

There are six model specifications in total. For each model specification, 11 models were run for each of the years (1999-2009). The results from Models 1 to 5 are presented in Appendix B for university participation rate and Appendix C for college participation rate. The results from Model 6 are presented in this section.

5.2.1 Regression results - university participation

The only explanatory variable included in Model 1 is family income. Results from the first model show that there is a positive relationship between participating in university and family income: as income increases, the likelihood of university participation also increases. Youth from families in the highest family income group (over $100,000) have significantly higher rates of participation (around 20 percentage points) in university than youth from families with more modest incomes ($50,000-$75,000). This pattern is consistent for all survey years except 2004, as well as with the findings from Drolet's (2005) study.

Model 2 includes parental education as its only explanatory factor. The results show that there is a positive relationship between university participation and parental education. Having at least one university-educated parent is associated with about a 40% higher chance of attending university, compared to youth whose parents have a high school education or less. This result is consistent and statistically significant for all years.

Models 1 and 2 examine the separate effects of family income and parental education. The main finding is that both family income and parental education matter when examined individually. In Model 3, family

income and parental education were examined together and Model 4 adds family type as an additional control. Results from Models 3 and 4 show that the effect of family income on the probability of participating in university is not as strong and statistically significant once parental education is controlled, but that the effect of parental education on university participation remained strong and statistically significant. Model 4 also shows that youth living independently were less likely to attend university than youth living with both parents. This result is significant in four of the 11 years of data being examined.

Given that family income and parental education are highly correlated factors, interaction terms between the two variables were added to Model 5. In Model 5, family income coefficients became insignificant while the effects of parental education stayed stable. The interaction terms capture the correlated effect of parental education and family income on university participation. Results from Models 5 and 6 show that regardless of family income levels, having at least one university-educated parent has a positive and significant effect on university participation. However, this positive effect is not as strong or significant when the highest level of parental education is college. Presented in Table 6, Model 6 includes all other previously identified characteristics including gender, Aboriginal status, immigrant status, mother tongue, disability status, urban/rural and age.

The last column in Table 6 presents the results from Model 6 and includes all 11 years of data. The results in this column can be used as the overall results for predicted probabilities of enrolling in university. Besides family income and parental education level, other characteristics included in the model also have an influence on university enrollment decisions. Being female has a positive and significant effect on university participation. Since the university participation rate is defined as the number of individuals 'ever enrolled' in a university, as expected, age has a positive and significant effect on university participation. The three age groups above the reference age 21 (age 22, age 23, age 24) all have positive and statistically significant effects on university participation. Youth living independently, Aboriginals, youth with disabilities, and youth from rural areas are less likely to attend university. The year effect is shown separately in Table 7 using 1999 as the reference year. Table 7 shows that there is very little change in the university participation rate over the 11 years and that only the year 2002 is shown as having a negative and statistically significant effect on university participation among all dummy coded year variables.

Table 6. Model 6 regression result on university participation rate, cross-sectional data, SLID Ontario, 18-24 year olds, 1999-2009, weighted

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	All years
After tax family income categories (50,000-75,000)												
0-25,000	0.0471	-0.0706	-0.0272	-0.0548	0.0374	-0.00641	0.0174	0.0885	-0.0375	-0.0314	-0.133	-0.0209
	[0.0969]	[0.0872]	[0.0901]	[0.0810]	[0.0913]	[0.105]	[0.113]	[0.112]	[0.116]	[0.141]	[0.111]	[0.0319]
25,000-50,000	0.0672	0.0647	-0.0839	-0.08	-0.0916	-0.062	0.0106	0.0926	-0.0212	-0.074	-0.262***	-0.045
	[0.0891]	[0.0831]	[0.0695]	[0.0760]	[0.0823]	[0.0885]	[0.101]	[0.0930]	[0.108]	[0.127]	[0.0876]	[0.0285]
75,000-100,000	0.118	0.00726	-0.0554	-0.034	0.0266	0.170*	0.0697	0.194*	0.16	0.0619	-0.146	0.0472
	[0.0969]	[0.0853]	[0.0746]	[0.0938]	[0.0926]	[0.0987]	[0.108]	[0.107]	[0.0989]	[0.111]	[0.101]	[0.0301]
Over 100,000	-0.0854	0.0169	-0.0508	-0.132	0.073	0.0956	0.0656	0.256**	0.142	0.169	-0.128	0.0359
	[0.0946]	[0.0998]	[0.0880]	[0.0874]	[0.104]	[0.104]	[0.109]	[0.108]	[0.109]	[0.110]	[0.111]	[0.0328]
Highest level of parental education (high school or less)												
University	0.452***	0.344***	0.195**	0.0897	0.284***	0.490***	0.231**	0.318***	0.426***	0.361***	0.191*	0.293***
	[0.0904]	[0.0921]	[0.0988]	[0.0965]	[0.0934]	[0.0803]	[0.103]	[0.0986]	[0.0943]	[0.111]	[0.106]	[0.0300]
College	0.333***	0.194**	0.0503	-0.0828	0.0249	0.0767	0.138	0.282***	0.195*	0.250***	0.0893	0.140***
	[0.0882]	[0.0917]	[0.0882]	[0.0807]	[0.0931]	[0.0968]	[0.111]	[0.0967]	[0.103]	[0.0921]	[0.103]	[0.0297]
Family type (living with parents)												
Independent	-0.188***	-0.239***	-0.216***	-0.0135	-0.125*	-0.106	-0.126*	-0.0502	0.0393	-0.197***	-0.138**	-0.123***
	[0.0540]	[0.0462]	[0.0477]	[0.0569]	[0.0642]	[0.0722]	[0.0660]	[0.0652]	[0.0838]	[0.0758]	[0.0660]	[0.0199]
Living with lone parent	-0.0641	-0.0723	-0.00605	-0.0377	-0.0384	-0.00613	-0.0485	-0.000869	0.00753	-0.0928	-0.1	-0.0409**
	[0.0644]	[0.0597]	[0.0578]	[0.0589]	[0.0630]	[0.0659]	[0.0586]	[0.0572]	[0.0607]	[0.0676]	[0.0651]	[0.0190]
Interaction terms (income_50K-75K*parent_highschool_or_less)												
*Income_<25K*parent_univ*	0.175	0.302**	0.449***	0.232*	0.0904	-0.0307	0.245*	0.226	-0.0462	0.241	0.186	0.183***
	[0.154]	[0.135]	[0.106]	[0.140]	[0.139]	[0.141]	[0.144]	[0.149]	[0.162]	[0.178]	[0.161]	[0.0471]
*Income_<25K*parent_coll*	-0.0234	0.0933	0.278**	0.221	0.0195	0.0288	0.0808	-0.164	-0.137	-0.00737	-0.043	0.0268
	[0.125]	[0.146]	[0.135]	[0.146]	[0.138]	[0.142]	[0.155]	[0.115]	[0.138]	[0.176]	[0.159]	[0.0452]
*Income_25K-50K*parent_univ*	-0.11	0.00887	0.331***	0.0665	0.111	-0.154	-0.0522	-0.0693	-0.0606	0.179	0.497***	0.0773
	[0.130]	[0.136]	[0.126]	[0.154]	[0.149]	[0.125]	[0.149]	[0.139]	[0.153]	[0.185]	[0.0804]	[0.0495]
*Income_25K-50K*parent_coll*	-0.114	-0.0187	0.163	0.0854	0.132	-0.0476	-0.00674	-0.0692	-0.033	-0.118	0.174	0.0059
	[0.105]	[0.118]	[0.128]	[0.139]	[0.138]	[0.138]	[0.153]	[0.127]	[0.149]	[0.155]	[0.163]	[0.0431]

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	All years
Income_75K-100K*parent_univ	-0.0269	0.22	0.283**	0.276*	0.103	-0.281***	0.0148	0.0401	-0.013	0.0182	0.322**	0.0811*
	[0.136]	[0.146]	[0.132]	[0.155]	[0.153]	[0.0783]	[0.154]	[0.153]	[0.149]	[0.177]	[0.138]	[0.0462]
Income_75K-100K*parent_coll	-0.220***	-0.0595	0.113	0.00871	-0.0145	-0.181*	0.029	-0.191*	-0.186*	-0.0825	0.208	-0.0592
	[0.0782]	[0.115]	[0.135]	[0.142]	[0.137]	[0.107]	[0.148]	[0.102]	[0.108]	[0.137]	[0.153]	[0.0394]
Income_100K+*parent_univ	0.229	0.194	0.274*	0.480***	0.0928	-0.169	0.279**	0.0851	-0.0726	0.0298	0.475***	0.182***
	[0.152]	[0.149]	[0.144]	[0.114]	[0.146]	[0.113]	[0.130]	[0.148]	[0.139]	[0.165]	[0.101]	[0.0449]
Income_100K+*parent_coll	0.0903	0.12	0.0991	0.404***	0.0451	-0.108	-0.113	-0.199*	-0.0417	-0.169	0.236	0.0202
	[0.148]	[0.151]	[0.143]	[0.129]	[0.141]	[0.128]	[0.135]	[0.105]	[0.143]	[0.121]	[0.152]	[0.0443]
Other characteristics												
Female (male)	0.129***	0.118***	0.121***	0.132***	0.119***	0.148***	0.130***	0.169***	0.255***	0.180***	0.229***	0.155***
	[0.0358]	[0.0348]	[0.0336]	[0.0365]	[0.0380]	[0.0376]	[0.0382]	[0.0365]	[0.0370]	[0.0445]	[0.0420]	[0.0116]
Aboriginal (Non-Aboriginal)	-0.116	-0.0666	-0.049	-0.0311	-0.319***	-0.207***	-0.214***	-0.215***	-0.149*	0.00325	-0.139*	-0.149***
	[0.0891]	[0.107]	[0.0859]	[0.0993]	[0.0485]	[0.0804]	[0.0779]	[0.0650]	[0.0778]	[0.0994]	[0.0783]	[0.0268]
Immigrant (non-immigrant)	0.0453	0.0393	0.00411	0.0206	-0.00188	-0.0681	0.129	-0.000673	-0.0849	0.0976	-0.0133	0.0128
	[0.0747]	[0.0718]	[0.0751]	[0.0733]	[0.0755]	[0.0730]	[0.0866]	[0.0874]	[0.0874]	[0.0884]	[0.0844]	[0.0243]
Mother tongue (English)												
French	0.0303	0.000059	0.0617	-0.0564	-0.0589	0.0269	-0.0776	-0.0626	-0.00997	0.0739	0.0445	0.00644
	[0.0868]	[0.0841]	[0.0783]	[0.0988]	[0.109]	[0.114]	[0.0997]	[0.0883]	[0.0916]	[0.109]	[0.0947]	[0.0282]
Other	0.0867	0.046	0.0972	0.0981	0.102	0.192***	0.0963	0.115	0.158**	0.11	0.162**	0.111***
	[0.0693]	[0.0635]	[0.0694]	[0.0677]	[0.0672]	[0.0653]	[0.0750]	[0.0796]	[0.0777]	[0.0832]	[0.0771]	[0.0219]
Disability status (non-disability)	-0.0657	-0.210***	-0.123**	-0.160***	-0.0988	-0.133*	-0.0825	-0.0987*	-0.0936	-0.203***	-0.205***	-0.125***
	[0.0630]	[0.0454]	[0.0586]	[0.0514]	[0.0662]	[0.0782]	[0.0602]	[0.0578]	[0.0619]	[0.0557]	[0.0546]	[0.0193]
Rural (urban)	-0.113**	-0.0284	-0.0325	-0.165***	-0.105**	-0.140***	-0.0206	0.00556	-0.0576	-0.115**	-0.077	-0.0781***
	[0.0448]	[0.0455]	[0.0426]	[0.0451]	[0.0492]	[0.0485]	[0.0562]	[0.0563]	[0.0507]	[0.0588]	[0.0586]	[0.0153]
Age (21)												
18	-0.0882	-0.132*	-0.300***	-0.268***	-0.0531	-0.0946	-0.107	-0.197***	-0.104	-0.0455	-0.234***	-0.154***
	[0.0958]	[0.0778]	[0.0502]	[0.0452]	[0.0840]	[0.0705]	[0.0828]	[0.0720]	[0.0864]	[0.0843]	[0.0711]	[0.0234]
19	-0.0238	-0.087	-0.0846	-0.077	-0.053	-0.153***	0.0966	-0.00111	-0.099	-0.0212	-0.0365	-0.0480**
	[0.0657]	[0.0584]	[0.0557]	[0.0662]	[0.0686]	[0.0589]	[0.0760]	[0.0659]	[0.0631]	[0.0711]	[0.0708]	[0.0203]

		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	All years
	20	0.058	-0.0163	-0.0436	-0.159***	0.115	-0.142**	0.0679	0.0676	-0.0687	-0.103	0.0661	-0.017
		[0.0627]	[0.0569]	[0.0535]	[0.0516]	[0.0741]	[0.0572]	[0.0729]	[0.0698]	[0.0616]	[0.0627]	[0.0746]	[0.0201]
Table 6, continued													
	22	0.0846	-0.0611	0.0593	0.0189	0.101	-0.0877	0.232***	0.0172	0.0124	0.0809	0.154**	0.0596***
		[0.0690]	[0.0573]	[0.0561]	[0.0612]	[0.0713]	[0.0676]	[0.0695]	[0.0712]	[0.0746]	[0.0700]	[0.0677]	[0.0210]
	23	0.191***	0.0218	0.00119	-0.0516	0.238***	-0.0633	0.196**	0.0952	-0.0645	0.075	0.233***	0.0796***
		[0.0643]	[0.0647]	[0.0586]	[0.0570]	[0.0680]	[0.0671]	[0.0771]	[0.0675]	[0.0757]	[0.0761]	[0.0677]	[0.0216]
	24	0.235***	0.130**	0.0705	-0.0943*	0.0958	0.101	0.148*	0.0866	0.04	0.13	0.178**	0.0969***
		[0.0660]	[0.0654]	[0.0634]	[0.0567]	[0.0722]	[0.0711]	[0.0765]	[0.0745]	[0.0669]	[0.0904]	[0.0796]	[0.0220]
Observations		1539	1534	1620	1418	1575	1557	1376	1458	1448	1230	1273	16028
Pseudo R2		0.362	0.358	0.344	0.334	0.392	0.414	0.401	0.399	0.417	0.436	0.407	0.141
Marginal Effect		0.186	0.176	0.165	0.15	0.136	0.166	0.148	0.15	0.154	0.176	0.225	0.394

Table 7. Year dummies from Model 6 "All years" on university participation rate (reference year is 1999)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Coefficient	-0.0118	-0.0151	-0.0496*	-0.00244	0.00982	0.00171	0.00707	0.0198	0.0366	0.00824
se	[0.0248]	[0.0247]	[0.0260]	[0.0260]	[0.0262]	[0.0270]	[0.0262]	[0.0273]	[0.0281]	[0.0270]

Based on the regression results from Model 6 "all years," Figures 8 and 9 present the predicted probabilities of enrolling in university by student characteristics. Figure 8 shows the predicted probabilities by different combinations of family income group (the lowest and the highest groups only) and parental education level. The predicted values were calculated by adding up the income effect, parental education effect, and the marginal effects of the interaction terms between family income and parental education. The results confirmed the findings above that family income is not a significant factor, but parental education level has a very strong and significant effect on Ontario youths' probabilities of enrolling in university. If a youth has at least one university-educated parent, the probability of him/her enrolling in university is above 85%. However, if a youth's highest level of parental education is high school only, but with family income more than $100,000 (the highest family income group), the probability of him/her university participation rate is only 43%.

Figure 8. Predicted probabilities of enrolling in university
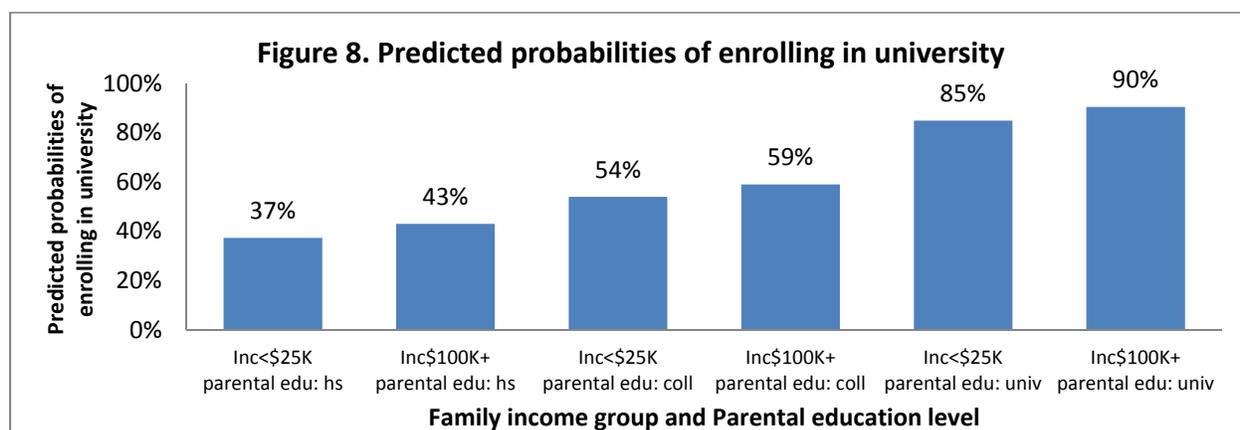
Figure 9 presents the predicted probabilities of enrolling in university by other characteristics in the model. The reference group represents urban Ontario youth who are 21 years old, who live with their parents, who have a family income between $50,000-75,000, mother tongue is English, and where the highest level of parental education is high school or less. Among all student sub-groups, females, older youth, and youth whose mother tongue is a language other than English or French have higher probabilities of enrolling in university. Youth living independently or in lone parent households, Aboriginals, youth with disabilities, and youth living in rural areas are less likely to participate in university than the reference group.

Figure 9. Predicted probabilities of enrolling in university by other characteristics
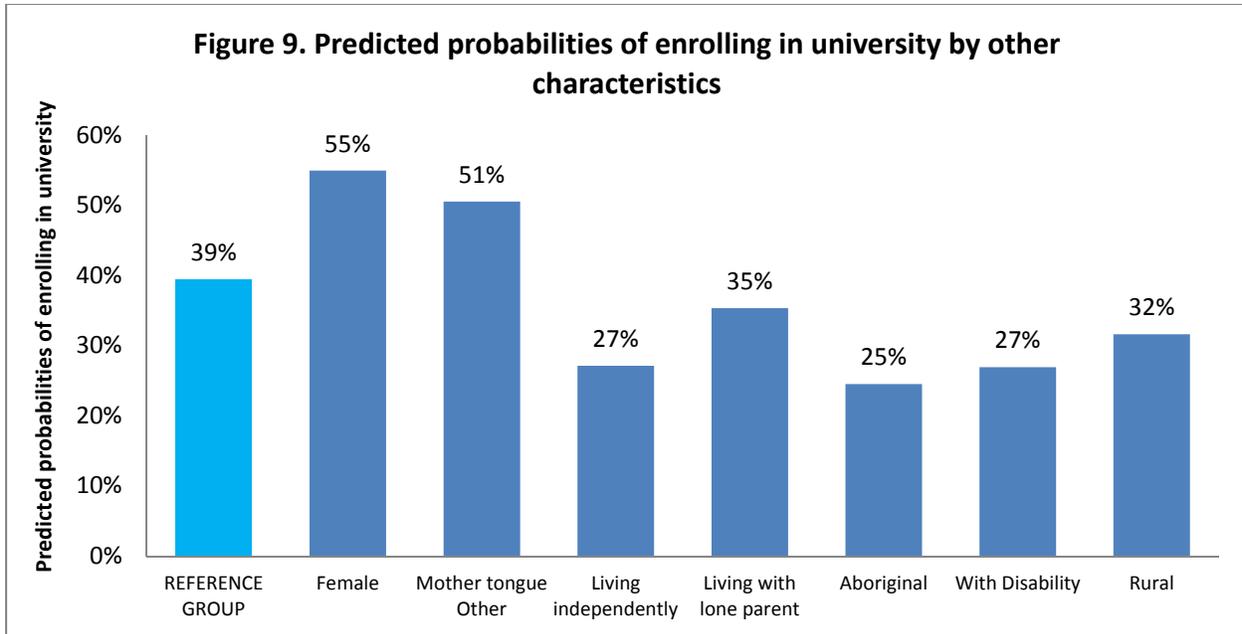
5.2.2 Regression results - college participation

The results from Model 1 show that there is a negative relationship between college and family income. Youth from families in the highest family income group (over $100,000) have lower rates of participation in college (significant for five of the 11 years). Model 2 shows that having at least one university-educated parent is associated with a negative effect on college participation. While the negative income effect lost its significance in Models 3 and 4, the negative parental education effect (university level) stayed stable.

Results from Model 6 on college participation rates are presented in Table 8. Figures 10 and 11 present the predicted probabilities of college participation by student characteristics. After controlling for all other characteristics, having a university-educated parent is associated with a negative and significant effect on three of the 11 years of data and in the "all years" model. The results for the interaction terms between family income group and parental education level also show that regardless of the family income level, having at least one university-educated parent has a negative and significant effect ("all years" model) on participating in college. However, having at least one college-educated parent has no effect on college participation rate. Being female has a negative and significant effect on college participation rate, since women are more likely to go to universities. Aboriginal status has a positive effect on college participation rate ("all years" model, significant at p<0.1). Immigrant youth were less likely than non-immigrant youth to go to college. Living with a single parent has a negative and significant effect on college participation ("all years" model). Having French as one's mother tongue did not show any effect on separate models for the 11 years but was positive and significant in the "all years" model. Disability status has a positive and significant effect on college participation. Living in rural area has no effect. The effect of age is not as strong as is seen in the results for university participation rate. Compared to the reference group (21 years old), being 18 and 19 years of age has a negative effect on college enrollment and no positive effect is seen for youth over 21 years old.

The year effects shown in Table 9 indicate that there is no statistically significant change in college participation rate over the 11 years.

Table 8. Model 6 regression result on college participation rate, cross-sectional data, SLID Ontario, 18-24 year olds, 1999-2009, weighted

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	All years
After tax family income categories (50,000-75,000)												
0-25,000	-0.00574	-0.0547	-0.0148	0.0542	-0.0113	-0.0774	-0.02	-0.027	-0.0479	-0.031	-0.175**	-0.0318
	[0.0698]	[0.0709]	[0.0710]	[0.0803]	[0.0785]	[0.0779]	[0.0870]	[0.0907]	[0.0875]	[0.0928]	[0.0688]	[0.0247]
25,000-50,000	-0.137**	-0.047	-0.0329	-0.0485	-0.00145	-0.0617	-0.0103	-0.106	-0.0339	-0.0731	-0.124*	-0.0589***
	[0.0571]	[0.0625]	[0.0621]	[0.0693]	[0.0715]	[0.0683]	[0.0834]	[0.0710]	[0.0809]	[0.0675]	[0.0639]	[0.0217]
75,000-100,000	-0.0282	0.0236	0.0572	0.0235	0.0759	-0.0633	-0.0615	-0.0709	-0.0565	-0.00066	0.0347	-0.00377
	[0.0682]	[0.0715]	[0.0728]	[0.0822]	[0.0834]	[0.0733]	[0.0771]	[0.0778]	[0.0764]	[0.0829]	[0.0842]	[0.0239]
Over 100,000	-0.0475	0.0584	-0.0578	0.0636	-0.00446	-0.00427	0.0323	-0.0768	-0.0663	-0.0339	0.0361	-0.00875
	[0.0744]	[0.0861]	[0.0756]	[0.0879]	[0.0820]	[0.0800]	[0.0878]	[0.0826]	[0.0810]	[0.0784]	[0.0937]	[0.0256]
Highest level of parental education (high school or less)												
University	-0.148*	-0.103	-0.00916	0.0182	-0.0856	-0.228***	-0.00884	-0.0997	-0.198**	-0.114	-0.0778	-0.0873***
	[0.0806]	[0.0794]	[0.0854]	[0.0875]	[0.0820]	[0.0723]	[0.0881]	[0.0839]	[0.0879]	[0.0895]	[0.0856]	[0.0258]
College	-0.0999	-0.0166	0.105	0.161*	0.0917	0.0562	-0.0417	-0.0388	-0.092	-0.083	-0.0404	-0.00329
	[0.0766]	[0.0785]	[0.0856]	[0.0848]	[0.0812]	[0.0853]	[0.0880]	[0.0808]	[0.0782]	[0.0692]	[0.0761]	[0.0247]
Family type (living with parents)												
Independent	0.0528	0.082	0.0226	-0.0374	-0.0132	-0.0154	0.0411	-0.0386	-0.00566	0.0647	0.117*	0.0192
	[0.0560]	[0.0535]	[0.0504]	[0.0531]	[0.0608]	[0.0638]	[0.0635]	[0.0549]	[0.0644]	[0.0612]	[0.0643]	[0.0182]
Living with lone parent	-0.077	0.0479	-0.0421	-0.0535	-0.0696	-0.108**	-0.057	-0.0625	-0.0731	-0.0062	0.0285	-0.0450***
	[0.0535]	[0.0631]	[0.0517]	[0.0535]	[0.0514]	[0.0464]	[0.0511]	[0.0489]	[0.0494]	[0.0520]	[0.0548]	[0.0161]
Interaction terms (income_50K-75K*parent_highschool_or_less)												
*Income _<25K*parent_univ*	-0.166*	-0.0347	-0.300***	-0.180**	-0.0885	0.0624	-0.219***	-0.165*	0.0465	-0.0984	0.0228	-0.117***
	[0.0900]	[0.116]	[0.0447]	[0.0837]	[0.106]	[0.132]	[0.0635]	[0.0890]	[0.155]	[0.117]	[0.142]	[0.0319]
*Income _<25K*parent_coll*	-0.117	0.109	-0.163**	-0.114	-0.0478	-0.0261	-0.0325	0.00948	0.077	-0.0441	0.318**	-0.00805
	[0.0909]	[0.117]	[0.0817]	[0.0973]	[0.115]	[0.109]	[0.115]	[0.123]	[0.139]	[0.116]	[0.152]	[0.0358]
*Income _25K-50K*parent_univ*	0.0112	0.045	-0.111	0.0738	-0.0387	0.0552	-0.127	0.13	0.208	-0.0739	-0.106	-0.00451
	[0.144]	[0.134]	[0.0982]	[0.149]	[0.121]	[0.166]	[0.0968]	[0.153]	[0.166]	[0.114]	[0.0991]	[0.0425]
*Income _25K-50K*parent_coll*	0.18	-0.067	-0.154*	0.0692	-0.0191	0.0309	0.0184	0.0431	0.112	0.238*	0.191	0.0581
	[0.124]	[0.0997]	[0.0794]	[0.123]	[0.105]	[0.120]	[0.131]	[0.123]	[0.135]	[0.135]	[0.144]	[0.0376]
*Income _75K-100K*parent_univ*	-0.0548	-0.190**	-0.261***	-0.236***	-0.149	0.283**	-0.0414	-0.0608	0.0239	0.00221	-0.143*	-0.0900***
	[0.118]	[0.0874]	[0.0603]	[0.0659]	[0.0983]	[0.141]	[0.116]	[0.115]	[0.140]	[0.140]	[0.0845]	[0.0337]
*Income _75K-100K*parent_coll*	0.221*	0.12	-0.176**	-0.0302	-0.0547	0.161	0.00294	0.00804	0.112	-0.0655	-0.0558	0.00295
	[0.128]	[0.122]	[0.0781]	[0.113]	[0.108]	[0.143]	[0.129]	[0.117]	[0.127]	[0.0973]	[0.103]	[0.0359]
*Income _100K+*parent_univ*	-0.104	-0.148	-0.15	-0.215***	-0.0659	0.041	-0.261***	-0.14	0.0822	-0.154*	-0.196***	-0.141***
	[0.110]	[0.0979]	[0.0966]	[0.0747]	[0.113]	[0.126]	[0.0546]	[0.0935]	[0.144]	[0.0866]	[0.0713]	[0.0290]
*Income_100K+*parent_coll*	0.136	-0.0795	-0.0461	-0.207***	-0.0633	-0.0342	-0.0225	-0.0705	-0.0458	0.062	-0.0197	-0.0384
	[0.138]	[0.113]	[0.115]	[0.0693]	[0.105]	[0.110]	[0.122]	[0.110]	[0.113]	[0.124]	[0.114]	[0.0345]

|	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	All years
Other characteristics												
Female (male)	-0.00498	-0.02	-0.0381	-0.0561*	-0.0692**	-0.0307	-0.0401	-0.0812**	-0.118***	-0.0445	-0.0387	-0.0482***
	[0.0318]	[0.0313]	[0.0305]	[0.0341]	[0.0334]	[0.0325]	[0.0340]	[0.0333]	[0.0335]	[0.0338]	[0.0333]	[0.0101]
Aboriginal (Non-Aboriginal)	-0.0303	-0.0224	0.00273	0.0592	0.215**	0.195**	0.115	0.0169	0.106	0.0061	0.0229	0.0601*
	[0.0764]	[0.0936]	[0.0760]	[0.104]	[0.0941]	[0.0895]	[0.122]	[0.0992]	[0.0911]	[0.0880]	[0.0760]	[0.0307]
Immigrant (non-immigrant)	-0.0697	-0.157***	-0.068	-0.111*	-0.0677	0.0152	-0.151***	-0.0682	-0.0386	-0.0966*	-0.0334	-0.0758***
	[0.0590]	[0.0535]	[0.0625]	[0.0611]	[0.0697]	[0.0735]	[0.0555]	[0.0665]	[0.0654]	[0.0522]	[0.0623]	[0.0191]
Mother tongue (English)												
French	0.0937	-0.0365	0.0278	0.131	0.0917	0.0562	-0.00801	0.138	0.142	0.00718	0.0665	0.0524**
	[0.0703]	[0.0610]	[0.0686]	[0.100]	[0.101]	[0.102]	[0.0856]	[0.0961]	[0.0868]	[0.0701]	[0.0836]	[0.0251]
Other	-0.00499	0.117*	0.0335	-0.00795	-0.0286	-0.08	-0.061	-0.0371	-0.0357	-0.0885*	-0.0888*	-0.0283
	[0.0563]	[0.0599]	[0.0569]	[0.0591]	[0.0593]	[0.0569]	[0.0568]	[0.0638]	[0.0571]	[0.0466]	[0.0522]	[0.0174]
Disability status (non-disability)	0.0235	0.0587	0.0109	0.0116	0.0103	0.141**	0.059	0.0676	-0.015	0.213***	0.0577	0.0575***
	[0.0568]	[0.0644]	[0.0628]	[0.0679]	[0.0596]	[0.0658]	[0.0579]	[0.0536]	[0.0523]	[0.0611]	[0.0554]	[0.0186]
Rural (urban)	0.0272	0.0286	-0.0334	0.0523	0.015	0.0738	-0.0299	-0.0107	0.0398	0.059	0.0268	0.0216
	[0.0480]	[0.0449]	[0.0407]	[0.0534]	[0.0435]	[0.0453]	[0.0450]	[0.0467]	[0.0473]	[0.0495]	[0.0500]	[0.0142]
Age (21)												
18	-0.235***	-0.261***	-0.189***	-0.215***	-0.194***	-0.165***	-0.227***	-0.178***	-0.201***	-0.163***	-0.205***	-0.199***
	[0.0499]	[0.0416]	[0.0563]	[0.0480]	[0.0494]	[0.0507]	[0.0445]	[0.0571]	[0.0522]	[0.0482]	[0.0468]	[0.0155]
19	-0.205***	-0.0501	-0.0603	-0.112**	-0.128**	0.0361	-0.118**	-0.0401	-0.0521	-0.00291	-0.0668	-0.0724***
	[0.0397]	[0.0564]	[0.0547]	[0.0543]	[0.0496]	[0.0557]	[0.0519]	[0.0571]	[0.0565]	[0.0576]	[0.0540]	[0.0166]
20	-0.100**	-0.0921**	0.0344	0.0467	-0.124***	0.0497	-0.0764	-0.0375	0.0353	0.00703	-0.0231	-0.0239
	[0.0461]	[0.0468]	[0.0528]	[0.0658]	[0.0479]	[0.0555]	[0.0516]	[0.0582]	[0.0585]	[0.0541]	[0.0564]	[0.0167]
22	-0.0601	0.105*	0.0642	0.00806	-0.0316	0.156**	-0.115**	0.071	0.0494	-0.0061	-0.0257	0.0132
	[0.0528]	[0.0562]	[0.0509]	[0.0572]	[0.0577]	[0.0672]	[0.0486]	[0.0658]	[0.0629]	[0.0550]	[0.0570]	[0.0177]
23	-0.142***	-0.025	0.151***	0.055	-0.114**	0.173***	-0.0676	-0.0064	0.0764	0.0495	-0.0447	0.00218
	[0.0441]	[0.0563]	[0.0572]	[0.0622]	[0.0505]	[0.0637]	[0.0551]	[0.0570]	[0.0674]	[0.0642]	[0.0542]	[0.0179]
24	-0.139***	-0.068	0.0186	0.068	0.00478	0.00755	-0.0225	0.0356	0.0169	-0.028	0.00399	-0.0121
	[0.0461]	[0.0517]	[0.0556]	[0.0649]	[0.0614]	[0.0584]	[0.0582]	[0.0655]	[0.0582]	[0.0606]	[0.0658]	[0.0179]
Observations	1539	1534	1620	1418	1575	1557	1376	1458	1448	1230	1273	16028
Pseudo R2	0.0707	0.0611	0.0658	0.0737	0.0597	0.0908	0.0825	0.0616	0.0592	0.0888	0.0865	0.0502
Marginal Effect	0.342	0.359	0.35	0.334	0.337	0.306	0.311	0.322	0.323	0.284	0.279	0.326

Reference group is family income $50,000-$75,000, and parental education is high school or less, and family type is living with parents

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in brackets

Table 9. Year dummies from Model 6 "All years" on college participation rate (reference year is 1999)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Coefficient	0.0144	0.00629	0.0117	0.0152	-6.91E-05	-0.00092	-0.00117	-0.00121	-0.0276	-0.0268
se	[0.0220]	[0.0216]	[0.0231]	[0.0226]	[0.0227]	[0.0230]	[0.0229]	[0.0232]	[0.0231]	[0.0230]

Figure 10. Predicted probabilities of enrolling in college by family income group and parental education level

Figure 11. Predicted probabilities of enrolling in college by other characteristics
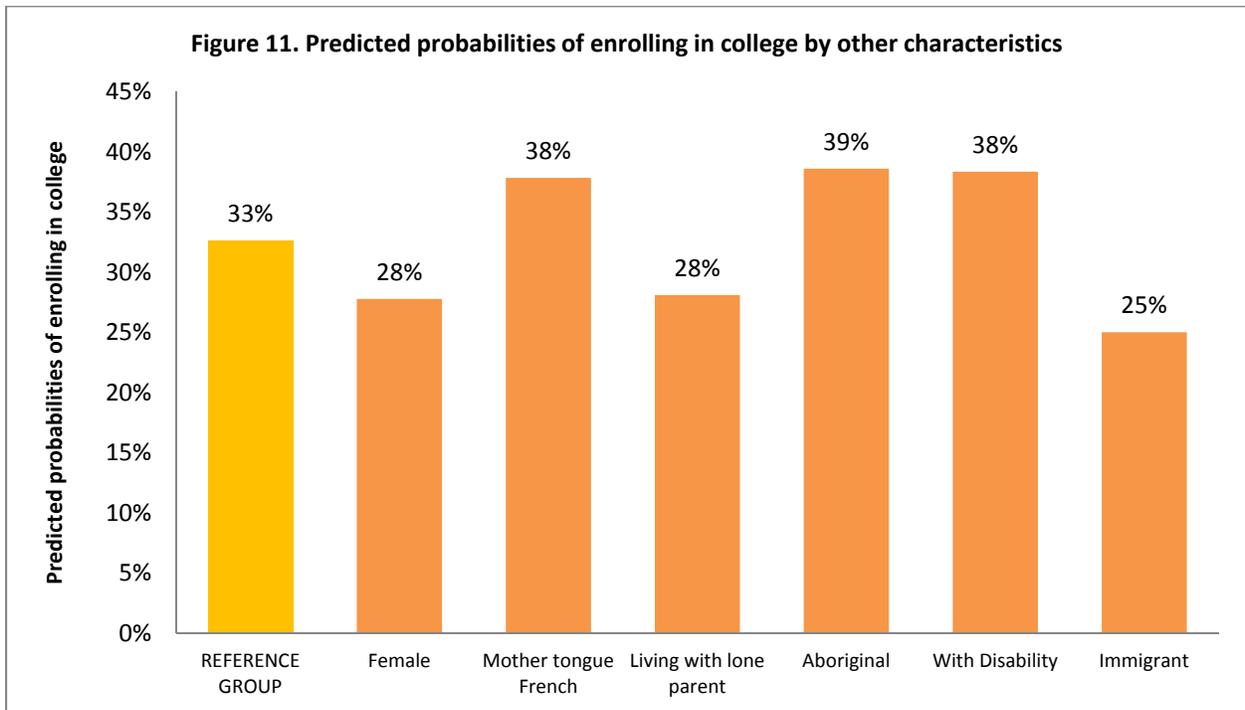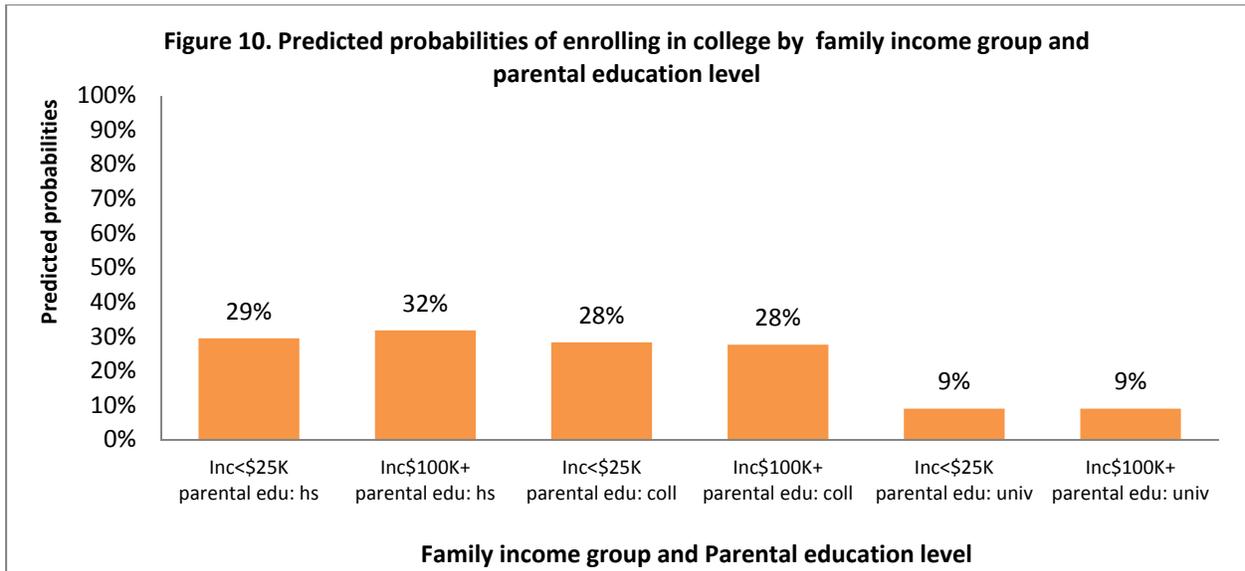
5.2.3 Regression results - summary

Table 10 summarizes the regression results on university and college participation rates. Table 10 shows that participation in university or college has different dynamics. Some youth sub-groups are clearly underrepresented in universities but overrepresented in colleges. For example, Aboriginals and youths with disabilities are less likely to enrol in universities but more likely to enrol in colleges. Likewise, some youth sub-groups are more likely to enrol in universities but not in colleges (e.g., females and youth with university-educated parents).

Table 10. Summary effects, regression results on university and college participation rates, cross-sectional data, SLID Ontario 18-24 year olds, 1999-2009, weighted

	University participation rate	College participation rate
After tax family income categories (50,000-75,000)		
0-25,000	no effect	no effect
25,000-50,000	no effect	negative
75,000-100,000	no effect	no effect
Over 100,000	no effect	no effect
Highest level of parental education (high school or less)		
University	positive	negative
College	positive	no effect
Family type (living with both parents)		
Independent	negative	no effect
Living with lone parent	negative	negative
Interaction terms (income_50K-75K*parent_highschool_or_less)		
*Income_<25K*parent_univ*	positive	negative
*Income_<25K*parent_coll*	no effect	no effect
*Income_25K-50K*parent_univ*	no effect	no effect
*Income_25K-50K*parent_coll*	no effect	no effect
*Income_75K-100K*parent_univ*	positive	negative
*Income_75K-100K*parent_coll*	no effect	no effect
*Income_100K+*parent_univ*	positive	negative
*Income_100K+*parent_coll*	no effect	no effect
Other characteristics		
Female (male)	positive	negative
Aboriginal (Non-Aboriginal)	negative	positive
Immigrant (Non-Immigrant)	no effect	negative
Mother tongue (English)	no effect	no effect
French	no effect	positive
Other	positive	no effect
Disability status (non-disability)	negative	positive
Rural (urban)	negative	no effect

		University participation rate	College participation rate
Age (21)			
	18	negative	negative
	19	negative	negative
	20	no effect	no effect
	22	positive	no effect
	23	positive	no effect
	24	positive	no effect

Note: coefficients p<0.01 are marked in the table; blank means no statistically significant effect

Section 6: Conclusions and policy recommendations

This study builds on previous research to analyze access to postsecondary education for a number of under-represented groups in Ontario and in other regions of Canada. This study differs from previous work as it has a larger scope in terms of the types of groups it considers (low family income, lower parental education, family type, disability status, etc.). As a result, this study gives a more precise indication of which factors matter most to PSE access among under-represented groups and which factors appear to matter simply because they are correlated with other factors. Some of the major findings of this project are:

- The gap in the university participation rates of different income groups remained relatively constant from 1999 to 2009. The gap between the highest and the lowest income groups was about 20%. Summary tables showed that the gap increased slightly. However, no statistically significant differences were found over the years in the regression results.
- The effect of family income is greatly reduced when it is considered jointly with other characteristics, including parental education.
- The higher the level of parental education, the more likely youth are to participate in university. The effect of parental education on university participation remained strong even after all other characteristics were controlled. Having at least one parent with a university degree has a strong positive effect on a youth's participation in university but a negative effect on participating in college.
- The gender gap in university participation widened from 1999 to 2009.
- Aboriginal and disabled youth are more likely to be under-represented in Ontario universities, but not in colleges.
- Living independently and living in a lone parent household have negative effects on university participation.

The fact that family income lost its significant effect when other characteristics were controlled implies that student financial assistance policies can only remove part of the barriers for traditionally under-represented youth groups. Rather than being limited to student financial aid, policy initiatives should shift direction and provide resources that consider the needs of each specific youth sub-group.

The results that Aboriginals and youth with disabilities are under-represented in universities but are more likely to enrol in colleges signals some success in the Ontario college sector's attempts to enroll less advantaged youth groups. Improving transfer pathways from college to university would provide more opportunities for Aboriginals and youth with disabilities to obtain a university degree. A HEQCO @ Issue paper (Kerr, McCloy, & Liu, 2010) indicates that high proportions of university applicants from under-represented groups (Aboriginal student, students with disabilities, first-generation students and low/moderate income students) are college transfer students. This suggests that college students from under-represented groups have already begun to take advantage of transfer opportunities to pursue further education in university. Government policies should continue to expand and improve student transfer pathways between college and university. Improving the credit transfer system will make it easier for students from under-represented groups to reach their preferred educational destination.

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