Accessibility in Ontario's Postsecondary Education System: an Interprovincial Comparative Analysis

report

By: Torben Drewes, Trent University

Higher Education Quality Council of Ontario

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The Higher Education Quality Council of Ontario

1 Yonge Street
Suite 2402
Toronto, ON Canada
M5E 1E5

Phone: (416) 212-3893
Fax: (416) 212-3899
Web: www.heqco.ca
E-mail: info@heqco.ca

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Executive Summary

This report uses the results of Statistics Canada's 2002 Postsecondary Education Participation Survey to examine various dimensions of accessibility in Ontario's postsecondary system. The PEPS is one of the primary sources capable of providing information on accessibility at the provincial level, and is examined for statistical evidence that can provide context for the discussion of accessibility issues in the Province. This is done through an interprovincial comparison of participation, financing, background factors affecting participation, and so on. The situation in other provinces does not establish the standard against which the Province should measure itself, but such comparisons can be informative.

The PEPS was conducted in 2002 and focused on young Canadians who were between the ages of 18 (17 in Quebec) and 24. Respondents were asked if they were currently enrolled in the postsecondary education (PSE) system or had been enrolled at some time. The key findings of the report are as follows:

- Among high school graduates in 2002, the proportion who had continued on to college in Ontario was higher than in the rest of the country, except for Quebec. The proportion who had, at some time, been enrolled in university was lower in Ontario than in any other region except Quebec.
- Whether or not sufficient space was available cannot be directly determined with the data (or any other available data source). The fact that high school graduates with low high school grades are less likely to have had participated in Ontario universities compared to other regions might be taken as evidence of a greater degree of rationing by Ontario universities. These high school graduates, on the other hand, were more likely to participate in colleges in Ontario than in the other regions, except for Quebec.
- Among those who had not participated in PSE, the proportion citing financial reasons in Ontario was about the national average.
- Family income appears to play no significant role in college participation, either in Ontario or nationally. It does in the case of university participation at both levels, but the positive correlation between family income and university participation is lower in Ontario. Parental educational attainment is one of the strongest correlates of university participation.
- The PEPS data confirm findings in the literature that the problem of attrition among those who begin PSE programs was not a more severe problem in Ontario than elsewhere. Of those who do leave, only about 23 percent cite financial reasons which is similar to the Western provinces, significantly lower than the Atlantic Region and higher than Quebec.
- Ontario students were much more likely to report savings being available for PSE and the average amount of those savings was significantly higher in Ontario than elsewhere.
- Ontario college students reported educational expenses that were average compared to those reported by students in other regions. They also reported average funding levels, success in securing student loans, and amounts of those loans. The mix of funding between repayable and non-repayable sources did differ across regions.
- Ontario university students reported educational expenses well above the national average. However, they also report funding levels above the national average. This may be partly due to student loans, the value of which were higher than in Quebec or the Western provinces (but appreciably lower than in the Atlantic provinces).

I. Introduction

The importance of higher education to economic prosperity at the individual and societal levels is well understood, and the promotion of participation in postsecondary education (PSE) is an important component of public policy. In Canada, provinces have an important role to play in such policy. The constitutional assignment of government responsibilities within the Canadian federation places the postsecondary educational system within provincial jurisdiction and provides provinces with significant levers that can be applied to PSE enrolment. For example, the supply of spaces is largely determined by how much money provincial governments choose to spend on the bricks and mortar of PSE institutions and on their operating expenses. Tuition levels are effectively regulated by provinces, and influence both the capacity of PSE institutions and the demand for those spaces. Demand is also affected by provincial policies concerning student financial assistance in the form of loans and grants, tax credits provided to PSE students and their families, and so on. One could expand the list of possible levers to include less direct measures such as improvements to the quality of the K-12 system and its ability to produce students willing and able to further their education.

Arguments in favour of proactive higher education policy can be based on principles of economic efficiency. The most basic efficiency argument is that the social returns to investments in higher education exceed the private returns so that, without active intervention, individual decisions would result in an under-investment in education from society's point of view. For example, an individual weighing the costs and benefits of pursuing higher education would consider gains in his or her income but would ignore any impacts on the incomes of others whose productivity may subsequently be enhanced. It is also widely believed that credit constraints may prevent private decision-makers from undertaking investments in PSE that are privately advantageous. Since labour services cannot be used as collateral, individuals are unable to borrow against their future higher earnings and may, therefore, be prevented from making socially beneficial investments. This is an issue of accessibility.

Public policy is not only about efficiency but also about equity. Children from lower income families are significantly less likely to attend university.[1] Differential access by family background is a general concern of government and a particular, mandated concern of the Higher Education Quality Council of Ontario (HEQCO).

Whether based on efficiency or equity grounds, arguments for active policy intervention to improve access also require empirical evidence of the need for such intervention. Is there evidence that lack of accessibility, for whatever reason, is a reality? If so, how large is the problem and what can the data tell us about the underlying causes? The following report is intended to shed light on these empirical questions as they relate to Ontario.

One approach to assessing the need for provincial strategies for increasing PSE participation in Ontario is to benchmark the Province's performance using interprovincial comparisons. Of course, participation in other provinces cannot be taken to be optimal so these benchmarks may not represent "best practices" or optimal targets. Nevertheless, such comparisons can tell us a lot about conditions in Ontario.

The goal of this report is to review Ontario's performance in terms of accessibility in general and, in light of HEQCO's explicit mandate with respect to equity in access, through a comparison of various statistical measures of access by socioeconomic status. The report will make use of a nationally representative survey expressly designed to investigate access and persistence in postsecondary education, Statistics Canada's 2002 Postsecondary Education Participation Survey (PEPS). The Survey covers the various dimensions of accessibility, which is more than simply a matter of affordability. In this report, a barrier to access will be regarded as any impediment to entering and staying in PSE. This clearly includes financial barriers, but may

[1] Although socioeconomic background appears to be much less of a factor in college participation. See Corak et. al. (2003) and Drolet (2005).

also include a lack of spaces in the system for qualified applicants, academic unpreparedness, a social background that does not encourage participation in higher education, and so on. The objective is to exploit any and all information that can be gleaned from PEPS on these barriers.

Given the centrality of the PEPS to this paper, the following section will review the survey design, its strengths and its weaknesses. Section III reviews evidence of what might be considered to be actual physical barriers in the form of supply restrictions. Getting into PSE is only one half of the equation. Achieving the full benefits requires the completion of studies and this might be jeopardized by financial pressures and other factors. Thus Section IV examines persistence rates to see if differences exist across regions in the successful completion of PSE studies. Clearly, the affordability of PSE is central to any discussion of access barriers and Section V looks at a number of financial dimensions including differences across provinces in higher education costs, capacity to bear those costs, and student financial assistance. Section VI concludes the report.

II. The Postsecondary Participation Survey

II.1 An Overview of the PEPS

The PEPS was conducted in February and March 2002 to provide basic indicators on PSE in Canada, including measures of access, persistence, and financing. Administered to a nationally representative cohort of 18 to 24 year olds (17 to 24 year olds in Quebec), PEPS data allow us to observe choices made by young Canadians concerning attendance and persistence in higher education, as well as a host of potential correlates including high school performance and previous intentions with respect to PSE. In PEPS, a program is considered to be postsecondary if it takes place after high school, involves the receipt of a certificate, diploma, or degree, and takes longer than three months to complete if taken full-time.

The sample size for the PEPS is 5,141 which is rather small by modern standards and will require some aggregation to meet confidentiality and/or data quality requirements. In the results reported below, estimates were first tried at the provincial level and then aggregated to the region level (Ontario, Quebec, Atlantic Region, Prairie Region, British Columbia) if necessary to meet Statistics Canada's confidentiality requirements. In some tabulations, further aggregation was required (Ontario, rest of Canada).

The PEPS is a valuable tool for education policy but does have some limitations. It does not contain a direct reporting of parental income, presumably because past researchers have found that students are notoriously uninformed about their parents' incomes. There is information, however, on parents' occupations and this was used to assign incomes to each parent. The occupational codes were converted to the 25 available codes in the 2001 Census and the median income (by gender) for each of these occupations was assigned to each parent in the PEPS data. This is less than satisfactory, but there is no other way around the problem of measuring students' socioeconomic backgrounds in terms of parental income. The PEPS also includes parental educational attainment. Given that educational attainment is strongly and significantly correlated with earnings,[2] it may serve as a fairly reliable proxy for socioeconomic status.

One further issue requires discussion. The PEPS allows us to identify students who graduated from Ontario high schools and to identify students pursuing PSE in Ontario. These groups will largely be the same people, but they will not match exactly since some graduates of Ontario high schools will pursue PSE outside the province and because some graduates from high schools outside Ontario will attend Ontario PSE institutions[3]. When thinking about accessibility in Ontario PSE, which group should be looked at? The next section deals with barriers to access arising out of a lack of space in the system. In this case, it would make

[2] See Lemieux (2002) for a recent review of Canadian evidence.
[3] In the PEPS data, approximately 5 percent of Ontario high school graduates pursuing PSE do so outside the province. The percentage of non-Ontario high school graduates in the Ontario PSE system is about 3.5 percent.

sense to look at students trying to get into Ontario institutions, regardless of where they completed high school. When we turn to issues around student financial assistance, however, the group of interest would be graduates of Ontario high schools (regardless of the province of destination) since student aid parameters depend on the province of residence when applying to PSE.

Rather than switching between two slightly different populations of interest, all statistical work in this report uses the population of Ontario high school graduates.[4]

II.2 Participation Rates in Postsecondary Education

Before proceeding to a detailed analysis of PEPS data, we need to look at the basic indicator of access to PSE, the participation rate. We also need to compare PEPS-derived measures of participation to those generated by other sources. Measuring participation rates is not straightforward. First, one must decide where to obtain measures of enrolment in PSE. One possible source is Statistics Canada's database of PSE enrolments derived from administrative data. University enrolment information from this source is acceptable, but college enrolment data have been problematic and have not been updated in some time. The Labour Force Survey has been widely used as an alternative source of enrolment data and, unlike administrative data, has the virtue of consistency across provinces. Secondly, the choice of base in the percentage calculation can complicate comparisons of participation rates. Administrative enrolment data is converted to a percentage by selecting an age group in the population to serve as the base, but this group is typically arbitrarily chosen.

The most recent and comprehensive look at participation in PSE has been reported in the latest report of the Pan-Canadian Education Indicators Program (Canadian Education Statistics Council (2007)) and the participation rates developed in that report are repeated in Table 3.1. The rates are derived from the Labour Force Survey. Comparisons of PSE participation involving Quebec are always problematic given that province's CEGEP system[5]. Indeed, provincial differences in the structure of the non-university PSE sector must be borne in mind generally. The university sector is more homogeneous across provinces so comparisons may be more meaningful.

A comparison of the participation rate among 20 to 24 year olds shows that Ontario fares well on the basis of this measure, with 28 percent of these individuals currently attending university full-time. This is the second highest rate among the provinces. The full-time participation rate among the younger age group is above the national average but that average is clearly being depressed by the low value in Quebec which, in turn, reflects the classification of many university-bound students as being in the college (CEGEP) sector. Bearing that issue in mind when looking at college participation rates, Ontario also does relatively well in terms of enrolments in the college system. Ignoring Quebec, Ontario's college participation rate is exceeded only by Alberta and British Columbia for the younger age group and only by British Columbia for the older group.

[4] This discussion raises the interesting issue of precisely how to define the supply of educational resources within a single province. Must a province build sufficient capacity within its own borders or could it rely on excess capacity elsewhere? For example, is it reasonable to think of Ontario promoting accessibility by increasing student financial assistance to students attending PSE in the Atlantic Region where universities are forecast to have significant excess capacity in the future? This issue is not addressed in the report.

[5] The LFS does not distinguish between the university transfer and technical streams in CEGEP program.

Table 3.1: Participation Rates by Age, 2005/2006

Jurisdiction	College		University	
	15 to 19 years	20 to 24 years	15 to 19 years	20 to 24 years
Canada	11	11	9	25
Nfld.	4*	11	13	26
PEI	4*	6*	15	23
NS	4	5	13	29
NB	5*	6	11	26
Que	24	9	3	26
Ont	**7**	**13**	**12**	**28**
Man	4	8	12	27
Sask	3	5	10	26
Alta	8	12	8	17
BC	9	16	9	21

Source: Canadian Education Statistics Council (2007)
Note: * indicates a coefficient of variation between 16.6% and 25%.

The PEPS data can also be used to derive participation rates. Given the purpose of this report, we are interested in the participation of those individuals who are in a position to attend higher education institutions and the sample used in all estimates has been restricted to those with a completed high school education.[6] This will naturally produce higher participation rates than those reported in Table 3.1. Recall, as well, that the age groups differ between the two tables. Finally, note that the Indicators Program participation rates refer to current attendance in a PSE institution while in the PEPS data a participant is an individual who is currently enrolled in PSE or has been enrolled in the past.

Table 3.2: Participation Rates Among High School Graduates
Percentage of high school graduates ages 18-24 who are taking or have taken at minimum some PSE

Region	University	College	Other	Total
Atlantic Region	41.6%	32.4%	2.3%	76.3%
Quebec	26.2	54.3	2.4	82.9
Ontario	**32.9**	**35.6**	**2.2**	**70.6**
Prairie Region	38.6	22.1	2.2	63.0
British Columbia	38.6	23.1	2.1	63.8

Source: PEPS

Table 3.2 paints a somewhat different picture of PSE participation than do the statistics from the Pan-Canadian Education Indicators Program. As expected, given that attention has been restricted to high school graduates, participation rates are higher across the board. Ontario's ranking across regions changes, however. A greater proportion of this age group had attended university PSE in Ontario than Quebec, as before, but the Province's rates are now significantly below those in the Atlantic Region, the Prairie Region and British Columbia. Unless this result is somehow a figment of the data, this seems to suggest that that university participation conditional on high school graduation is greater in the latter regions than in Ontario. In other words, it may be that that young people in, say, the Atlantic Region are less likely to complete high school but, if they do, are more likely to continue on to university. This is an interesting scenario that needs to be explored.

[6] Although Ontario universities admit students without high school completion as mature students, this group will be of negligible size given the restricted age range (18-24) in PEPS.

In terms of college participation, Ontario does very well if we ignore the special case of the college participation numbers in Quebec. The college participation rates in Table 3.2 are consistent with those of Table 3.1 in showing above average participation in Ontario.

The university and college sectors clearly dominate PSE in every province and the following report is primarily focused on these two streams. To make interprovincial comparisons more meaningful within each sector, CEGEP students enrolled in two-year pre-university studies were assigned to the university sector (with those in technical programs considered to be in the college group). Any students reporting enrolment in a college but pursuing studies leading to university qualifications were similarly reassigned to the university sector. The final assignment of respondents to each of the three groups (university, college and other) is provided in Appendix 1.

III. Demand and Capacity Issues

III.1 Descriptive Statistics

It is possible that an individual who is willing and able (both financially and academically) to participate in PSE may face supply-side barriers if the system does not have sufficient capacity. In price-driven market systems, we trust that an excess of demand over supply is eliminated in a timely fashion through price increases that induce more supply and dampen demand. The market for higher education in Ontario does not have those internal equilibrating forces. In principle, Ontario universities are independent corporations with the authority to charge whatever price (tuition) they please. In practice, a funding formula that essentially taxes away any revenues gained from tuition levels above provincially proscribed levels results in universities having no incentive to diverge from those levels.[7] Provincially regulated university tuition levels are obviously not established so as to clear the market. The same story holds for Ontario's colleges.

The system's response to changing demand comes, then, from quantity adjustments and here the Province does pursue a proactive policy of ensuring a sufficient supply of higher education. Indeed, the provincial government has made a public commitment to ensuring that every qualified student will find a place in the system. Although the Ontario system has recently shown a remarkable capacity for handling major shifts in enrolment caused by the "double-cohort" and by demographic changes, the ability of a quantity adjustment system to respond to demand changes needs to be examined.

There is surprisingly little research in the area of quantity constraints given that the simple lack of capacity is both an obvious barrier to entry and a potential source of inequity in access. Quantity constraints at the institutional level take the form of admissions offices making offers of admission to only some of the qualified applicants. Any particular institution may establish a target level of incoming students based upon available provincial funding and then achieve that level by adjusting entrance requirements. If high school averages are used to assess an applicant relative to those requirements, and if high school averages are correlated with socioeconomic background, those from lower income backgrounds are more likely to be rationed out of the system.

The lack of research in this area may reflect the lack of data that directly measure capacity constraints. Interestingly, Ontario has the best potential for developing measures of capacity constraints through data generated by the province's centralized application centres that tracks applications and registrations by program and by institution. However, these data have not yet been put to use in this way. Whatever direct evidence exists for the country as a whole is principally restricted to universities, and has been reviewed by Snowden, who concludes:

[7] The Province has deregulated some professional programs but the great majority of university enrolments occur in regulated programs.

> *"As far as the two main questions are concerned (Do all qualified secondary school applicants from secondary school/CEGEP have access to university? and Have universities expanded first-year intakes in concert with the demands of the "echo boom"?), the answer is a qualified yes in both cases. … If access is defined as access to the* ***first-choice*** *program/university, the answer appears to be no to both questions."* Snowden (2004, p. i)

Without access to applicant data in all provinces, direct comparisons of capacity constraints across provinces are not possible. Inferences can be made, however, using indirect information. If institutions ration seats using entrance requirements, provincial variations in those requirements can be taken as evidence of differential capacity, although interprovincial comparisons of high school averages are not uncontroversial. For example, Usher and Junor (2004) find that

> *… secondary school students from Alberta and British Columbia have much higher literacy scores than their counterparts in Atlantic Canada. … And yet, far more students attend university in the Atlantic provinces than in Alberta and BC. The main reason? Smaller university capacity in the west and lower academic standards in the east … Between 20-25 percent of the entering university class in the Atlantic provinces have average secondary school marks below 75 percent while the corresponding figure in BC is only 2 percent."* (Education Policy Institute, Fall 2004).

The claim that university participation rates in the Atlantic Provinces are higher than elsewhere is corroborated by the evidence in Table 3.2 showing significantly higher rates in that region. Tables 3.3a and 3.3b examine university and college participation rates by region and by high school average to examine the claim that high school graduates in the Atlantic Region with lower grades have a greater likelihood of attending PSE.[8]

Table 3.3a: University Participation by High School Average
Percentages Attending or Having Attended University

Region	90% +	80 to 89.9	70 to 79.9	60-69.9
Atlantic Region	73.6%	59.4%	32.6%	15.9%
Quebec	60.2	38.8	19.4	8.3
Ontario	**71.0**	**52.9**	**25.3**	**4.8**
Prairie Region	86.7	58.3	36.4	11.2
British Columbia	56.9*	58.0	25.8	15.1

Source: PEPS
Note: * indicates an unacceptably high coefficient of variation.

The data in Table 3.3a are consistent with (although they certainly do not prove) the hypothesis of a higher degree of rationing by grades in Ontario universities than in other regions. The proportion of high school graduates with a "C" average attending university was substantially lower than it was in Quebec and less than one third of what it was in the Atlantic Region or British Columbia. Since participation rates differ by region at all levels of high school averages, the more telling statistic is the ratio of the participation rates of low ability high school graduates to the rates of those with higher averages. From this perspective, Ontario high school graduates with low averages were much less likely to attend university than those with the highest grades, with a ratio of 4.8%/71.0% = 0.07. In the Atlantic Region, the gradient of participation with respect to high school averages was less steep at 0.22. Quebec and the Prairie Region had intermediate values of 0.14 and 0.13, respectively. Unfortunately, the cell size for British Columbia high school graduates with A+ averages is too small to yield reliable estimates.

It is important to note that enrolments reflect choices made by both individuals and institutions so that the low participation rate among Ontario students with below average high school performance may in principle be

[8] Recall that only individuals with completed high school are included.

due to their own decisions not to pursue university programs. Why this should occur in Ontario and not elsewhere, however, is not immediately obvious, leaving quantity rationing as a possible explanation.

Table 3.3b: College Participation by High School Average
Percentages Attending or Having Attended College

Region	90% +	80 to 89.9	70 to 79.9	60-69.9
Atlantic Region	17.0%	27.2%	34.4%	28.3%
Quebec	26.2	47.7	59.9	53.3
Ontario	**14.5**	**22.3**	**43.8**	**42.7**
Prairie Region	8.3	16.9	26.0	20.4
British Columbia	13.8	19.8	28.3	25.7

Source: PEPS

Participation by high school average is repeated for colleges in Table 3.3b. Within each region, quite a different picture from that in Table 3.3a emerges with participation rising as we move from left to right until dropping off in the last column. Ontario now has, with the exception of Quebec, the highest participation rates among the lower two high school averages. At the risk of being speculative, this is consistent with a story in which quantity rationing in the Ontario university sector is creating an overflow into a college system more open to accepting applicants with lower high school grades. Once again, however, the perils of interprovincial comparisons of grades must be borne in mind and precisely what is driving the patterns seen in Tables 3.3a and 3.3b needs further exploration.

The question can be explored further using answers to PEPS questions asked of respondents who had no PSE or who had left PSE before July 2001. These individuals were asked the primary reason why they were not attending PSE (if they had applied) or were not applying (if they had not applied). Table 3.4 reports the proportion of these non-attenders by reasons for Ontario and the other regions. Note that respondents are asked to provide the primary reason (hence the rows sum to 100%). Note also that the table does not distinguish between universities and colleges since, for those not attending, PEPS did not ask what type of PSE they might have been considering.

Table 3.4: Reasons for not Attending PSE
(Percentage of those not attending PSE)

Region	Financial Reasons	Unqualified	Uninterested	Other
Atlantic Region	42.3%	11.9%	16.1%	29.7%
Quebec	20.0	17.5	19.6	42.9
Ontario	**35.0**	**14.4**	**17.5**	**33.1**
Prairie Region	29.3	9.7	28.8	32.2
British Columbia	38.1	9.2	21.0	31.7

Source: PEPS

Recall that the sample has been restricted to high school graduates, so that respondents stating that they were unqualified for PSE were presumably assessing their qualifications at least in part on the basis required high school averages[9]. In Table 3.4, Quebec and Ontario respondents were most likely to point to a lack of qualifications as the primary reason for not attending PSE. This complements the relatively low participation rates of low ability high school graduates reported in Table 3.3 in pointing to the possibility of more severe quantity rationing in these provinces than elsewhere.

[9] In systems where high school students were streamed, course selection may also have entered into consideration.

Financial issues will be dealt with below, but the evidence on financial reasons for not attending PSE is worth noting while Table 3.4 is available. Not surprisingly, non-participating respondents in the Atlantic Region, who face the highest tuition rates and weaker provincial economic conditions, were much more likely to cite financial considerations for their decision not to pursue higher education than those who reside elsewhere. Bearing in mind the difficulty of comparisons with Quebec, Ontario results appear to be in line with national averages.

III.2 Family Background

A key component of PSE policy is ensuring that access is equalized across socioeconomic groups. That participation in university education is strongly correlated with family background is a stylized fact, and we should expect this correlation to be true in Ontario as well. The only question is whether Ontario policies have served to alleviate the correlation to a greater or lesser degree than in other provinces. To examine this issue, a multivariate approach is required to fully control for confounding influences.

One possible strategy to investigate the role of family background is to estimate a model of participation separately by university and college enrolment since family background has been found to play a much smaller role in college participation. It would not be realistic, however, to regard a young individual as making two distinct choices: whether or not to attend university, and whether or not to attend college. A simultaneous model is required that considers a choice between three options: not attending PSE, attending university, and attending college. The model estimated is a multinomial logit where the dependent variable takes on one of three values, one for each option (although the order is immaterial).

Four income classes for parental income in 2000 have been constructed: less than $25,000 (income class 1); $25,000 to $49,999 (income class 2); $50,000 to $74,999 (class 3); and greater than $75,000 (class 4). Indicators for these income classes are interacted with the indicator variable for Ontario in order to determine whether income has a differential impact in the Province compared to the rest of Canada. To illustrate, suppose that there are only two income classes and that the probability of attending PSE is linearly related to province and income class according to the following equation:

$$P_i = \beta_0 + \beta_1 DONT_i + \beta_2 DINC_i + \beta_3 DONT_i \times DINC_i$$

where P_i equals 1 if individual *i* is attending PSE and 0 if not,
$DONT_i$ is an indicator variable equal to 1 if the individual is from an Ontario high school and 0 if not, and
$DINC_i$ is an indicator variable equal to 1 if the individual's family is in the high income class and zero if not.

The estimated impact of being in the higher income class on the probability of participation is found by differentiating the estimating equation with respect to DINC. This results in

$$\partial P_i / \partial DINC_i = \beta_2 + \beta_3 DONT_i$$

If there is a greater probability of participation for individuals in the higher income class outside Ontario, the estimate of β_2 will be positive. The estimate of β_3 will tell us whether the difference in participation by income class is higher ($\beta_3 > 0$) or lower ($\beta_3 < 0$) in Ontario than it is on average in the rest of the country.

Table 3.5 reports the results of a fuller specification that includes controls for age, gender and parental education. The highest educational attainment of either parent has been classified as no more than high school, some PSE, completed college, completed bachelor's, and completed graduate program. The reference group is completed high school or less. High school averages of the individuals are also included,

with the reference group being "D" averages. Once the multinomial logit model has been estimated, the coefficients can be used to determine their impact on the probability of participating in college versus stopping at high school, and the probability of participating in university versus stopping at high school. The coefficients reported in Table 3.5 are these marginal effects of the explanatory variables evaluated at sample means. Thus, the estimates tell us how changes in the explanatory variable change the probability of attending college (or university) instead of stopping at high school completion.

Table 3.5 Multinomial Estimates for Participation in Higher Education
(Estimates are Marginal Effects of Explanatory Variable)

Explanatory Variable	College	Universities
Ontario (1 if Ont, 0 if not)	-0.075	0.018
Male (1 if male, 0 if not)	-0.005	-0.055*
Age in years	0.309*	0.804*
Age squared	0.008*	-0.018*
Income Class 2 (1 if in class 2, 0 if not)	-0.005	0.001
Income Class 3	-0.044	0.053
Income Class 4	-0.045	0.127*
Income Class2 x Ontario	0.082	-0.051
Income Class3 x Ontario	0.133*	-0.111**
Income Class4 x Ontario	0.158	-0.114**
(Reference parental ed. class is HS)		
Highest Parent Education is College	0.007	0.104*
Highest Parent Ed. is some PSE	0.006	0.112*
Highest Parent Ed. is Bachelor's	-0.053	0.222*
Highest Parent Ed. is graduate Program	-0.216*	0.425*
High School Avg. is C (ref. D avg.)	0.093	-0.065
High School Avg. is B "	0.077	0.144**
High School Avg. is A	-0.073	0.375*
High School Avg. is A+	-0.244*	0.496*
No. of Observations	3832	3832

Notes: * statistically significant at 5% level, ** significant at 10% level

The positive coefficients on age are artifacts of the structure of the data. Recall that PEPS respondents are between the ages of 18 (17 in Quebec) and 24 and that participation is defined to be attending at any time, not just currently. Thus, the older the respondent, the more likely he or she is to have attended PSE. Very few of the remaining variables provide significant explanatory power in the choice of college participation over high school completion only. The interactive term including the indicator for Ontario and income class three suggests that respondents from families with a parental income from $50,000 to $75,000 are more likely to attend college than those in the lowest income class, but this appears to be true only in Ontario. Parental education plays no role except if it is at the postgraduate level in which case participation in college is reduced compared to those whose parents had no more than a high school education. Similarly, high academic achievement in high school tends to reduce college attendance.[10]

With respect to universities, we see a negative coefficient on the male indicator as would be expected given the lower university participation rates for males than for females in the raw data. Outside of Ontario, only the highest income class has a significant impact on the probability of university participation while the interactive terms (although only weakly significant) indicate that, within the Province, the impact of higher family income is lessened compared to the rest of the country. The significantly positive coefficients on parental educational attainment confirm the findings that parents' education and university participation are positively correlated in

[10] Note that these latter two results are estimated for Canada as a whole and do not apply only to Ontario.

Canada. University participation at the national level is also strongly and positively correlated with high school averages.

Returning to the issue raised at the beginning of this section, the estimates in Table 3.5 yield the following conclusions. Income does not appear to matter much in the decision to attend college instead of stopping after high school, either at the national or the provincial level. Family income does matter for university choices where, outside Ontario, being from a family in the highest income category ($75,000 plus) increases the probability of participation by over 12 percent compared to family income levels below $25,000. In Ontario, the positive association between family income and university participation is reduced compared to the national pattern.[11]

IV. Persistence Rates

Entry into the postsecondary system is only one aspect of success in higher education. While partial completion of a degree or certificate may enhance productivity, so-called "sheepskin effects" imply that the full benefits of education will accrue to an individual only if that education is completed.[12] It may be that the productivity impacts of an individual's program are not fully achieved unless the program is completed. Or, it may be the case that completion of a program of study is used by employers to screen applicants. In either case, dropping out of the PSE system reduces returns to the individual. As well, completion of a degree or certificate is typically a prerequisite for further formal schooling. If financial pressures underlie the decision to drop out of the system before completion, then this phenomenon would be considered an issue with socioeconomic dimensions and consequences in the same way that initial access into the system is.

To what extent is persistence (or its inverse, attrition) a problem and is the Ontario experience different than it is in other provinces? Attrition is difficult to measure and even more difficult to understand using administrative data since institutions rarely administer exit surveys to departing students and really do not know whether these students are leaving the system or only their own institution[13]. Fortunately, the PEPS was designed to elicit information on attrition. Various authors have also used the Youth in Transition Survey (YITS) and the School Leavers Follow-up (SLF).

Butlin (1999) used the SLF survey to assess how socioeconomic and high school related factors affect the decision to leave university or college. Leavers are defined as respondents who had begun PSE but had not completed and were not currently enrolled. This group may well contain individuals who eventually return to complete their studies. Of considerable interest is a breakdown by geographic region. Butlin estimates that leavers constitute 20 percent of those who had begun university studies and 18 percent of community college students. Estimates indicate that Ontario compares favourably to other regions of the country in terms of leavers. Only 13 percent of Ontario respondents are classified as university leavers, compared to nearly a quarter of students from the Atlantic and Prairie regions and a third of students in British Columbia.[14] About 18 percent of Ontario respondents were community college leavers compared to 14 percent for Quebec respondents, a quarter of respondents in the Prairies and over a third in British Columbia.

Lambert et al. (2004) look at attrition using the YITS data for cohort B. This group was 18 to 20 years old when the first cycle of YITS was administered in 2000 and 20 to 22 years old when the 2002 data used in this study were gathered. The authors find that approximately 15 percent of 20 to 22 year olds who had begun PSE had left without completing a formal certificate. As a whole, the population of postsecondary leavers appears to resemble those who never undertook any PSE more than those respondents who were continuing or had graduated. At the December 2001 reference data for the survey, the range in leaver rates (the proportion of the indicated group that had left PSE) was much smaller than that reported by Butlin. In

[11] The possibility that family income information may be of poor quality should be borne in mind in interpreting these estimates.
[12] See, for example, Ferrer and Riddell (2002).
[13] Grayson et al. (2003) report the results of several institutional analyses.
[14] Reliable estimates for Quebec are not available.

Ontario, the estimated proportion of YITS respondents who had left PSE was 14 percent. This compares to a high of 17 percent in Saskatchewan and Alberta and a low of 13 percent in New Brunswick.[15]

Finally, Bar-Telford et al. (2003) use the PEPS data to address attrition. Of those who were 18 to 24 years old in February/March 2002 and who first began their PSE in September 2000, about 16 percent had left prior to completion. The attrition rate is not provided by province. Half of the leavers cited reasons suggesting lack of fit with their programs or PSE in general, while the next most often cited group of reasons were financial and cited by 29 percent of leavers.

Junor and Usher (Educational Policy Institute (2004)) claim Ontario does well in terms of persistence. To examine this claim, the status of PEPS respondents at the time of the interview is used to establish how many of those who had begun PSE at some point prior to the date were now classified as "leavers". This group is comprised of those who left PSE without completing the degree or certificate requirements[16]. As shown in Table 4.1, the proportion of leavers among PSE attenders in Ontario appears to be entirely average.

Table 4.1: PSE Status Among Those With Some PSE Experience

Region	Graduates	Continuers	Leavers
Atlantic Region	30.0%	57.4%	12.5%
Quebec	28.1	58.7	13.2
Ontario	**20.8**	**67.2**	**12.0**
Prairie Region	23.3	64.9	11.8
British Columbia	22.8	63.1	14.4

Note: The entries indicate what proportion of PEPS respondents who had begun PSE at some point had graduated, continued, or left PSE at the time of the interview.
Source: PEPS

Reasons for leaving PSE without graduation are highly individual, but policy concerns would be raised if financial exigencies play a significant role. Table 4.2 indicates that the percentage of Quebec high school graduates who went on to PSE but did not complete due to financial reasons is extremely low. This may be due to the low cost to students of CEGEP and university tuition levels well below the national average. Comparisons of the Ontario situation with the Atlantic and the Western regions are more valid and suggest that financially induced attrition from Ontario's PSE sector is not high in relative terms.

Table 4.2: Reasons for Leaving PSE (Among Leavers)

Region	Financial	Uninterested	Other
Atlantic Region	33.0%	27.4%	39.6%
Quebec	7.8	55.7	36.5
Ontario	**22.9**	**41.7**	**35.5**
Western Region	22.7	36.5	40.8

Note: The entries indicate what proportion of PEPS leavers reported each of the reasons as being primary.
BC and the Prairie provinces have been combined to avoid small cell counts
Source: PEPS

[15] PEI showed a rate of 11 percent, but the coefficient of variation was quite high.
[16] The Bar-Telford methodology of examining a specific cohort within PEPS cannot be used due to small cell counts when regional analysis is required. Small cell counts are also the reason Tables 4.1 and 4.2 combine university and college attenders.

V. Financial Assistance Issues

Not surprisingly, the bulk of the literature on barriers to PSE deals with the financial dimensions of the issue. And the literature here is large, beginning with the basic question of whether financial barriers exist at all. The general literature is surveyed well elsewhere (see de Broucker (2005), Junor and Usher (2004)) and, in the following, interest is focused on any differences across provinces that student financial assistance programs play in affecting access. The policy questions here are: "Is there a greater or lesser need in Ontario for student financial assistance?" and, "Is student financial assistance in Ontario more or less successful in enhancing access to PSE?"

Differences in need across provinces may arise either because the ability to finance PSE investments differs or because the costs of those investments differ. We address this question of the balance of financial capacity and costs first before turning to a comparison of the impact of Ontario's student financial assistance programs with impacts elsewhere.

Exploring financial capacity using the PEPS data is hampered by the lack of direct information on family income. The survey did, however, ask respondents about the amount of savings that had been accumulated to finance their education, whether or not they actually attended. The amounts include savings not only by the respondents themselves, but also by their parents and others. The value of savings might be used to reflect capacity to pay, although savings levels reflect not only capacity but also expected need and attitudes towards saving for education. Thus, interprovincial differences in savings may not be attributable entirely to different capacities.

This interdependence of capacity and expected costs is evident in Table 5.1 where the savings behaviour among the families of Quebec families is very different from the rest of the country, both in amounts and incidence. Clearly this must reflect the lower costs of the province's PSE sector and is consistent with evidence from other surveys that families in Quebec are less likely to save for higher education.[17] The Atlantic and Western Provinces may provide a more meaningful comparator group for Ontario in terms of the costs of PSE and, relative to those provinces, Ontario families clearly save more often and in greater amounts.

Table 5.1: Incidence and Amounts of Saving for PSE

Region	Mean Accumulated Savings	Proportion Reporting Savings
Atlantic Region	$2,772	39.8%
Quebec	1,499	30.0
Ontario	**4,824**	**49.1**
Prairies	3,201	39.2
BC	3,591	36.7

Note: Includes all respondents, whether or not attending PSE
Source: PEPS

We may glean some information on whether the higher levels of savings in Ontario reflect higher expected costs by reviewing evidence on the behaviour of those costs. Of course, the question of differences in costs across provinces is a matter of interest in its own right. Table 5.2 reproduces calculations by Junor and Usher (2007) that attempt to compare the affordability of university education by province. Average tuition and fees in the first column are taken from Statistics Canada data and represent the weighted (by program) average tuition cost plus ancillary fees for undergraduates within each province.

[17] Drewes (2006) finds a significantly lower incidence of saving for higher education among Quebec respondents to Statistics Canada's Survey of Approaches to Education Planning.

Table 5.2 Net University Tuition by Province
2001-02 (real 2005 $)

Province	Tuition and Fees	Tax Credits	Average Grant	Net Tuition
Newfoundland	4,134	1,780	2,891	-536
PEI	4,536	1,583	2,676	277
New Brunswick	4,442	1,706	1,655	1,080
Nova Scotia	5,824	1,913	2,397	1,514
Quebec	2,492	1,153	3,328	-1,990
Ontario	**5,552**	**1,681**	**2,283**	**1,588**
Manitoba	3,965	1,671	3,146	-853
Saskatchewan	4,808	1,906	2,367	535
Alberta	4,874	1,843	2,424	607
British Columbia	3,136	1,051	3,399	-1,314

Source: Junor & Usher (2007)

Tax credits are calculated for students studying full-time for eight months and paying the average tuition and fees in the first column. Subtracting these credits from the average tuition plus fees would produce the net tuition cost for a student. The average grant in any province is calculated for those receiving grants, which implies that this measure does not "pick up" interprovincial differences in the incidence of grants. That aside, the final column is simply the actual average tuition plus fees, less tax credits and average grants. The result is the net tuition that would be paid for someone receiving grants.

The low and often negative values for net tuition seem inconsistent with the general perception that PSE has become prohibitively expensive. It must be recognized that the grants in Table 5.4 are largely debt remission grants provided to students whose debt levels exceed a proscribed limit. Students do not actually receive a cheque so that, although their debt levels fall, these funds do not help them overcome cash flow problems while attending PSE. As well, the average grant amounts are not received by all students. Finally, there can be significant costs not factored into the table, such as living expenses. Moving left to right in the table, Ontario clearly is a high tuition cost province for university-bound students. Tuition credits are, however, only average compared to other provinces and average grants are lower than any other province except New Brunswick. The net result is that Ontario university students face the highest net tuition in the country.

The regional pattern of university tuition and fee costs reported by Junor and Usher is consistent with that reported by PEPS respondents, who were asked to provide their total annual out-of-pocket expenses. These expenses include tuition, required fees, and other expenditures on books, supplies and equipment related to education. Ontario university students reported the highest educational expenses, as shown in Table 5.3 (once Nova Scotia is aggregated with the other three Atlantic Provinces). Educational expenses among college students in the Province are more in line with national averages.

Table 5.3: Mean Educational Expenses 2002
(excludes living expenses)

Region	College Students	University Students
Atlantic Region	$6,024	$5,234
Quebec	1,493	2,453
Ontario	**3,900**	**6,096**
Prairies	4,318	5,051
BC	3,269	3,949

Note: refers only to those with PSE
Source: PEPS

Ontario's higher university costs need not affect the province's relative participation rate if there is an off-setting higher than average level of funding.[18] We have already seen that savings are higher in Ontario. Is there any evidence that student financial assistance compensates in any way for the higher costs? PEPS respondents were asked about various aspects of financial assistance they received while attending PSE. Table 5.4 reports the levels of funding by PSE type and by funding type. Repayable funding consists of government loans, private bank loans and lines of credit, and loans from family or friends. Non-repayable includes amounts received from family that need not be paid back as well as scholarships, bursaries, and government grants.

Table 5.4: Funding Levels
(regional means)

	College Students		University Students	
Region	Repayable	Non-Repayable	Repayable	Non-Repayable
Atlantic Region	$6,005	$2,586	$3,782	$2,463
Quebec	1,112	1,409	1,629	2,470
Ontario	**2,619**	**2,206**	**3,071**	**3,631**
Prairies	3,171	1,812	2,273	2,860
BC	1,856	3,404	*	*

Note: * indicates insufficient data
Source: PEPS

Some interesting patterns emerge from Table 5.4. For college students, total funding for Ontario students was about average, significantly lower than in the Atlantic Region, slightly lower than in British Columbia, and greater than in Quebec or the Prairies. Recall that Ontario college students also reported educational expenses that were close to the national average. However, Ontario funding for college students is more or less evenly matched between repayable and non-repayable forms whereas the Atlantic and Prairie Regions show a preponderance of repayable funding and non-repayable funds predominate in British Columbia. When university students are considered, total funding in Ontario is appreciably higher than the other three regions for which reliable estimates are available, including the Atlantic Region. The higher than average university costs reported in Table 5.3 appear, then, to be matched by relatively high levels of funding. Of course, these funds include those raised from private sources and relatively high levels may not indicate active public policy to offset high costs. To examine that issue, we can explore the provincial behaviour of government student loans programs.

Table 5.5 reports the results of questions put to PEPS respondents about government student loans. The results refer only to those who actually attended PSE. Almost two-thirds of Atlantic Region college respondents applied, whether successfully or not, for government loans and the average loan amount was significantly higher than in the rest of the country. Ontario college students applied at a rate that is not statistically different than the remainder of the country and received average amounts of loans. Student loan values are determined through needs assessment and, since college costs in Ontario are estimated to be about average, the last finding is not surprising.

The rate of successful application by Ontario university students is far below that in the Atlantic Region, although average when that region is excluded. As was the case for college students, the rejection rate is the highest among the regions but, when successful, the loans amount granted was substantially above the mean values in Quebec and the Western Region. It is interesting to note that the pattern of loan amounts in Table 5.5 matches the pattern of educational expenses in Table 5.3 with the exception of the Atlantic Region where loan amounts exceed expenses. Even with that exception, government support appears to generally reflect cost differences across regions.

[18] It is important to recognize that the largest component of the cost of higher education is the foregone opportunity to earn income while attending PSE. If, for example, labour market opportunities in a province like Alberta are high, then participation in PSE may be low even if out-of-pocket costs are relatively low.

Table 5.5: Receipt of Government Loans
(Includes all PSE attenders)

Region	Successfully Applied	Rejected	Never Applied	Average Loan
		College Students		
Atlantic Region	67.0%	7.8%	25.2%	$8,224
Quebec	29.7	10.4	59.9	4,005
Ontario	**28.7**	**12.8**	58.5	**5,236**
Western Region	30.5	7.9	61.6	5,898
		University Students		
Atlantic Region	51.2%	4.0%	44.8%	$7,021
Quebec	41.5	3.5	55.0	2,385
Ontario	**37.6**	**10.4**	**52.1**	**6,043**
Western Region	33.8	8.3	57.9	5,169

Source: PEPS

VI. Conclusion

It is difficult to assess the state of higher education in Ontario, and the need for policy intervention, without context. To provide that context, this report uses an interprovincial comparison of indicators that may suggest whether or not improvements are required. There is absolutely nothing to suggest that the situations in other provinces are ideal, but they can certainly be used as benchmarks in an initial examination of Ontario's performance.

The report looks at three dimensions of access: the supply of adequate spaces, retention, and financial barriers to PSE. It finds the following:

- Participation rates in the Ontario college system are relatively high (when Quebec's CEGEP's are ignored) but university participation tends to be low when only high school graduates are considered. Ontario high school graduates with low grades have a more difficult time entering university. These two results are consistent with the hypothesis that there is more rationing of university seats in Ontario.
- The high correlation between participation in PSE and family income is evident in Ontario as in all other jurisdictions. There is no evidence, however, that this correlation is more acute in the Province than elsewhere in Canada.
- The rate at which individuals leave PSE in Ontario is among the lowest in the country and those that do leave are no likelier than leavers in other regions to cite financial reasons as the cause.
- A significantly greater percentage of Ontario students enter PSE with past savings and the amount of those savings is considerable greater than in other regions.
- A greater capacity for savings may be one reason for the previous finding. But it is also true that a greater need exists in Ontario where educational expenses are average for college students but are the highest for university students.
- Total financial assistance, including funds from private sources, reflect the regional differences in costs. Total repayable and non-repayable assistance reported by Ontario university students is higher than the rest of the country.
- The higher amounts of assistance for Ontario university students may be partly attributable to government loans, since the average loan among recipients is higher in Ontario than in Quebec or the western provinces, although it is lower than in the Atlantic Region.

This report raises a considerable number of questions. It points to the need for further research that will corroborate the results derived from the PEPS data through alternative sources and to explore a number of issues. These include:

- The low participation rates among Ontario residents with completed high school. Ontario's performance relative to other provinces seems to deteriorate when participation is measured for this group rather than the population as a whole.
- The relationship between family background and participation in PSE needs to be explored with data that are richer in detail about those backgrounds.
- The surprisingly large differences in the types of funding used by students in different regions. The ratio of repayable to non-repayable funding is important to access if the phenomenon of debt aversion plays a role, and this ratio varies considerably across regions.

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Appendix

Postsecondary Education Program Classification

Postsecondary Educational Categories

PSE Category Used in Report	Includes the following PEPS categories
University	University transfer program at a college or CEGEP (for credits, university transfer diploma, or Associate's degree) Undergraduate-level diploma or certificate BELOW Bachelor's degree Bachelor's degree First professional degree Graduate-level diploma or certificate ABOVE a Bachelor's degree but BELOW a Master's degree Master's degree Ph.D. D.Ed.
College	Private business school or training institute College, CEGEP or trade/vocational College post-diploma or graduate level program
Other	Secondary School Vocational Diploma Attestation of Vocational Specialization Registered Apprenticeship program Diploma, certificate, or license from a professional association Other

Higher Education
Quality Council
of Ontario

An agency of the Government of Ontario

Higher Education
Quality Council
of Ontario

An agency of the Government of Ontario