

A New Measuring Stick

Is Access to Higher Education in Canada Equitable?

Alex Usher

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The Educational Policy Institute

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A New Measuring Stick: Is Access to Higher Education in Canada Equitable?

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Introduction

Over the past several years, many studies have examined the accessibility of higher education in Canada with a view to establishing whether or not higher education was becoming less accessible over time. These studies have been sparked by a concern that increases in student debt (AUCC 1997) or in tuition fees (CFS 2003) might deter participation in post-secondary education generally and more specifically by individuals from lower-income backgrounds. The link between higher fees and lack of “access” was made most explicitly by CAUT (2003) and Doherty-Delorme & Shaker (2004). Unfortunately, neither of these sources actually defines the term “access”; according to these authors, the presence of higher fees alone is ample evidence for these authors that “access” is being impeded.

Thankfully, other authors have used more rigorous definitions of the term “access.” Generally speaking, “access” is held to have two possible interpretations. In the first interpretation, access is about *how many* people are attending post-secondary education. Anisef et. al (1985) referred to this as “Type I” access, in counterpoint to “Type II” access, which is about *who* attends post-secondary education. The former measures the total number of places available while the latter examines the social background of the students who fill them.

The existence of two standard definitions of access can clearly lead to some serious disagreements in describing whether one system is more or less “accessible” than another. For example, one could imagine a very large university system that allowed many students the opportunity to attend (a good “Type I” outcome) but in practice restricted these opportunities to people from high income backgrounds (a bad “Type II” outcome). Conversely, one could imagine a very small university system that allowed very few students to attend but distributed these opportunities equally among students from all student backgrounds. Both of these hypothetical cases could legitimately be described as either a success or a failure, depending on one’s point of view.

From a policy research perspective, it has not been difficult to measure “Type I” access. Raw enrolment numbers and participation rates function as good proxies for “Type I” accessibility both within Canada and across jurisdictions. “Type II” access is more difficult to measure, particularly in a comparative sense as different countries examine the question of inequality through different lenses. In

Canada, the question of “who” is going to university has usually been described in terms of family income, notably by Zhao and DeBroucker (2002), and Corak, Lipps, and Zhao (2003). In the United States, income bands are sometimes used as a base of analysis, notably by St. John (1993, 1994) and St. John and Starkey (1995), but race is also a frequent basis of analysis and socio-economic status is also used. In Europe, it is more common to look at Social Class indicators, which are usually based on parental occupation (e.g. Connor and Dewson, 2001).

To a large extent the different metrics used to measure “Type II” access reflect either national differences in the social construction of inequality or differences in data collection practices. What makes these differences problematic is that in the absence of standardized measures of social background, it is difficult if not impossible to make cross-national comparisons of inequality. In turn, without standard outcome measures, a proper evaluation of the effectiveness of inputs (i.e. government funding policies) is also impossible.

The problem of data comparability of “Type II” access measures exists even within a single country such as Canada. This is largely because policy analysts in this country prefer to use family income as the measure of social background. While family income is an accepted way to examine social origins, accurate figures of parents’ family income are difficult to obtain at the sub-national level. While it is theoretically possible to obtain this information by asking parents of university students directly about their income, practical difficulties still intervene. First, there is the issue of finding parents of university students and then linking parental data to children’s data – easy enough if the student lives at home, but difficult in the roughly 30 percent of cases where they do not. Second, the sample size necessary to deliver accurate data on each and every province is roughly 20,000 people. Even at twenty thousand, the standard deviation on a continuous variable like income will be very high in some of the small provinces. As a result, the costs of obtaining an adequate sample of students’ family incomes at a province-by-province level are prohibitive. An alternative data collection method – asking students about their parents’ income – is generally regarded as producing results that are unreliable. Hence, we have no useful data on “Type II” accessibility at a sub-national level.

Trends in Access and Causes of Jurisdictional Variation

“Type I” access is increasing in most jurisdictions; educational attainment is increasing across Canada and across the OECD due to the increasing returns to education. Using data over a 20-year period, Junor and Usher (2002) demonstrated the lack of correlation between tuition fees and participation rates at a provincial level. At an international level, Swail (2004) found that enrolment increases occur regardless of the kind of tuition policy in place in any particular jurisdiction because long-term international labour-market trends and middle-class parental aspirations have sharply increased the demand for higher education. Within Canada, data collected by the Association of Universities and Colleges of Canada suggests that the largest increases in provincial enrolment over the past five years (excluding Ontario, where the double cohort skews enrolment numbers) are British Columbia and Manitoba. In the former, tuition fees have been rising sharply; in the latter they have been reduced. Hence, the news on “Type I” access is nearly uniformly good, across Canada and around the world.

“Type II” access is more difficult to examine. At a national level, Bouchard (1999) observed that in 1986, the percentage of youth from the top SES quartile attending university was twice what it was for those from the bottom SES quartile. Zhao and DeBroucker (2001), showed a similar ratio for students in 1998 (using family income rather than SES). Corak, Lipps, and Zhao (2003) also showed at a national level that inequality appeared to be decreasing over time, at least among the constant 70 percent of students who live at home. Thus, the major Canadian studies either show “Type II” access either remaining constant or improving over time. However, no study has managed to show differences in inequality at a provincial level, largely because of the prohibitive costs of collecting these data described above.

Some have used this data vacuum to suggest that not all is well in “Type II” access. This argument typically suggests that while Junor and Usher (2002) may have proven that “Type I” access (i.e. participation rates) are uncorrelated to tuition fees, the point is fundamentally irrelevant since it is “Type II” access (i.e. equity of participation) that really matters. This line of argument is usually coupled with the reasonable observation that rising tuition fees may not affect total enrolment but may affect the composition of enrolment by pushing out poorer students and replacing them with richer ones. Conversely, by this reasoning, lower fees would be associated with a more equal enrolment composition. As Canada’s Vice-Regent John Ralston Saul (2000) put it:

“Wherever tuition goes down, enrolment goes up. And where does the increase in students come from? From those with less money. In other words, the lower the fees, the more egalitarian the society.”

Ralston Saul is half-right on his first point: enrolment does indeed increase when tuition goes down. Then again, enrolment also goes up when tuition goes up

(Swail 2004), so this is not compelling evidence in favour of low tuition fees. However, it is Saul's second point - on the relationship between the level of fees and social equity in enrolments - which is the more crucial one for the purposes of this paper. His suggestion - that education equity rises as costs decline - is simple, easy to understand, and compelling. And yet, there is no empirical evidence to suggest whether or not this suggestion is correct. It is simply a hypothesis.

A New Measure of Equality of Educational Opportunity

In order to measure of equality of educational opportunity across jurisdictions, the metric must:

- Be reliable
- Be easy to collect
- Be easy to use and understand
- Be an interval or dichotomous variable
- Be collected in all jurisdictions
- Have the same meaning in all jurisdictions

"Average parental income" fails these tests, because it is not always reliable, especially when collected from a student, who often doesn't know, or worse, thinks they know but don't really. As well, income data collected in one jurisdiction may not match that in another jurisdiction due to definitional issues.

"Race" - to the extent that the construct of race is accepted - fulfills most of the necessary criteria, but is of limited use in comparing jurisdictions that are ethnically mixed with those that are ethnically homogeneous.

Social class, "Socio-economic status", or parental occupation all pass most of the tests of usefulness, but since "class" and "status" are relative, constructing a class index based on occupation may be tricky if jobs do not hold the same status across the jurisdictions being compared. Even in a single country, classifying all occupations into one of a small number of simple categories is complicated and controversial; in a cross-national context, the difficulties are multiplied several-fold.

Parental occupation, however, is only one way of getting at students' socio-economic status. Another, simpler, method is to look at their parents' highest level of education. Since education is tightly correlated with income and social status, it makes at least as good a proxy for social origins as any occupational index. Moreover, educational attainment can be easily categorized, allowing for the creation of an ordinal variable, or even a dichotomous variable (i.e. university

education – yes/no). The benefits of dichotomous variables over continuous ones are substantial when low standard deviations are desired from a small or relatively small sample.

Using this line of reasoning, a useable metric for cross-jurisdictional comparisons of social origins becomes easy to create. First, determine the percentage of males aged 45-64 in the general population with a university credential (males 45-64 being a reasonable comparator group for fathers of university-aged children). Second, determine the percentage of the student body whose fathers have a university credential.¹ The ratio of the first to the second, multiplied by 100, produces a two-digit “Educational Equity Index” (EEI) score. The higher the EEI score, the closer a jurisdiction is to having equitable participation in higher education; the lower the score, the greater the demonstrated stratification.

The Educational Equity Index measures student SES (using father’s education as a proxy) in relation to the overall SES status of the general population. By measuring against a comparator population, the usefulness of the measure in measuring inequality between countries is not affected by differences in overall attainment levels between countries. It doesn’t matter if country A has twice the overall level of attainment as country B – what matters is the *relative* parental SES (education level) to the SES (education level) distribution in the population as a whole. For example, imagine Country A, where 20 percent of men aged 45-64 had a university education, and 40 percent of students had fathers with university qualifications. In effect, in this country, youth whose fathers had a university education are overrepresented in university by a factor of 2. This country’s EEI score would be 50 [(20/40) x100]. Now imagine Country B where only 10 percent of men aged 45-64 have a university education and 15 percent of students had fathers with university qualifications. This country would have smaller overall attainment levels in education than Country A (indicative of low “Type I access”, in the past at least), but would have a better EEI score [(10/15) x 100 = 67] and hence have more equitable “Type II” access. In short, Country B may not have as many educational opportunities as country A, but it does a better job of ensuring that the opportunities that do exist are spread around evenly.

Before proceeding in this discussion, two things need to be made clear about the usefulness of EEI as a measure of access. The first is that there are many reasonable objections that can be raised against using father’s educational attainment as a proxy for socio-economic status. For instance, it is true that a more sophisticated analysis could be achieved with family income data. The best argument in favour of the EEI is that it is simply the only tool available to make the necessary comparisons to examine equality of access across all jurisdictions. At present, the alternative to EEI is no measure at all.

¹ In principle, this measure is gender-neutral and could be used with either mothers or fathers; however, since males aged 45-64 are more likely to possess a university education than women aged 45-64, it was felt that fathers made slightly more sense as a measurement.

The second is that the EEI is not meant as a stand-alone tool to measure “accessibility.” All it measures is the extent to which people from higher SES backgrounds (as measured by father’s education level) are over-represented in higher education. It says nothing about the overall size of the system or the number of opportunities available to young people; all it measures is how widely these opportunities are spread. It is meant to complement this type of data so as to give a more complete view of “accessibility.”

The rest of this paper will apply this new measurement tool to existing data to see well Canadian jurisdictions fare in terms of educational equity.

Data

Table 1 below presents the evidence on educational equality across jurisdictions in Canada. Data on students’ fathers’ educational attainment is taken from Statistics Canada’s Youth In Transition Survey (YITS; 2002 follow-up). Data on educational attainment in the general male population is taken from the 2001 census. Recall from the preceding discussion that a high EEI score indicates relative equality of opportunity while a low score indicates relative inequality of opportunity.

Table 1. Educational Equity in Canada by Province

	% of male population aged 45-64 with a university credential (A)	% of university students whose fathers have a university credential (B)	Educational Equality Index (EEI) Score [(A/B) x 100]	EEI Rank
Newfoundland	11.71	22.1	53	9
Prince Edward Island	14.60	29.1	50	10
Nova Scotia	16.49	27.2	61	4
New Brunswick	13.67	24.5	56	8
Quebec	17.06	29.9	57	7
Ontario	21.69	31.5	69	2
Manitoba	17.15	24.8	69	1
Saskatchewan	15.50	26.3	59	5
Alberta	20.32	34.8	58	6
British Columbia	21.05	33.6	63	3
Canada	19.35	30.8	63	-

Source: YITS 2002 Follow-up survey; 2001 Canadian Census of Population; Author’s calculations

The results show that educational equity varies somewhat across the country. Nationally, children of university-educated fathers are over-represented by about 59 percent. Equity is highest in Manitoba and Ontario (over-representation of about 45 percent) and lowest in Newfoundland and Prince Edward Island (over-representation of 89 percent and 100 percent, respectively).

Table 2 looks at Canada in comparison to other countries with known EEI scores. Canadian data in Table 2 is from the previous table; data for the United States is taken from the 2000 National Post-Secondary Student Aid Survey (NPSAS) and Bureau of the Census; data for all other countries is taken from is *Eurostudent, Social and Economic Indicators of Student Life in Europe, 2000*. Here we see that the Netherlands has the highest Educational Equity Index score, just ahead of Ireland, Canada and Finland, all of which have effectively similar scores. Educational Equity is lowest in Belgium, Germany and Austria, where children of university-educated fathers (i.e. from high socio-economic backgrounds) are over-represented by between 131 percent and 233 percent. It should be noted that the US EEI score is likely slightly understated as the NPSAS survey asks about one's *parents'* highest level of education rather than father's. Therefore, to the extent that students' mothers have higher education levels than their fathers, the US score will be lower than it would be if US data were perfectly comparable with other countries in the table.

Table 2. Educational Equity, Selected Countries

	% of male population aged 45-64 with a university credential (A)	% of university students whose fathers have a university credential (B)	Educational Equality Index (EEI) Score [(A/B) x 100]	EEI Rank
Austria	10	26	38	10
Belgium (French)	22	50	44	8
Belgium (Flemish)	15	50	30	11
Canada	19	31	63	3
Finland	14	23	61	4
France	21	38	55	6
Germany	16	37	43	9
Ireland	19	30	63	2
Italy	9	19	47	7
Netherlands	26	39	67	1
United States	29	51	57	5

Comparing the results of Table 1 to those of Table 2 we see that all Canadian provinces fare in comparison to other countries. Manitoba and Ontario still have the best educational equity scores even when compared to a number of European countries, and even the provinces with the worst scores within Canada would rank no worse than the 7th-ranked country in table 2 (Italy).

Analysis and Discussion

We can now test Ralston Saul's assertion with respect to the relationship between educational equity and tuition fees (fees are from statistics Canada for 2002-03, in order to converge with the timing of the YITS follow-up survey from which the EEI score was derived).

Figure 1. Tuition vs. Educational Equity Index Score, Canadian Provinces 2002-03

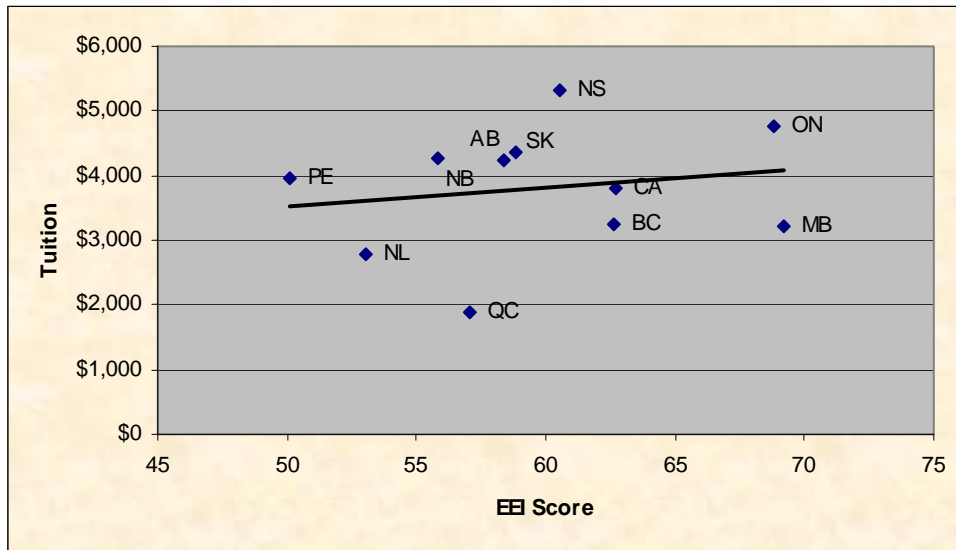
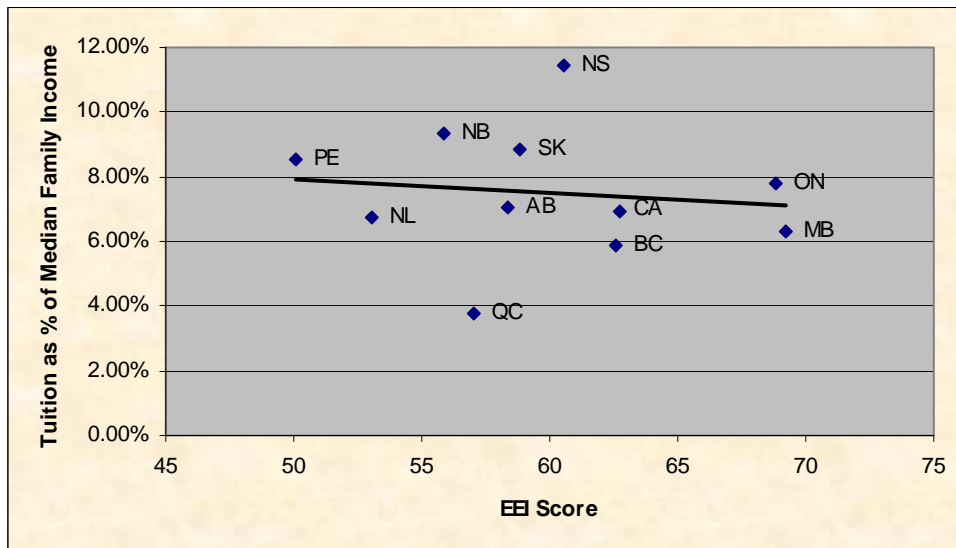


Figure 2. Tuition as a Percent of Median Family Income vs. Educational Equity Index Score, Canadian Provinces 2002-03



Figures 1 and 2 examine the relationship between educational costs and educational equity in two different ways. The first, shown in Figure 1, simply plots each province's tuition and EEI score against each other. In effect, Figure 1 reveals no obvious relationship between the fees and equality of accessibility. Fig-

ure 2 looks at the affordability of tuition by displaying the relationship between tuition as a percentage of median family income and EEI. Again, the results show no obvious correlation. On the basis of this result, it is difficult to observe a link between affordability and equity at the jurisdictional level. Further evidence can be gleaned from a quick glance back at Table 2 – of the five countries with the highest EEI scores, three had tuition fees and two did not.

So, if tuition and equity are not correlated at the jurisdictional level, is there another factor that might explain differences in equity between provinces? One theory, which emerges from the work of Finnie (2004) and Mateju (2003), is that there is a direct relationship between the capacity (size) of a university system and the equity it is able to provide. In brief, this line of reasoning suggests that small university systems are required to ration spaces more strictly based on merit criteria, and that since academic ability at the secondary level is reasonably well correlated with socio-economic background (see Willms and Flanagan, 2003), a small system is also likely to be an unequal one. By this logic, jurisdictions with high participation rates should be better at spreading opportunity widely (and hence have high EEI scores) while jurisdictions with lower participation rates should not be as good at spreading educational opportunity widely (and hence have lower EEI scores). In short, this argument suggests that good “Type I” access leads automatically to good “Type II” access. The actual relationship between provincial participation rates and provincial EEI scores is plotted below in Figure 3.

Figure 3. Participation Rates vs. Educational Equity Index Score, Canadian Provinces 2002-03

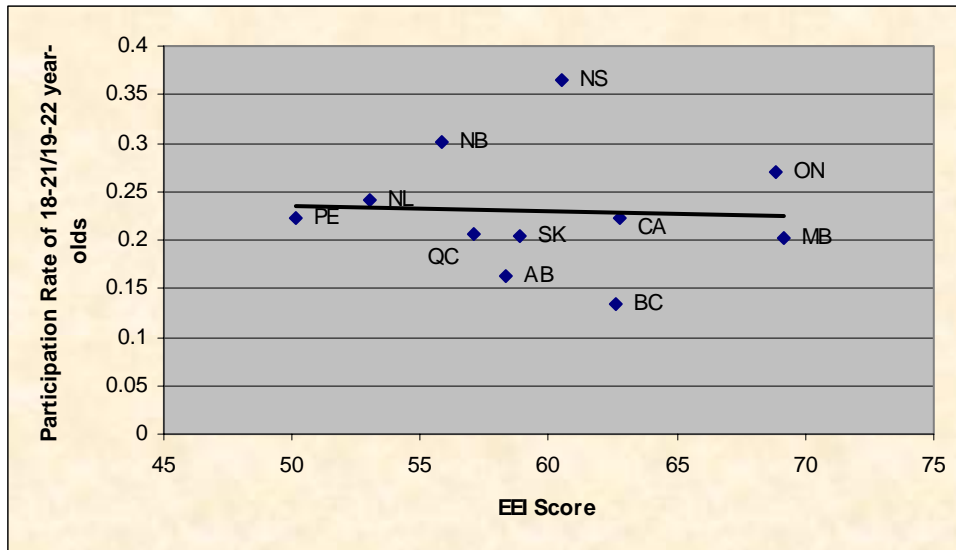


Figure 3 plots each province’s EEI score against its university participation rate for 18-21 year-olds (19-22 year-olds in Ontario and Quebec, to take account of differences in pathways to university). Participation data is for 2002-03, to take account of the year in which the EEI data was captured. As can clearly be seen,

there is no more relationship between participation rates and equity scores than there was between equity scores and tuition.

This brief look at Canadian access data through the EEI lens has given us two important results. The first is that there is a clear need to take a look at both “Type I” and “Type II” notions of accessibility into consideration as the two are demonstrably not linked. A jurisdiction that has good Type I access is not necessarily going to have good type II access and vice-versa. Second, the results belie the claim that higher tuition necessarily results in a less equal university population. Clearly, the problem is much more complicated and requires a more sophisticated analysis than that to which it has hitherto been subjected.

Conclusion

In this brief study we have observed that:

- In the absence of any standardized inter-jurisdictional method of comparing the social origins of the student body, using a ratio of parental educational attainment to educational attainment of a control group is an easy, simple, and widely applicable alternative (referred to in this document as the Educational Equity Index, or EEI)
- Within Canada, there is some provincial variation in the social composition of the student body, as measured by the EEI. Prince Edward Island and Newfoundland appear to have the greatest over-representation of students from high SES backgrounds while Manitoba and Ontario appear to have the least.
- As a whole, Canada’s EEI score is reasonably good in international comparison, though the Netherlands have the best EEI score among the ten nations examined.
- Neither provincial tuition fees, nor provincial affordability levels nor provincial participation rates appear to affect a province’s EEI score. The causes of variation between jurisdictions remain unknown.

In short, while differences in educational equity rates by jurisdiction can easily be observed, they are less easily explained. And while the value of a measure whose outcome is not easily explained can be called into question, its usefulness is inherent in that it provides a glimpse at “Type II” accessibility that was hitherto impossible. As such, it remains an important complement to existing measures of “Type I” access.

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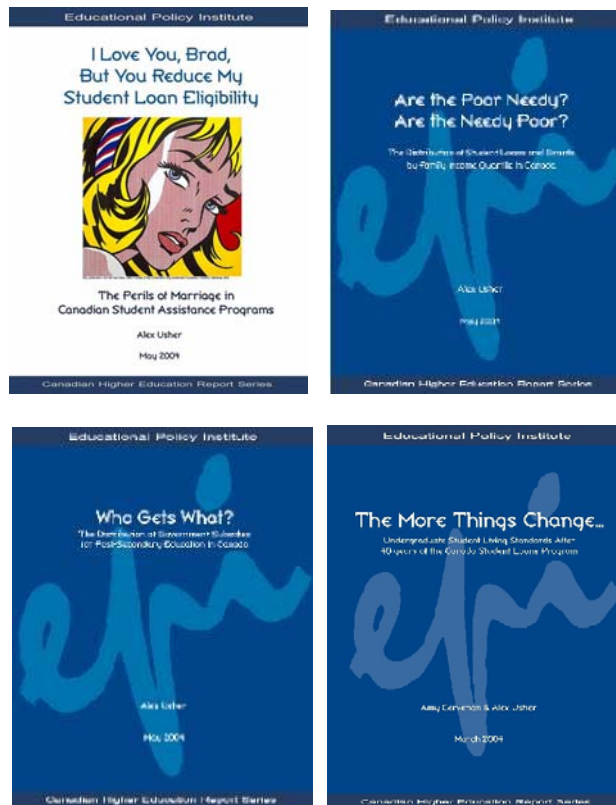
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