Research Paper

Analytical Studies Branch Research Paper Series

Immigrant Status, Early Skill Development, and Postsecondary Participation: A Comparison of Canada and Switzerland

by Garnett Picot and Feng Hou

Social Analysis Division
Ottawa, Ontario

Telephone: 1-800-263-1136

Statistics Canada   Statistique Canada

Canada

Immigrant Status, Early Skill Development, and Postsecondary Participation: A Comparison of Canada and Switzerland

by
Garnett Picot and Feng Hou

Note of appreciation
Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, and Canada's businesses, governments, and other institutions. Accurate and timely statistical information could not be produced without the continued cooperation and goodwill of these partners.

Standards of service to the public
Statistics Canada is committed to serving its clients in a prompt, reliable, and courteous manner. To this end, the Agency has developed standards of service which its employees observe in serving its clients. To obtain a copy of these service standards, please contact Statistics Canada, toll-free, at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca. Under "Our agency": click on "About us > The agency" and select "Providing services to Canadians."

Analytical Studies
Research Paper Series

The *Analytical Studies Research Paper Series* provides for the circulation, on a pre-publication basis, of research conducted by Branch staff, visiting fellows, and academic associates. The *Analytical Studies Research Paper Series* is intended to stimulate discussion on a variety of topics, including labour, business firm dynamics, pensions, agriculture, mortality, language, immigration, and statistical computing and simulation. Readers of the series are encouraged to contact the authors with comments and suggestions. A list of titles appears at the end of this document.

Papers in the *Analytical Studies Research Paper Series* are distributed to research institutes and specialty libraries. These papers can be accessed for free at www.statcan.gc.ca.

Symbols

The following standard symbols are used in Statistics Canada publications:

.   not available for any reference period
..   not available for a specific reference period
…   not applicable
0   true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x   suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F   too unreliable to be published
*   significantly different from reference category ($p < 0.05$)

Acknowledgements

Table of contents

Abstract

This paper examines differences in postsecondary-participation rates between students with and without immigrant backgrounds in Switzerland and Canada. For both countries, a rich set of longitudinal data, including family background, family aspirations regarding postsecondary education, and students' secondary-school performance as measured by Programme for International Student Assessment (PISA) scores, are used to explain these differences. Two groups are analyzed: all 15-year-old students; and all low-performing 15-year-old secondary-school students. The results suggest that the gap in postsecondary participation between students with and without immigrant backgrounds, and its determinants, differs significantly between the two countries. This gap also differs significantly by students' source region background. In Canada, students with immigrant backgrounds who are low performers in secondary school have surprisingly high rates of postsecondary participation, particularly if they have an Asian background. In Switzerland, postsecondary participation among low performers in secondary school is much lower, whether they have an immigrant background or not. Possible reasons for these inter-country differences are discussed, including differences in the immigration and education systems as well as differences in the distribution of immigrants by source region.

Related studies on **immigration** and **education and training** from the Social Analysis Division can be found at **Update on Social Analysis Research**.

Executive summary

This paper examines the relationship between students' immigration status, their secondary-school performance, and the likelihood of their pursuing postsecondary education. Emphasis is placed on the gap in postsecondary-participation rates between students with and without immigrant backgrounds. The paper has three unique features. First, secondary-school performance as well as other well-established variables are used to explain differences in rates of postsecondary participation. Only recently have such data become available. Second, the paper focuses on postsecondary participation among low-performing secondary-school students as well as among all postsecondary students. Third, the paper contrasts the findings for Canada and Switzerland and discusses possible reasons for the different outcomes observed between them. These two countries in many ways reflect the differences between North America and Europe regarding immigrant outcomes.

In Switzerland, students with immigrant backgrounds, including both the first and second generations, typically have lower levels of postsecondary participation than students with Swiss backgrounds (the third-and-higher generations). This study finds that this difference can be accounted for almost entirely by poorer secondary-school performance, as measured by the Programme for International Student Assessment (PISA) literacy reading score, among students with immigrant backgrounds. This poorer secondary-school performance is explained in part by differences in family and socio-economic backgrounds of immigrant students compared with students with Swiss-born parents. In addition, there is significant variation in postsecondary participation across immigrant source regions. Students with immigrant backgrounds from European Union countries such as Germany, France, Belgium, and Austria tend to have higher levels of postsecondary participation than students with Swiss parents. Little of this positive gap is explained by the variables in the analysis, including secondary-school performance. Students with immigrant backgrounds from countries other than Germany, France, Belgium, and Austria have lower levels of postsecondary participation, with poorer secondary-school performance accounting for much of this.

Canadian outcomes are very different. Students with immigrant backgrounds, including both the first and second generations, have a much higher rate of postsecondary participation than their counterparts with Canadian-born parents. The explanatory variables in the analysis account for about one-half of the difference, with postsecondary aspirations among students and their parents accounting for the largest portion. Unlike in Switzerland, however, differences in secondary-school performance in Canada account for little of the difference in postsecondary-participation rates among students with and without immigrant backgrounds. Again, there is significant variation by immigrant source region. In particular, students with Asian immigrant backgrounds are much more likely to pursue postsecondary education than students with other immigrant backgrounds and students with Canadian-born parents, even if they perform poorly in secondary school.

Focusing specifically on students who were low performers in secondary school, one finds that the rate of postsecondary participation was lower in Switzerland than in Canada. In Canada, a relatively large share of low performers with immigrant backgrounds pursue a postsecondary education. Again, this is particularly true for low performers with Asian backgrounds, of whom two-thirds pursue a postsecondary education. About one-third of low-performing students with Canadian-born parents continue to the postsecondary level. PISA scores, family background, and aspirational variables account for one-third to one-half of the difference between these groups, with educational aspirations again playing the greatest role. In Switzerland, first-generation low-performing students are less likely to pursue postsecondary education than students with Swiss parents, and variables included in the analysis account for little of this gap: other unmeasured effects were at play.

Differences in parents' education play a small direct role in explaining differences in the postsecondary-participation rate between groups. However, this variable may act indirectly through secondary-school performance or parents' aspirations regarding the educational attainment of their children.

What explains the differences in outcomes between Canada and Switzerland? Differences in the immigration systems likely matter. The Canadian system emphasizes the selection of immigrants with high levels of education. Canadian immigrants have also tended to come from source regions, such as Asia, that place a high value on educational attainment and working in professional occupations. The Swiss immigration system has traditionally brought in lower-skilled immigrants—although this has been changing in recent years. These inter-country differences in immigrant characteristics will affect first- and second-generation educational outcomes in the two countries.

Differences in the education systems also play a role. The more structured Swiss system allows students less flexibility in their academic program as they advance through secondary school. Immigrant students are overrepresented in the lower academic streams, and this affects their likelihood of attending the postsecondary level. The Canadian school system does not have such a streaming process. However, Swiss students have access to strong vocational training at the secondary level; this negates the necessity to continue to the postsecondary level for many.

1   Introduction

Considerable research has been devoted to the relationship between immigration status and educational attainment. Our interest in this relationship is driven by the observation that, in North America, students with immigrant backgrounds typically achieve higher levels of education than their counterparts with domestic backgrounds (Picot and Hou 2010), while the opposite is typically observed in Europe (Heath *et al.* 2008). The extent to which students' performance in secondary school accounts for this difference has received little analytical attention to date. It is the focus of this paper.

The factors associated with participation in postsecondary education in Canada and Switzerland are compared. These two countries are considered because they are among the few in the world that possess the longitudinal data necessary for such a study.[1] Other European nations do not possess data comparable with that held by Canada and Switzerland. The immigration and education systems also differ between these countries, and this has implications for the outcomes observed. The comparison of Canada and Switzerland also allows for broader reflections on differences between Europe and North America.

This paper also contributes to the education and immigration research by considering the postsecondary enrolment rates not only of students generally, but also of those who perform poorly in secondary school. Using test scores from the Programme for International Student Assessment (PISA), this paper addresses a number of questions: Do significant numbers of students who perform poorly in secondary school pursue postsecondary education? What distinguishes those who do from those who do not? Does immigration status play a major role? Furthermore, do these outcomes vary across national contexts?

The remainder of the paper is divided into five sections. In Section 2, the literature on the factors associated with participation in postsecondary education is reviewed, with a focus on early skill development and immigrant background. In Section 3, differences in the immigration and education systems of Canada and Switzerland are discussed. In Section 4, the data source and methods used in the paper, as well as the demographic characteristics of students with and without immigrant backgrounds are discussed. Results are presented in Section 5. Conclusions follow in Section 6.

2   Literature review

Students' academic and cognitive performance in secondary school is positively correlated with their ultimate educational attainment. PISA reading literacy tests, administered at age 15, provide one means of assessing the association between secondary-school performance and educational attainment. A recent Organization for Economic Cooperation and Development (OECD) study found that, in Canada, students who obtained the highest PISA scores (Level 5) were 20 times[2] more likely to attend university and twice as likely to attend college than those who obtained the lowest PISA scores (Level 1) (OECD 2010*a*).[3] In Switzerland, researchers found that almost one-half of students aged 15 years who scored at levels 4 and 5 on the PISA reading literacy test continued on to the tertiary education level (i.e., education beyond the

---

1. As far as we know, Australia is the only other country that has followed students who participated in PISA at age 15 through longitudinal surveys. However, Australia's Longitudinal Surveys of Australian Youth (LSAY) started with the 2003 PISA cohort, while the Canadian and Swiss surveys started with the 2000 PISA cohort and thus have three more years of follow-up time than LSAY.
2. This is an adjusted result, after controlling for other variables such as parents' education, secondary-school marks, and gender.
3. The PISA reading scores were much better than other variables, such as self-reported secondary-school marks and parents' education, at discriminating between those who attend university and those who do not (OECD 2010*b*).

upper secondary level) six years later, compared with only 8% of those scoring at reading Level 2 (Meyer and Bertschy 2011).

Few studies have focused specifically on the postsecondary educational outcomes of low cognitive achievers in secondary schools.[4] Using longitudinal data from Australia, Thompson and Hillman (2010) concluded that motivation is a key determinant of students' later educational and labour market outcomes among low achievers at age 15. The socio-economic background of students is also important, as is having some form of educational goal or plan. Stalder *et al.* (2011a) concluded that, in Switzerland, a surprisingly large number of low-performing secondary-school students (those with PISA reading literacy Level 2 or below) go on to complete upper secondary school with a vocational diploma. However, Stalder *et al.* did not examine the tertiary participation of low performers in secondary school.

Using longitudinal data from Statistics Canada's Youth in Transition Survey (YITS), Foley *et al.* (2010) focused on high school dropout rates. They concluded that parental aspirations are major determinants of the tendency to drop out of high school by age 19, above and beyond any effect of the PISA score at age 15, family background, or other variables. This was particularly true for students with low PISA reading scores at age 15. In fact, Foley *et al.* concluded that, after accounting for PISA reading scores and parental valuation of education, parental educational attainment has no direct effect on students' probability of dropping out of high school. Falter (2009) obtained similar results for Switzerland, except that the outcome variable is the likelihood of making the transition to a particular upper secondary-school stream, typically a vocational or academic stream (see Section 3). After controlling for PISA scores, he found that parental background has little effect on the outcomes of low- and high-ability students.

Canadian research on the educational attainment gap between the children of immigrants and children with Canadian-born parents suggests that the most important determinants are parents' education, age, and residential location (Boyd 2002; Hum and Simpson 2007; Bonikowska 2008). However, parents' education may be a proxy for other effects, such as parental aspirations regarding the child's education, the child's performance in high school, educational resources made available to the child, and the valuation of education by the parents or the child. However, even after accounting for many determinants, this research found that as much as one-half of the positive gap in educational attainment between the children of immigrant and domestic-born parents persists. Ethnic group differences also matter in the likelihood of pursuing postsecondary education (Abada *et al.* 2009).

More recent Canadian research uses YITS data to address issues related to postsecondary education among students with and without immigrant backgrounds (Childs *et al.* 2010). Parental aspirations regarding university education are found to be higher among children with immigrant backgrounds, particularly among immigrant families from source regions such as China, India, other Asian countries, and Africa. Regarding low achievers, Childs *et al.* observed that students from immigrant families who have low PISA scores are more likely to pursue postsecondary education than their low-scoring counterparts with Canadian-born parents.

Recent European research also shows significant differences in educational attainment between the children of immigrant and non-immigrant families. Heath *et al.* (2008) found that second-

---

4. The PISA reading, mathematics, and science scores have been used as an outcome measure of educational achievement. In Switzerland, both first- and second-generation students received significantly lower PISA scores, on average, than students with Swiss-born parents (OECD 2001). A Swiss study found that social origin was one of the most important factors accounting for the difference in PISA score outcomes between children with and without immigrant backgrounds (Coradi Vellacott and Wolter 2002). Meunier (2011) found that, for Switzerland, differences in individual characteristics, family background, and school characteristics could account for the majority of the PISA reading literacy gap between first- and second-generation students on one hand and students with Swiss-born parents on the other. A study based on the 2003 PISA reading test scores concluded that controlling only for differences in parental educational and occupational background reduced the PISA performance gap but did not eliminate it (OECD 2006).

generation students whose parents came from less economically developed countries tend to have much lower educational attainment (before controlling for social background) than students from non-immigrant groups. However, just as in Canada and the United States, second-generation immigrants of Indian and Chinese background often outperform children of non-immigrant families (unconditionally). Heath *et al*. found that, among second-generation groups of European ancestry, lower levels of educational attainment among children with immigrant backgrounds than among children with non-immigrant backgrounds can be accounted for by socio-economic background. They also observed that educational aspirations are often much higher among immigrant than domestic-born families.

In Switzerland, Meyer and Bertschy (2011)—after controlling for socio-economic background, PISA literacy scores, and students' secondary-school stream—concluded that immigration background has no effect on the likelihood of pursuing tertiary-level education. However, they pointed out that this does not mean that immigration background is unimportant. Its effect may work through other variables, notably the type of secondary-school stream in which students with immigrant backgrounds find themselves compared with those with Swiss backgrounds.

3 Differences in the immigration and education systems of Canada and Switzerland

To understand the inter-country differences between Canada and Switzerland with respect to the role of student immigrant background in postsecondary educational participation, among all students as well as among low performers, it is necessary to review the basic features of different immigration and education systems.

Canada, like Australia and New Zealand, has an immigration system that focuses on educated and skilled immigrants. Immigrants to Canada have, on average, educational attainment levels above those of the Canadian-born population. This has a positive influence on both the social and economic integration of immigrants and the educational outcomes of their children (see Picot and Hou 2010 for a review). Switzerland, like many European nations, has experienced the immigration of largely lower-skilled workers. However, as a result of changes to the Swiss system introduced during the early 1990s and, more recently, the *Agreement on the Free Movement of Persons*, which came into force in the European Union (EU) in June 2002, migration patterns are shifting. Many highly skilled immigrants are now entering Switzerland from nations such as Germany and France, and a smaller share of lower-skilled immigrants are arriving from regions such as the Balkans and from countries such as Turkey and Portugal.

Differences in the immigration systems of Canada and Switzerland are reflected in the socio-economic characteristics of students with immigrant backgrounds in the two countries (as discussed in Section 4.4); these differences have implications for rates of participation in postsecondary education. We account for these background differences in the statistical models presented below.

The Canadian and Swiss education systems are also structurally very different. The Swiss system is highly selective. Starting in the sixth or seventh grade, students are streamed into either an upper school track with more intellectually demanding courses, an intermediate track, or a basic track (see Bertschy *et al*. (2009) and Meyer (2009) for a description of this school system). Only 3% of students from the "basic" track enter tertiary-level (referred to as postsecondary in North America) education by age 23, compared with 30% of those in the upper-level track (Meyer and Bertschy 2011). Students with an immigrant background are overrepresented in the lower-level track; this overrepresentation limits their tertiary educational

opportunities (Meyer 2009).[5] Following compulsory school, students move into upper-secondary, which is also heavily segmented. General education is provided in the gymnasium stream, which typically leads to university. Meunier (2011) found that 24% of students with Swiss parents were in streams that prepared for university entrance, compared with 19% of second-generation students and 12% of first-generation (immigrant) students.

However, most students (between 40% and 70%, depending upon the region) enter a three- to four-year vocational training program, usually through a dual apprenticeship, where training is done both in school and with a firm.

At the tertiary level, the level beyond upper secondary, there are two major streams: "Tertiary A" and "Tertiary B." The former includes longer university programs leading to a bachelor's, master's, or higher degree. Tertiary B includes mostly vocational programs in specialized areas. At age 23, roughly 25% of the 15-year-old cohort is in stream Tertiary A, and 5% is in stream Tertiary B (Federal Office for Professional Education and Technology 2011).[6]

To assess the effect of this streaming on the rate of tertiary-level participation among students with and without immigrant backgrounds, statistical models are run both with and without controls for type of secondary school.

The Canadian education system has a simpler structure than the Swiss. There is little or no streaming at the elementary or secondary level in most provinces, although there is significant freedom in course selection. As a result of this course selection by students, some are eligible to apply to a broader range of postsecondary options, such as university or college, than others. A very small percentage of students enter secondary vocational schools. However, most job-oriented vocational education is conducted in the college system. So, while in Switzerland students need not pursue postsecondary education in order to obtain vocational training, in Canada they do. This obviously affects the level of tertiary participation in the two countries.

At the postsecondary level, most provinces have both community colleges and universities (Quebec has both the CEGEP system and universities). Universities are degree-granting institutions at the bachelor's, master's, and doctorate levels. Community colleges include advanced vocational programs designed for labour market entry and, in some provinces, an academic stream that can lead to university.

4   Data and methods

4.1   Data

The analyses for both Canada and Switzerland use longitudinal surveys that tracked secondary-school students from age 15 in December 1999 to age 23 in December 2007.[7] Both surveys

---

5. The overrepresentation of students with immigrant backgrounds in the lower academic streams appears to be related to more than marks and school performance. Sacchi *et al*. (2011) found that the transition from compulsory education to upper secondary school in Switzerland is strongly shaped by students' social origins and cultural backgrounds, irrespective of their school achievements as measured by PISA reading scores and academic record. Haeberlin *et al*. (2004) found similar results. Students with immigrant backgrounds, but with equal school performance, were much less likely to be recommended for "higher level" school streams than were students with Swiss-born parents. Coradi Vellacott and Wolter (2004) discussed the degree of equity in the Swiss school system across immigrant and other groups.
6. However, many students enter the Tertiary B level at an older age, so that perhaps half of the students who graduate from Tertiary B have not entered the system by age 23. Thus, by focusing on the educational outcomes of 23-year-olds, we are under-representing the ultimate participation in Tertiary B level in particular.
7. More detail on data and methods can be found in the research paper on which this chapter is based (Picot and Hou 2011*b*).

start with the national student sample of 15-year-olds[8] from the PISA 2000 project. PISA assessed reading, mathematical, and scientific literacy among 15-year-olds, with a primary focus on reading literacy, the measure used in this analysis. PISA 2000 also collected information on social, cultural, economic, and educational factors believed to be associated with student performance. On the basis of this sample of 15-year-old students from PISA 2000, both Canada and Switzerland implemented longitudinal surveys designed to examine the major transitions in young peoples' lives as they move through the education system and into the labour force.

The Swiss Transition from Education to Employment (TREE) survey started with an original sample in Wave 1 of 5,532 15-year-olds. By Wave 7, 3,900 23-year-olds remained, for a response rate of 62%. Data from both Wave 1 and Wave 7 are used in this analysis, and the sample is restricted to students still in the sample in Wave 7 (Stalder *et al.* 2001*b*).

The Canadian Youth in Transition Survey (YITS) started in Wave 1 with 29,687 respondents; by Wave 5, at age 23, 14,751 remained, for a response rate of 50%. In both surveys, the data were reweighted in order to reduce the sample bias introduced by non-response and to compensate as much as possible for sample attrition (Statistics Canada 2009).[9]

4.2   Methods

Linear probability models (i.e., ordinary-least-squares models) are used to analyze the data.[10] The dependent (outcome) variable is the probability of pursuing postsecondary (or tertiary) education by age 23. Three models are run. Immigrant status is the only independent variable in Model 1. This variable comprises four categories:

(1)   Immigrant (foreign-born) students who immigrated prior to the age of 15, referred to as 'first-generation students';
(2)   Students born domestically with two immigrant (foreign-born) parents, referred to as 'second-generation students';
(3)   Students born domestically with one immigrant (foreign-born) parent and one domestic-born parent, referred to as '2.5-generation students';
(4)   Students born domestically with two domestic-born parents, referred to as 'third-and-higher-generation students.'

Third-and-higher-generation students are selected as the reference group. Therefore, the coefficients on the immigrant-status variable measure the difference in the probability of pursuing postsecondary education between students in a given immigrant group (e.g., the second generation) and those in the third-and-higher generations.

Model 2 uses the independent variables that are common to both the Canadian and Swiss datasets. In addition to immigrant status, these variables include gender, parents' highest level of education, family type, number of siblings, language spoken at home, size of the city of residence, and the student's PISA reading score (see Picot and Hou 2011*b* for more detail on the models and variables). Family income is not included in the list of independent variables.

---

8. The Canadian sample consisted of a representative sample of 15-year-olds in the secondary-school system. The Swiss sample was representative of students in Grade 9 as of December 1999, and therefore includes some students who were slightly younger or slightly older than 15.
9. Because we focus on students with and without immigrant backgrounds, we are concerned with differential response rates in these two groups and their possible effects. However, the response rates were not that dissimilar. The response rates for students with immigrant backgrounds and those without were 57% and 66%, respectively, in Switzerland and were 49% and 54%, respectively, in Canada.
10. These are preferred to logit or probit models because the coefficients can be interpreted directly. Also, most of the probabilities are not close to either *0* or *1*; consequently, all three types of models (logit, probit, and linear probability) give approximately the same result.

This variable is not available in the Swiss data. However, earlier research has shown that, once one controls for parental education (a variable included in this study), the effect of family income on postsecondary participation is greatly reduced or falls to zero. Hence, the inability to include this variable should not affect the results in a significant way.

The coefficient on the immigrant status variable in Model 2 measures the difference in the probability of pursuing postsecondary education after controlling for the other independent variables in the model. The difference in the immigrant-status coefficient between Model 1 (raw data) and Model 2 indicates how much of the postsecondary-participation gap between groups is "explained" or accounted for by the independent variables included in Model 2. Furthermore, a decomposition is run which estimates how much each of the independent variables contributed to this "explained" gap. More detail on the decomposition can be found in Picot and Hou (2011*b*).

Performance in secondary school is measured in terms of PISA reading scores. Five "plausible values" of the score, instead of one single value, are calculated for the analysis. This approach is necessary because not all students received all PISA questions (see OECD 2009 for more detail). The regressions are run five times with the five values, and the average value of the coefficients is reported. Also, bootstrap re-sampling methods are used to correct the standard errors for complex survey design effects (Picot and Hou 2011*b*).

Model 3 includes all the independent variables in Model 2, plus variables unique to each country. For Switzerland, these include students' secondary-school stream and the language of the canton of residence. For Canada, these include whether the parent hopes that the child will get at least one university degree, whether the student hopes to get at least one university degree, whether the family has made some financial preparation for postsecondary education, and whether the student expects to have a job that requires a university degree. These three models are run on two populations: all students; and students who are low performers in secondary school.

Regarding interaction terms, earlier research suggests that the effect of parents' education on university education may differ between the second generation and the third-and-higher generations. Some research has found that, in Canada, the correlation between parents' education and students' educational attainment is weaker among immigrant than domestic families (Bonikowska 2008; Childs *et al*. 2010). Similar results are found in Switzerland (Bauer and Riphahn 2007). This would suggest interacting immigrant (i.e., generation) status and parents' education in the model. It may also be that PISA scores have a different effect on postsecondary participation for immigrant students compared with other students; this also suggests an interaction term. In a robustness check, the fact of including these interaction terms had virtually no effect on the explained gap in participation between students with immigrant backgrounds and students without immigrant backgrounds, the coefficients of interest. Furthermore, in most cases the interaction terms themselves were statistically insignificant. Therefore, they were excluded from the final models.

4.3   Defining low and high performers in secondary school

PISA literacy scores are used to identify low and high performers in secondary school. PISA defines reading literacy quite broadly: the ability to understand, use, and reflect upon written texts (OECD 2001). PISA goes well beyond the ability of individuals to just read a text—it assesses a combination of students' level of reading ability and cognitive skills at age 15.

PISA 2000, used here, assesses the extent to which 15-year-old students have mastered reading skills and have the cognitive literacy abilities to succeed in the future (OECD 2001). To do so, it measures ability in three major domains: (1) the ability to read various types of text, including different types of prose, as well as forms, charts, and diagrams; (2) the ability to

retrieve, understand, interpret, and reflect upon text; and (3) the ability to relate the text to its intended use, such as private, public, work-related, or educational. PISA literacy scores provide a reasonable basis for the categorization of 15-year-olds into low and high performers, that is, those students who have not yet mastered and demonstrated the literacy skills, broadly defined, needed for future academic advancement, and those who have.

PISA reading scores are grouped by the OECD into five main categories, Level 5 being the highest. Students at Level 1 or below fail to demonstrate the most basic reading skills and have serious reading deficiencies. In this paper, low performers are those at Level 1 or Level 2—students who scored 480 or lower on the PISA test—while high performers are students who attained Levels 4 or 5—a score of 553 or higher.

In Canada, 26% of students are classified as low performers, and 47% are classified as high performers. Switzerland has a higher percentage of low performers (44%) and a smaller percentage of high performers (27%) (Table 1). The postsecondary outcomes of low secondary-school performers is of particular importance for Switzerland, since over three-quarters of immigrant students, and 61% of second generation students, fall into that category.[11]

Table 1
Distribution of students by PISA reading level

	All students	First generation	Second generation	2.5 generation	Third-and-higher generations
			percent		
Canada					
Low (Level 2 or lower)	25.9	37.6	23.3	18.6	25.8
Medium (Level 3)	27.2	21.9	29.8	27.8	27.4
High (Levels 4 and 5)	46.9	40.5	46.9	53.6	46.8
Switzerland					
Low (Level 2 or lower)	43.7	78.2	61.2	36.8	31.4
Medium (Level 3)	29.5	14.1	23.2	36.9	33.9
High (Levels 4 and 5)	26.8	7.6	15.7	26.3	34.7

Notes: "First generation" refers to foreign-born students*; "*second generation" refers to domestic-born students with two foreign-born parents*; "*2.5 generation" refers to domestic-born students with one foreign-born parent; and "third-and-higher generations" refers to students with two domestic-born parents. PISA: Programme for International Student Assessment.
Sources: Statistics Canada, Youth in Transition Survey; and Swiss Federal Statistical Office, Transition from Education to Employment Survey.

---

11. It is possible that students with immigrant backgrounds and low PISA reading scores are not "poor" performers in general, but rather have lower PISA reading scores because the language of the test is not their "home" language. They may be average or better in other subjects, such as science and math. However, this is not the case. First, much of our sample consists of second-generation students, whose schooling would have been in the language of the test. Second, the PISA results show that immigrant-background students with low PISA reading scores also had, on average, low PISA math and science scores. In Canada, among immigrant-background students, those with low PISA reading scores (Level 1 or Level 2) had reading scores that were 68% of those of their counterparts with high PISA reading scores (Level 4 or Level 5). These same students with low reading skills had science PISA scores that were only 70%, and math scores that were 75%, of those of students with high PISA reading scores. These ratios were almost identical for first-, second-, and third-generation students. Very similar results were observed for Switzerland.

4.4 Characteristics of students with and without immigrant backgrounds

The mean values of the variables used in the regressions are shown in Tables 2 and 3. In Canada, first- and second-generation students have backgrounds that tend to be correlated with higher levels of postsecondary participation while, in Switzerland, first- and second-generation students have characteristics that tend to be correlated with lower levels of postsecondary participation.

Canada

- In Canada, the parents of first- and second-generation students are more educated than parents of third-and-higher-generation students: 49% of first-generation students and 38% of second-generation students have two parents who are postsecondary graduates (college or university), compared with 33% of third-and-higher-generation students.
- A smaller share of first-generation (21%) and second-generation (25%) students than of third-and-higher-generation students (26%) are in families without two biological parents (e.g., single-parent or blended families). Students from single-parent or blended families are less likely to participate in postsecondary education than those from two-parent families.
- First-generation (87%) and second-generation (84%) students have greater aspirations of attaining a postsecondary education than their counterparts in the third-and-higher generations (74% of students). Their parents (97%−98%) have a greater hope that they will attain such an education than the parents of the third-and-higher-generation students (88% of parents).
- A larger share of first-generation (63%) and second-generation (55%) students than of third-and-higher-generation students (21%) live in the three largest metropolitan areas (Vancouver, Toronto, and Montréal), where the rate of university education is higher.

Switzerland

- In Switzerland, 50% of parents of first-generation students and 52% of parents of second-generation students have lower secondary-school education or less. This is the case for 21% of parents of students in the third and higher generations (Table 3).
- The educational resources at home are greater among students of the third-and-higher generations than among first- and second-generation students, on average.
- Residential location (city size) tends to favour higher participation by first- and second-generation students, as in Canada. These students are more likely to live in cities, where the probability of pursuing postsecondary education is greater, and are less likely to live in villages and smaller communities.
- By design, students in the pre-gymnasial stream in secondary school are much more likely to attend university, or the tertiary level in general, than those in the other streams (extended or basic academic requirements). First-generation students (14%) are much less likely to be in the pre-gymnasial stream than those of the third-and-higher generations (31%). This may be related to many factors, including academic performance and cultural and social backgrounds (see literature review in Section 2). However, second-generation students are as likely to be in the pre-gymnasial stream as students of the third-and-higher generations (34%).

Table 2
Variable means by generational status, Canada

	All students				Low-performing students			
	First generation	Second generation	2.5 generation	Third-and-higher generation	First generation	Second generation	2.5 generation	Third-and-higher generation
	mean							
Plausible PISA reading score	518	540	557	537	414	420	425	419
Number of siblings	1.8	1.8	1.8	1.8	2.2	1.9	1.9	1.9
Educational resources at home	0.2	0.0	0.0	-0.2	-0.1	-0.2	-0.4	-0.4
Time spent on homework	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
	percent							
Girl	51.9	53.8	48.5	48.3	43.9	34.9	38.3	34.5
Both parents with postsecondary education	49.1	37.5	45.9	33.1	33.2	28.2	31.3	24.0
One parent with postsecondary education	23.0	27.7	32.0	31.6	24.4	26.1	32.5	30.1
Both parents with upper secondary	10.7	15.2	13.2	16.7	8.6	20.2	17.9	18.1
One parent with upper secondary	7.4	7.0	6.6	10.6	11.4	5.5	13.9	13.1
Neither parent with higher than lower secondary	4.3	7.0	1.6	6.3	9.5	9.2	2.4	11.1
Both parents with lower than lower secondary	5.4	5.6	0.8	1.7	12.9	10.9	2.1	3.6
Nuclear families	76.5	73.8	85.7	71.1	70.7	68.8	80.8	66.8
Single parents	15.7	22.5	1.2	15.7	23.2	25.7	1.5	16.2
Blended families	5.4	2.4	10.3	10.5	2.2	2.5	13.7	13.1
Other families	2.3	1.3	2.8	2.7	3.8	2.9	4.0	3.8
Home language is official language	39.2	74.0	95.4	98.0	26.3	65.6	88.1	96.6
Three largest metropolitan areas	63.2	55.1	37.1	20.5	60.8	50.6	30.3	15.8
Next five largest metropolitan areas	14.0	16.7	19.7	14.8	17.3	15.2	12.6	12.1
Other metropolitan areas	13.2	16.4	16.8	17.6	11.4	15.5	25.3	16.6
Small urban areas	4.5	7.2	11.0	18.4	4.1	10.9	10.5	21.1
Town	4.3	3.8	11.1	18.3	6.3	7.6	15.2	21.7
Village or rural area	0.9	0.8	4.3	10.3	0.1	0.2	6.1	12.8
Parents hope child takes postsecondary education	98.0	96.6	94.0	87.6	96.6	90.2	82.4	73.6
Parents made financial preparation	63.3	75.4	75.4	65.4	49.6	70.0	74.1	59.0
Student hopes to complete postsecondary education	86.9	83.6	84.6	74.2	79.3	64.2	67.7	50.7
Student wants a job requiring postsecondary education	60.8	56.2	56.6	54.8	44.3	40.5	40.4	36.8

Note: PISA: Programme for International Student Assessment.
Source: Statistics Canada, Youth in Transition Survey.

Table 3
Variable means by generational status, Switzerland

	All students				Low-performing students			
	First generation	Second generation	2.5 generation	Third-and-higher generation	First generation	Second generation	2.5 generation	Third-and-higher generation
	mean							
Plausible PISA reading score	404	452	498	517	366	392	412	423
Number of siblings	2.8	2.3	2.6	1.8	2.9	2.5	2.8	2.0
Educational resources at home	-0.1	0.2	0.2	0.4	-0.2	0.1	0.1	0.2
Time spent on homework	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
	percent							
Girl	46.2	44.2	51.6	50.5	47.4	35.5	44.6	42.2
Both parents with tertiary education	16.5	4.7	17.0	8.2	14.0	2.9	19.3	5.5
One parent with tertiary education	16.5	19.1	32.0	30.5	16.2	10.4	18.5	27.7
Both parents with upper secondary	4.9	8.6	15.7	26.0	1.7	5.5	9.6	25.2
One parent with upper secondary	11.8	15.7	14.4	10.6	10.3	16.1	24.2	9.8
Neither parent with higher than lower secondary	29.0	36.7	15.5	20.4	34.6	46.4	18.4	25.2
Both parents with lower than lower secondary	21.3	15.1	5.4	4.3	23.2	18.8	9.9	6.6
Nuclear families	68.1	66.1	81.5	76.5	67.8	72.5	74.3	72.5
Single parents	20.5	25.0	0.0	12.5	22.7	17.7	0.0	13.2
Blended families	9.7	5.8	11.2	6.7	8.1	5.6	14.1	8.8
Other families	1.8	3.1	7.3	4.4	1.3	4.2	11.6	5.6
Home language is official language	23.6	60.2	91.0	97.2	17.8	55.7	88.6	94.8
Village	7.0	6.3	6.6	15.2	8.5	7.4	9.4	16.9
Town	73.2	66.5	75.8	74.8	74.1	62.8	67.5	73.0
City	16.8	26.3	13.8	7.8	14.5	29.0	17.1	8.0
Location not specified	3.0	0.9	3.8	2.1	2.9	0.8	6.1	2.1
Pre-gymnasial	14.2	33.7	29.3	30.9	5.7	20.7	5.3	5.2
Extended academic requirements	26.1	25.4	46.9	44.0	22.8	20.4	51.6	38.6
Basic academic requirements	55.7	36.3	20.6	23.7	67.6	52.2	41.1	53.9
No formal tracking	4.0	4.6	3.3	1.4	3.7	6.7	2.0	2.3
German-language region	57.9	61.1	53.1	81.3	58.0	60.3	45.4	77.0
French-language region	34.3	32.9	40.2	16.7	33.0	33.5	48.7	20.4
Italian-language region	7.8	6.0	6.6	2.0	9.0	6.2	5.9	2.6

Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

5   Results

5.1   PISA scores for Canada and Switzerland

PISA literacy scores are generally higher in Canada than in Switzerland. In PISA 2000 (the measure used in this analysis), the average literacy performance score in Canada was 534; in Switzerland, it was 494. The average for all OECD countries was 500. In PISA 2009, the scores were 524 in Canada and 501 in Switzerland, while the OECD average was 494.

In Switzerland, reading ability as measured by PISA scores was much lower among children with an immigrant background. The average among students of the third-and-higher generations was 517, compared with 452 among second-generation students and 404 among first-generation students (Table 3). For many of these foreign-born students, the language of assessment would have been their second language, and some students may have been enrolled in the Swiss school system for only a short time. Even among second-generation students, the language spoken at home may not have been the language of assessment.

In Canada, students of the second generation and students of the third-and-higher generations have approximately the same average PISA score, at 540, while first-generation students have a slightly lower average score, at 518 (Table 2). However, all these groups have scores above the OECD average of 500.

Given their higher educational aspirations and higher parents' educational attainment, one might have expected the second generation in Canada to register higher PISA scores than their counterparts in the third-and-higher generations. This was not the case.

## 5.2   All students: Likelihood of pursuing tertiary-level education

5.2.1   Differences by generation

In Canada, students of the first generation are 12-percentage-points more likely to attend a postsecondary institution than students of the third-and-higher generations (Chart 1 and Table 6, Model 1). Adjusting for differences in background variables accounts for about 40% to 50% of this gap in models 2 and 3 (Chart 2 and Table 6). A number of variables account for this explained portion of the gap, including differences in students' and parents' aspirations (accounting for almost one-half of the explained gap) as well as differences in geographical location, homework time, and parents' education each accounting for about one-fifth of the explained gap (Charts 3 and 4, and Table 7). Differences in PISA scores tended to reduce the likelihood of the first generation pursuing postsecondary education, but this effect was more than offset by the other positive effects.

According to the raw data, the second generation is around 18-percentage-points more likely to pursue postsecondary education than students of the third-and-higher generations (Chart 1 and Table 6). In Model 3, about one-half of this gap can be accounted for by the independent variables related to background, PISA score, and aspirations (Chart 4). Of this explained gap, parents' and students' aspirations accounted for about one-third, while geographical location and homework time each accounted for about 15% (Table 7). The PISA scores did not differ between the second generation and the third-and-higher generations; therefore, this variable is not important in accounting for the group difference. Differences in parents' education also were unimportant.

Chart 1

Percentage of 15-year-old students attending a postsecondary institution by age 23, by immigration status — Unadjusted (raw data) – Canada

percent

Generational status
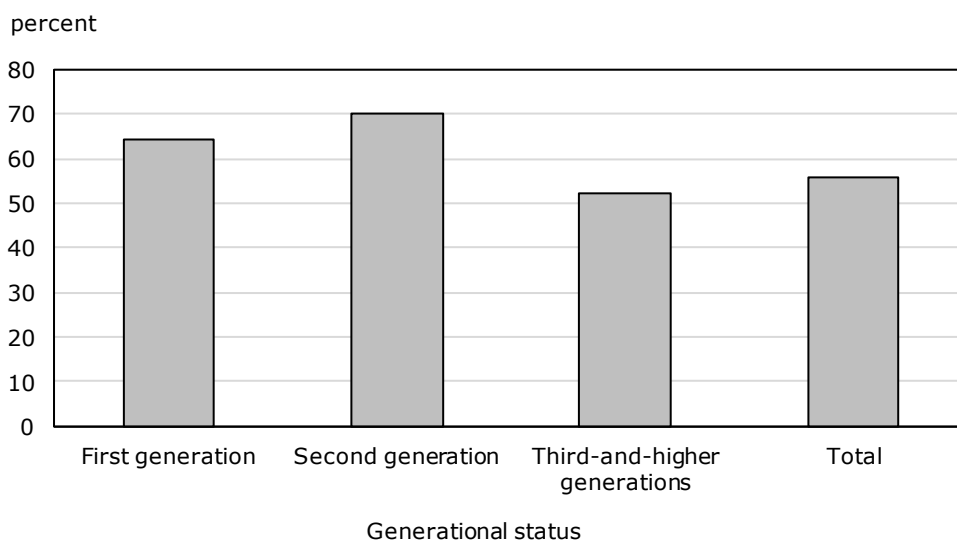
Source: Statistics Canada, Youth in Transition Survey.

Chart 2

Percentage of 15-year-old students attending a postsecondary institution by age 23, by immigration status — Adjusted for differences in PISA score, family background, and other[1] variables – Canada

percent

Generational status
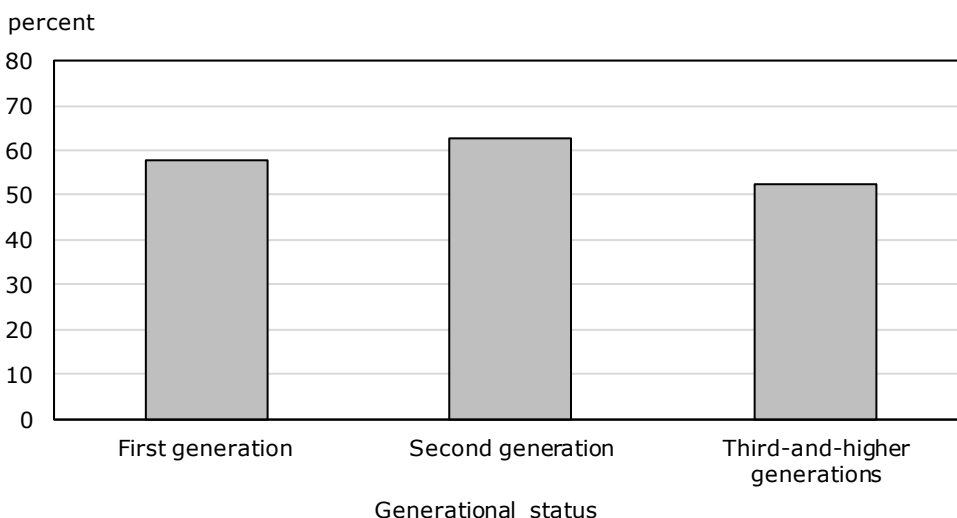
1. The important other variables include, in Canada, students' and parents' aspirations regarding university and, in Switzerland, students' secondary-school stream.
Note: PISA: Programme for International Student Assessment.
Source: Statistics Canada, Youth in Transition Survey.

Chart 3

Differences in the probability of 15-year-old students attending a postsecondary institution by age 23 between the first generation and the third-and-higher generations — Canada

Difference in probability

Gap in the probability of attending
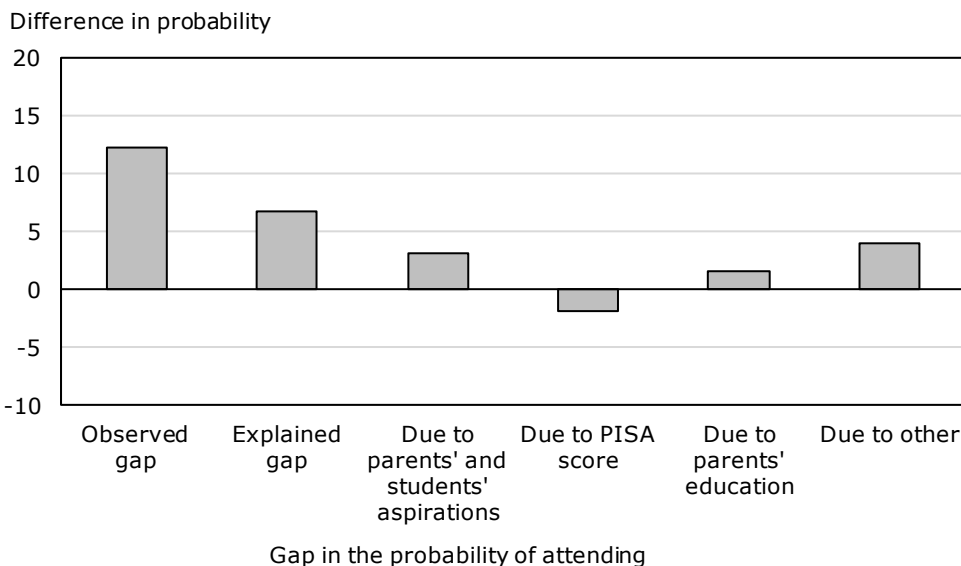
Note: PISA: Programme for International Student Assessment.
Source: Statistics Canada, Youth in Transition Survey.

Chart 4

Differences in the probability of 15-year-old students attending a postsecondary institution by age 23 between the second generation and the third-and-higher generations — Canada

Difference in probability

Gap in the probability of attending

Source: Statistics Canada, Youth in Transition Survey.

Chart 5

**Percentage of 15-year-old students attending a postsecondary institution by age 23, by immigration status — Unadjusted (raw data) – Switzerland**

percent

Generational status

Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Chart 6

Percentage of 15-year-old students attending a postsecondary institution by age 23, by immigration status — Adjusted for differences in PISA score, family background, and other[1] variables – Switzerland

percent

Generational status
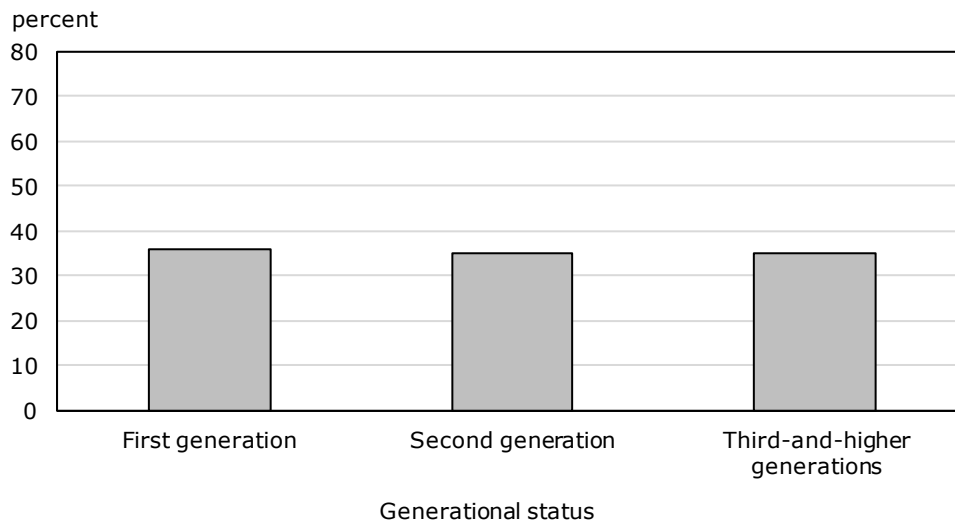
1. The important other variables include, in Canada, students' and parents' aspirations regarding university and, in Switzerland, students' secondary-school stream.
Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Chart 7

Differences in the probability of 15-year-old students attending a postsecondary institution by age 23 between the first generation and the third-and-higher generations — Switzerland

Difference in probability

Gap in the probability of attending
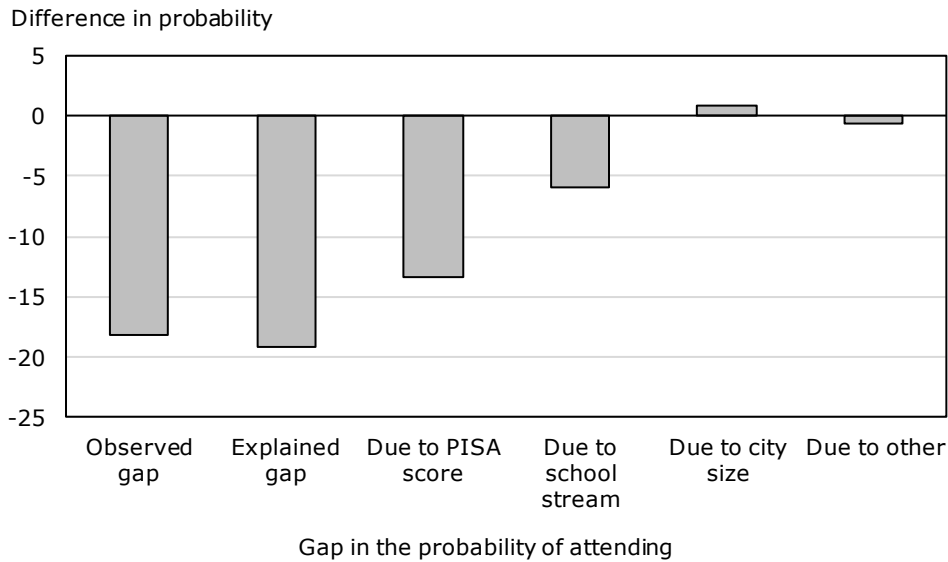
Note: PISA: Programme for International Student Assessment.
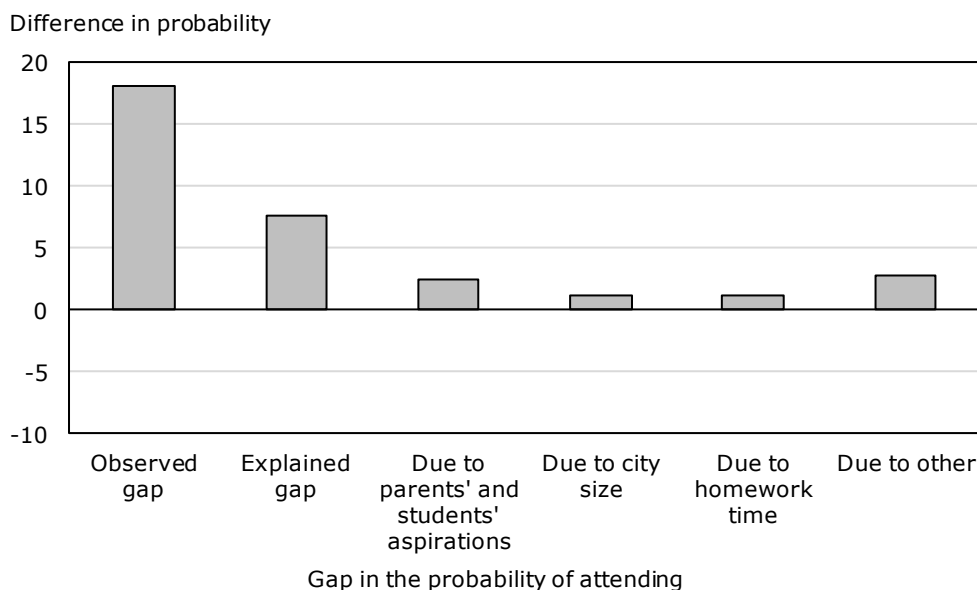Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Chart 8

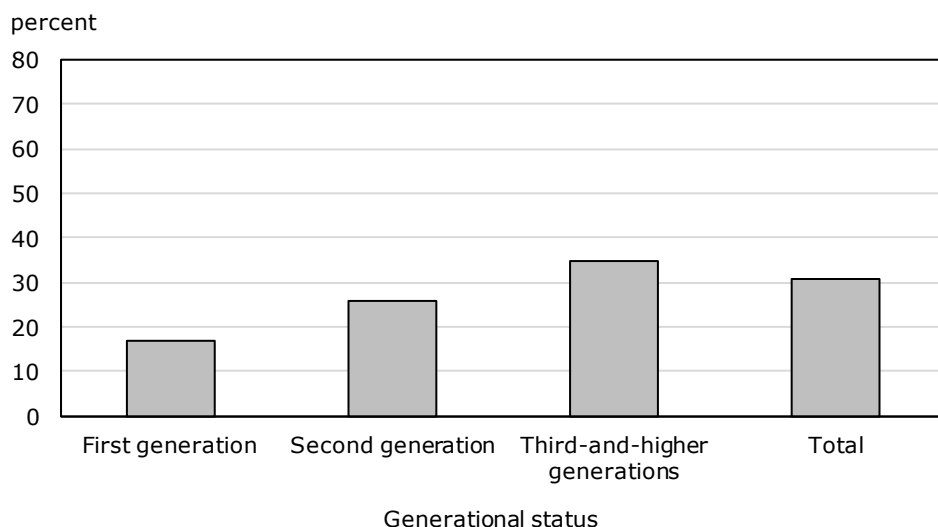**Differences in the probability of 15-year-old students attending a postsecondary institution by age 23 between the second generation and the third-and-higher generations — Switzerland**

Difference in probability

Gap in the probability of attending
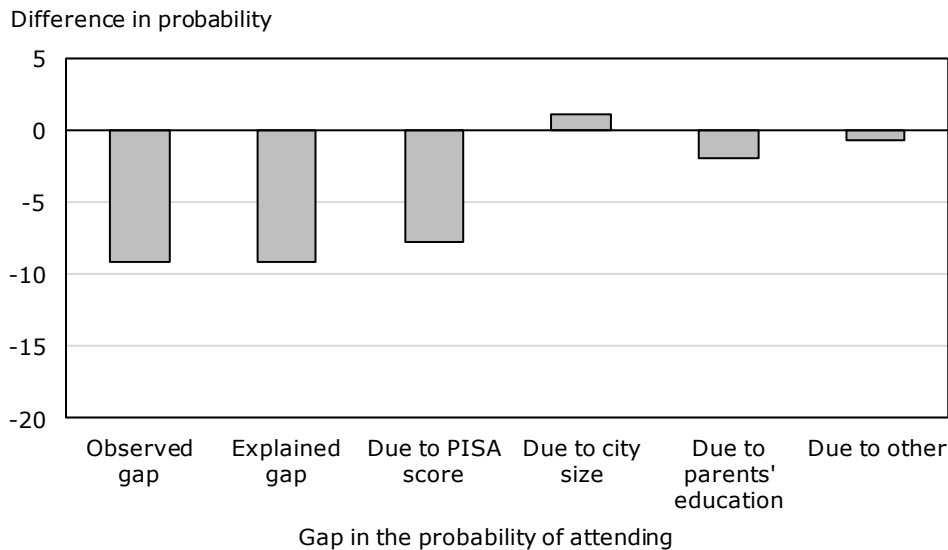
Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

In Switzerland, first-generation students were 18-percentage-points less likely to pursue tertiary-level education by age 23 than their counterparts in the third-and-higher generations. The second generation was 9-percentage-points less likely (Chart 5 and Table 8). In both cases, the entire gap could be accounted for by the independent variables included in both models 2 and 3 (Chart 6 and Table 9). The differences in the PISA score between the students with immigrant backgrounds and those in the third-and-higher generations accounted for the entire gap in Model 2. In Model 3, the secondary-school stream is introduced and 'soaks up' some of the explanatory power of the PISA variable. However, since a student's secondary-school stream is in part a reflection of academic performance, both the PISA and the stream variables reflect academic performance to some extent. Parents' education and geographical location account for some of the gap—the former negatively and the latter positively—but their effect is very small compared to that of the PISA variable (Charts 7 and 8).

Therefore, in Canada, differences in parental and student aspirations regarding university education play the most important role in accounting for the gap, but much is left to be explained. In Switzerland, differences in PISA reading scores account for the entire gap.

5.2.2 Differences in outcomes by source region background

Earlier research clearly shows that the educational attainment of the first generation varies by students' source country and that the educational attainment of the second generation varies by the source country of the students' parents. Source country, likely serving as a proxy for a host of variables that are difficult to disentangle, is one of the important determinants of educational attainment among the children of immigrants (Picot and Hou 2011*a*; Heath *et al*. 2008). Source country may reflect differences in many ways: the value placed on education by the parents; the expectations of the parents regarding educational attainment; the support available from the ethnic group as a whole ('ethnic capital'); the educational attainment and occupational status of the parents, which varies by ethnic group; the quality of the school systems to which students are exposed; home-language effects; and other cultural differences influencing lifestyle choices.

In Switzerland, slightly over one-quarter of first- and second-generation students were from, or had parents who were from, developed European economies (Table 4). About 40% were born in, or had parents who were born in, the less-developed economies of the former Yugoslavia, Albania, Kosovo, or Turkey. The remaining roughly one-third had Spanish or Portuguese backgrounds or were from other countries.

The source regions of first- and second-generation students were very different in Canada (Table 4). About 44% were of Asian origin, notably China and India, and about 18% had backgrounds associated with the developed economies of the United States, the United Kingdom, Northern Europe, and Western Europe. The approximately one-third remaining were born in, or had parents who were born in, Central or South America, other European countries, or Africa.

Table 4

Source countries among the first and second generations

Source countries	Proportion
	percent
In Canada	
China	14.3
India	9.8
Other East and Southeast Asia	19.7
United States	4.4
Central and South America	13.0
United Kingdom	8.9
Northern and Western Europe	3.9
Other Europe	18.4
Africa and other	7.6
In Switzerland	
Germany and Austria	3.1
France and Belgium	5.1
Italy	17.5
Spain	3.8
Portugal	9.0
Former Yugoslavia	15.6
Albania and Kosovo	13.5
Turkey	9.8
Other	22.6

Sources: Statistics Canada, Youth in Transition Survey; and Swiss Federal Statistical Office, Transition from Education to Employment Survey.

To assess differences in outcomes by source region, the three regression models outlined in the methods section (Section 4.2) are used.[12] Given the small sample sizes, it is necessary to combine the first- and second-generation populations into one category, referred to as 'students with immigrant backgrounds.' The host country (Switzerland or Canada) is always the reference group in the source region variable. Therefore, in the regression models, we are estimating the differences in the likelihood of pursuing postsecondary education between immigrant-background students whose source region is, for example, Turkey, and students whose parents were born in Switzerland (the third-and-higher generations). The same approach is used with the Canadian sample.

12. The same population of students with PISA scores at age 15, and who remain in the sample in 2007 at age 23, is employed. The dependent variable is the probability of attending a tertiary-level institution by age 23. The independent variables are the same as those used in the regression models described earlier, except the immigration status variables. Rather than employing a binary variable that denotes immigration status (first, second, 2.5, or third and higher) as in the earlier regressions, we use a source region variable that denotes the country of birth of a student from the first generation or the third-and-higher generations and the country of birth of the parent of a second-generation student. The source region variable has 7 levels for Switzerland and 11 for Canada. For Switzerland, the categories for this variable are Switzerland (i.e., third-and-higher generations), Germany/France/Austria/Belgium, Italy, Spain/Portugal, Yugoslavia/Albania/Kosovo, Turkey, and other. For Canada, the categories are Canada (i.e., third-and-higher generations), China, India, Other East/Southeast Asia, Other Asia, United States, Central/South America, United Kingdom, Northern/Western Europe, Other Europe, and Africa and other. Some aggregation of categories was necessary as a result of issues with sample size.

The sample that includes all students shows the expected results. In Switzerland, unconditional results show that immigrant-background students with German/Austrian/French/Belgian backgrounds are more likely than students with Swiss-born parents to participate in tertiary education; those with all other backgrounds are less likely to do so (in the raw data, Table 5, Model 1). The differences are substantial, ranging from 21-percentage-points more likely to participate (German/Austrian/French/Belgian backgrounds) to 21-percentage-points less likely. Students from families from Yugoslavia/Albania/Kosovo, Spain/Portugal, and Turkey are much less likely to pursue tertiary education than their counterparts with Swiss-born parents.

For most regions, the differences in the explanatory variables included in models 2 and 3, notably PISA score, can account for most of this gap in tertiary education between immigrant-background students and students with Swiss-born parents (Table 5). The German/Austrian/French/Belgian case is an exception. Relatively little of their advantage relative to tertiary students of the third-and-higher generations is accounted for either by family background, PISA scores, or school stream. Other unmeasured variables play a significant role.

In Canada, unconditional results show that students with Chinese backgrounds are 28-percentage-points more likely to pursue postsecondary education than those with parents born in Canada. This means that 80% of Chinese-background students attend some form of postsecondary institution—the vast majority attending university. Background characteristics and aspirations regarding education, as well as residential location (Model 3), account for 45% of this positive gap in the Chinese case (Table 5). However, there remains an unexplained component even with this relatively rich set of control variables.

Students from other source regions also show a significant advantage over the Canadian-background students in postsecondary participation. This is particularly true for students with backgrounds from all other Asian regions, Africa, and other European nations. Students with backgrounds from other developed economies, such as the United States, the United Kingdom, Northern Europe, and Western Europe, are not much different from Canadian-background students in terms of postsecondary participation. However, students with immigrant backgrounds from all source regions used in this typology have participation rates equal to or higher than those of students with Canadian-born parents. No source-region group is seen to lag behind in the raw data.

The proportion of the positive gap with Canadian-background students that can be accounted for by differences in family background, PISA scores, aspirations, and other variables in Model 3 varies tremendously by source region, from one-quarter to over three-quarters (Table 5). However, in many cases the postsecondary-participation advantage cannot be entirely explained, even by the rich set of variables available in Model 3.

Table 5

Differences in the probability of attending a postsecondary institution between first- and second-generation students and students of the third-and-higher generations, by source region

	All students				Low-performing students			
	Model 1	Model 2	Model 3	Percentage of gap accounted for	Model 1	Model 2	Model 3	Percentage of gap accounted for
	difference[1]			percent	difference[1]			percent
Canada								
China	0.28 *	0.20 *	0.16 *	45	0.34 *	0.30 *	0.24 *	28
India	0.19 *	0.09	0.04	80	0.08	-0.01	-0.04	…
Other East and Southeast Asia	0.20 *	0.19 *	0.15 *	25	0.33 *	0.29 *	0.26 *	22
Other Asia	0.25 *	0.25 *	0.20 *	20	0.34 *	0.36 *	0.33 *	3
United Kingdom	0.09	0.05	0.05	46	0.26 *	0.20	0.20	21
United States	-0.05	-0.06	-0.05	…	-0.17	-0.06	-0.10	45
Caribbean, and Central and South America	-0.01	0.03	0.01	…	-0.03	-0.04	-0.07	…
Northern and Western Europe	0.07	0.01	0.02	70	0.21	0.28	0.22	…
Other Europe	0.17 *	0.14 *	0.12 *	27	0.15	0.13	0.12	22
Africa and other	0.19 *	0.14 *	0.10 *	50	0.07	0.02	0.00	101
Switzerland								
Germany, Austria, France, Belgium	0.21 *	0.19 *	0.18 *	13	0.00	-0.02	-0.05	…
Italy	-0.14 *	0.03	-0.02	88	-0.12 *	-0.09 *	-0.14 *	…
Spain and Portugal	-0.21 *	-0.07	-0.11 *	48	-0.06	-0.03	-0.11	…
Former Yugoslavia, Kosovo, Albania	-0.20 *	0.05	0.02	111	-0.06	0.00	-0.02	57
Turkey	-0.20 *	0.04	-0.01	94	-0.05	0.01	-0.01	72
Other countries	-0.13 *	-0.02	-0.03	79	-0.09 *	-0.05	-0.09	3

* significant at p<0.05
1.Differences in the probability of attending a postsecondary institution between first- and second-generation students and students of the third-and-higher generations, by source region.
Note: Coefficients from regression models showing differences in the proportion attending a postsecondary educational institution.
Sources: Statistics Canada, Youth in Transition Survey; and Swiss Federal Statistical Office, Transition from Education to Employment Survey.

5.3   Results for low performers

5.3.1   Differences by generation

The results in the previous section referred to all students. To address the questions posed earlier in the paper, the analysis is replicated for students who are low performers in secondary school.

More than one-third of low performers participated at the postsecondary level in Canada, compared with 11% in Switzerland (Charts 9 and 10). However, as noted earlier, we are likely underestimating tertiary participation in Switzerland. Enrolment in Tertiary B, mainly vocational postsecondary schools in Switzerland, often occurs at a later age. Perhaps as few as one-half of the students who will ultimately attend Tertiary B schools are enrolled by age 23. Furthermore, the capacity of the Tertiary B system in Switzerland is relatively small compared

with that of the college system in Canada. Finally, many low-performing students may opt for vocational training in upper secondary rather than continuing to the tertiary level. This route can result in positive labour market outcomes, and is a choice not readily available in Canada.

Being a low performer in secondary school in Switzerland has a very large effect on the likelihood of tertiary participation, more so than in Canada, particularly among students with immigrant backgrounds. This is significant, since over three-quarters of Swiss immigrant students perform poorly in secondary school as measured by the PISA test (Table 1).[13] As noted, differences in the structures of the school systems likely account for part of this difference.

In Canada, high performers in secondary school (PISA Level 4 or Level 5) are twice as likely to pursue postsecondary education as their low-performing counterparts (in the raw data, no controls); in Switzerland, they are over five times as likely to participate. This difference is greater among the immigrant population. In Canada, among the first and second generations, high performers are 1.6 times as likely as low performers to participate. In Switzerland, high performers are 12 times (among the first generation) and 6 times (among the second generation) as likely to participate.

But what accounts for the gap in postsecondary participation between students with immigrant backgrounds and those without?

In Switzerland, the tertiary-education rate of first-generation low performers is less than one-half that of their counterparts in the third-and-higher generations; among the second generation, the tertiary-education rate of low performers is two-thirds of the rate for the third-and-higher generations (Chart 10 and Table 10). Therefore, the very large numbers of students with immigrant backgrounds who are in the low-performing category have relatively low tertiary-education rates compared with their counterparts in the third-and-higher generations.

---

13. The language of the test is often not immigrant students' home language, and this fact affects test scores. This may be true among some second-generation students as well, where the share of poor performers is also high (61%). However, these PISA reading literacy scores are strongly correlated with postsecondary participation and no doubt play a significant role in tertiary-participation patterns.

Chart 9

Percentage of low-performing 15-year-old students attending a postsecondary institution by age 23, by immigration status — Unadjusted (raw data) – Canada
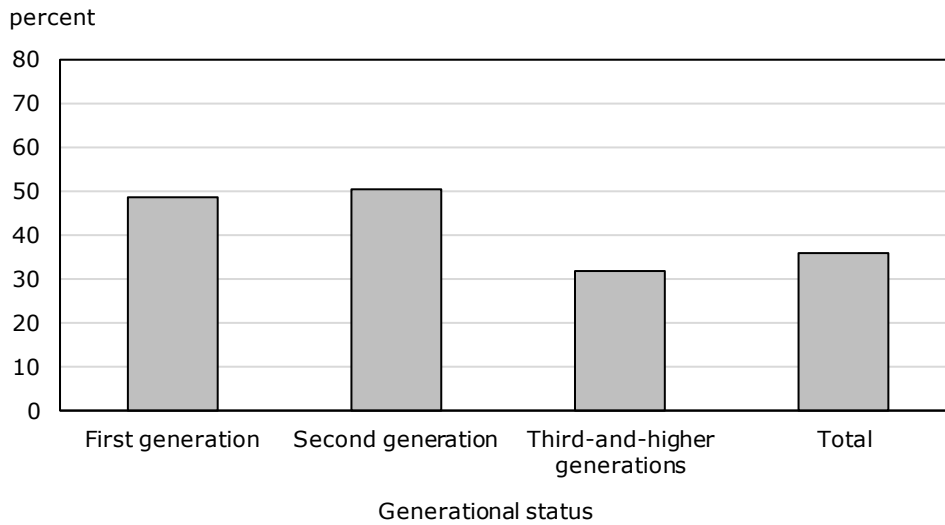
percent

Source: Statistics Canada, Youth in Transition Survey.

Chart 10

Percentage of low-performing 15-year-old students attending a postsecondary institution by age 23, by immigration status — Unadjusted (raw data) – Switzerland

percent

Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Chart 11

Percentage of low-performing 15-year-old students attending a postsecondary institution by age 23, by immigration status — Adjusted for differences in PISA score, family background, and other[1] variables – Switzerland

percent
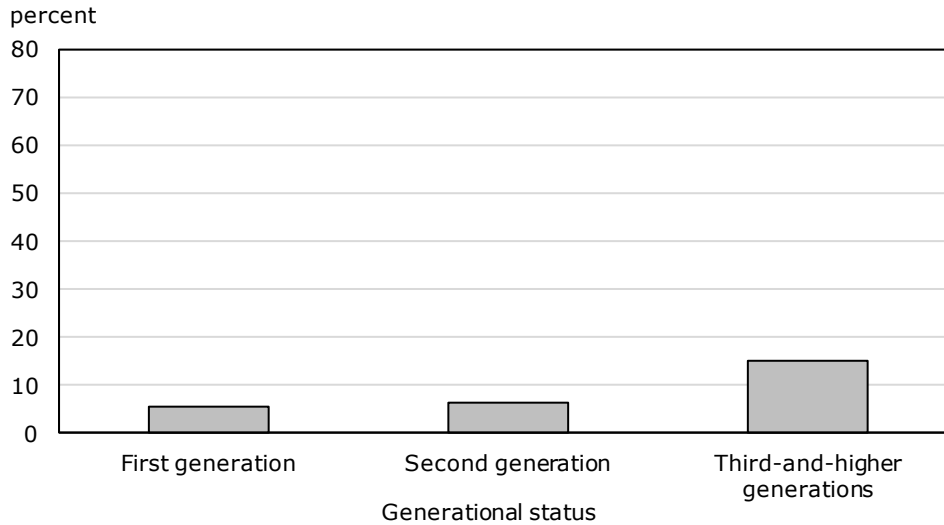
1. The important other variables include, in Canada, students' and parents' aspirations regarding university and, in Switzerland, students' secondary-school stream.
Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Chart 12

Differences in the probability of 15-year-old low-performing students attending a postsecondary institution by age 23, between the first generation and the third-and-higher generations — Switzerland

Difference in probability

Gap in the probability of attending
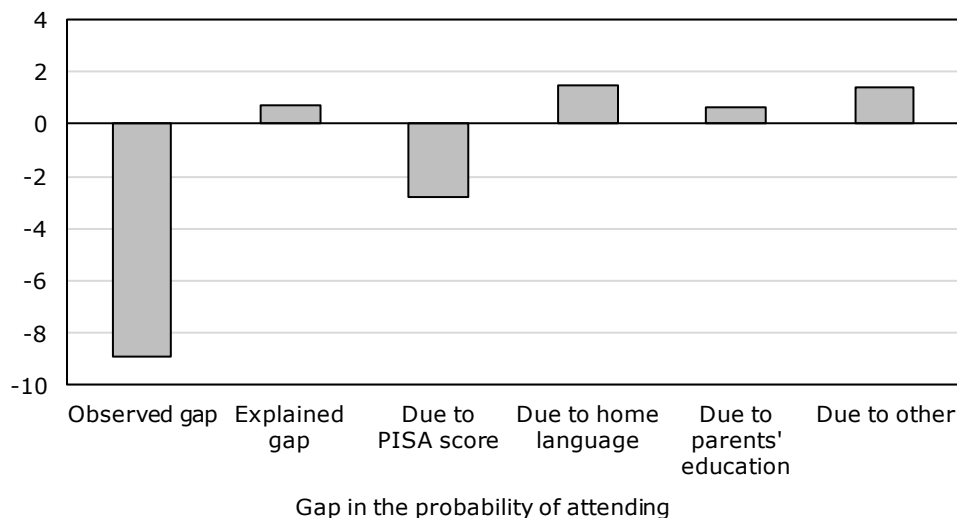
Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Chart 13

Differences in the probability of 15-year-old low-performing students attending a postsecondary institution by age 23, between the second generation and the third-and-higher generations — Switzerland

Difference in probability

Gap in the probability of attending
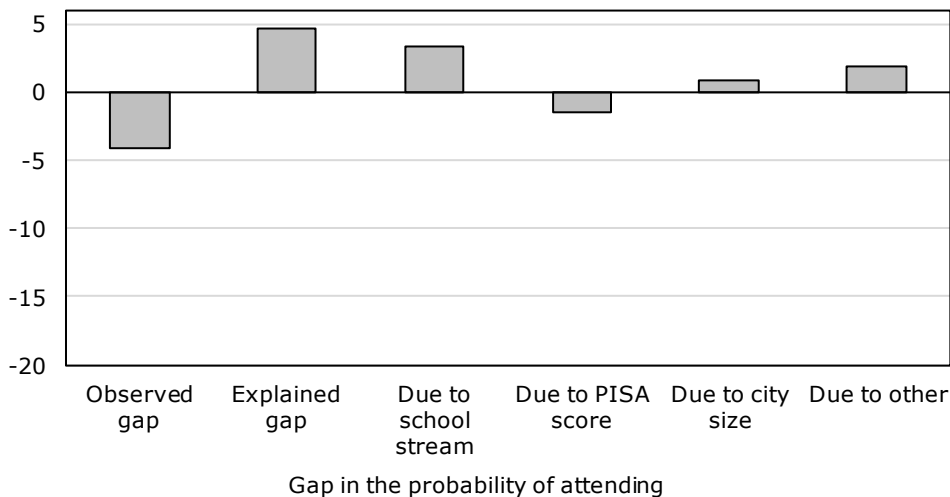
Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Chart 14

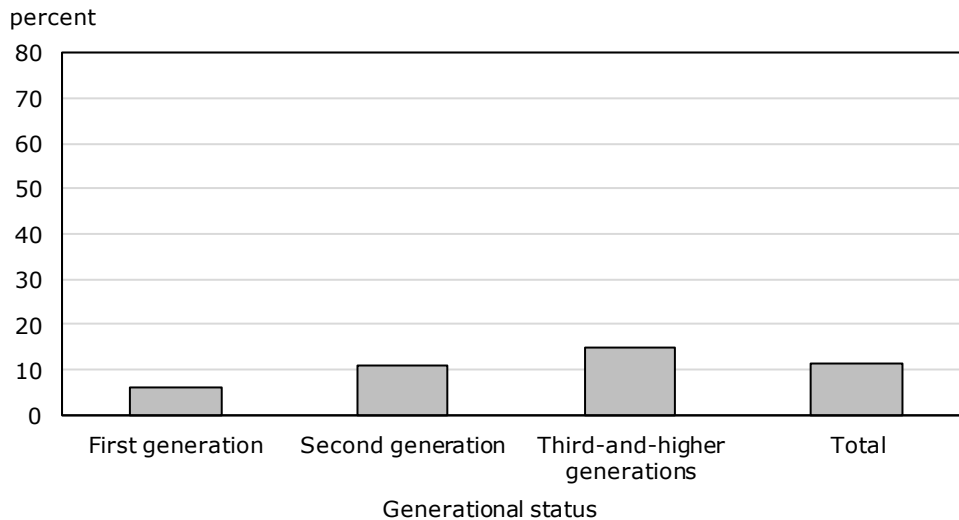**Percentage of low-performing 15-year-old students attending a postsecondary institution by age 23, by immigration status — Adjusted for differences in PISA score, family background, and other[1] variables – Canada**

percent
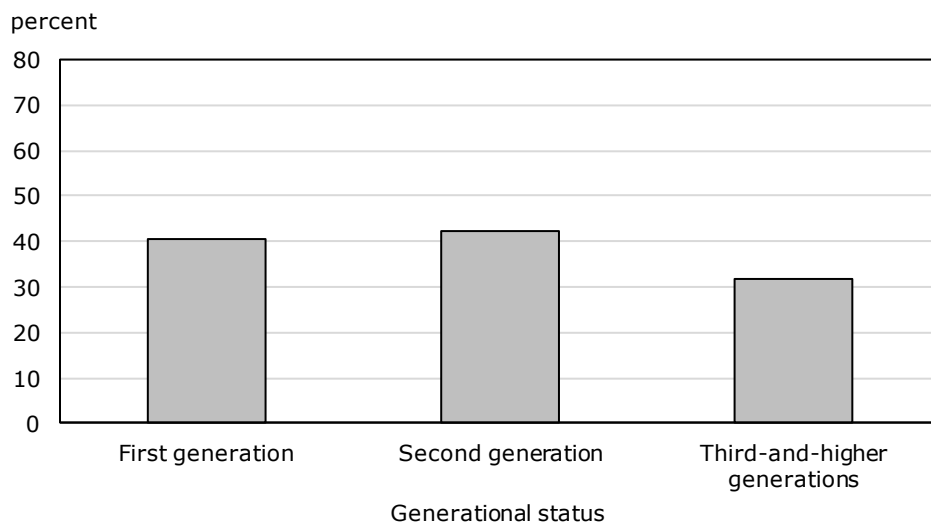
1. The important other variables include, in Canada, students' and parents' aspirations regarding university and, in Switzerland, students' secondary-school stream.
Note: PISA: Programme for International Student Assessment.
Source: Statistics Canada, Youth in Transition Survey.

Chart 15

Differences in the probability of 15-year-old low-performing students attending a postsecondary institution by age 23, between the first generation and the third-and-higher generations — Canada

Difference in probability
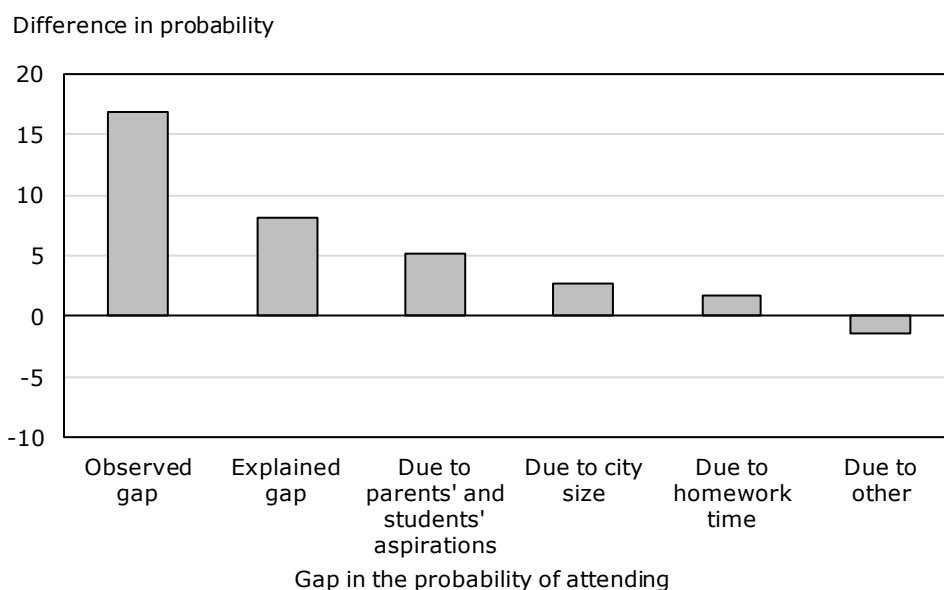
Source: Statistics Canada, Youth in Transition Survey.

Chart 16

Differences in the probability of 15-year-old low-performing students attending a postsecondary institution by age 23, between the second generation and the third-and-higher generations — Canada

Difference in probability

Gap in the probability of attending
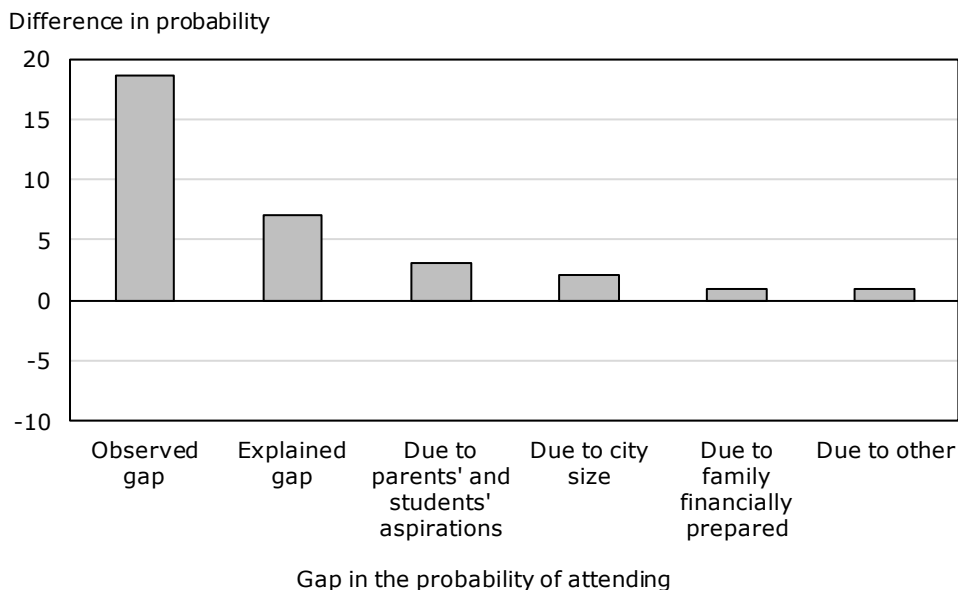
Source: Statistics Canada, Youth in Transition Survey.

The models presented here explain little of the difference (Charts 11, 12, and 13, and Table 9). For the first generation, both models account for virtually none of the 9-percentage-point gap in tertiary education between low-performing immigrant students and low-performing students with Swiss-born parents. Data on parents' and students' aspirations regarding postsecondary education are not available in the Swiss dataset. Such information might shed some light on the unexplained differences in educational outcomes between low-performing students with immigrant and Swiss-born parents. The difference in tertiary participation between low-performing students in the second-generation and in the third-and-higher generations is much smaller, at 4.1 percentage points, and is not statistically significant.[14]

In Canada, low performers in secondary school with immigrant backgrounds are much more likely to continue to the postsecondary level than their counterparts of the third-and-higher generations (Chart 9 and Table 11). About one-half of low performers in secondary school of the first and second generations continue to the postsecondary level, compared with one-third of low-performing students with Canadian-born parents. Students with immigrant backgrounds seem to pursue postsecondary education in spite of their low PISA reading scores. The gap between students with an immigrant background and students of the third-and-higher generations is 17 percentage points or 18 percentage points, of which 40% to 50% can be explained by the variables in the extended model (Chart 14 and Table 7). Therefore, even after one has controlled for numerous variables related to family characteristics, PISA reading literacy scores, and aspirations, low-performing students with immigrant backgrounds remain 9-

---

14. In Model 3 (Table 10), when the variable for secondary-school streaming is added, the gap becomes marginally significant at -8.8 percentage points. The gap increases in this model because second-generation students were more likely to be in the pre-gymnasial stream, which leads to tertiary schooling, than students of the third-and-higher generations. (This was observed primarily in the French-speaking cantons, not the German-speaking ones.) The result is that, after accounting for this difference through the control variable, the likelihood gap increases.

percentage-points to 12-percentage-points more likely to continue to the postsecondary level than their counterparts in the third-and-higher generations.

Differences in parents' and students' aspirations regarding postsecondary education once again account for a large portion, roughly 40% to 60%, of the explained gap (Charts 15 and 16). Other significant variables include differences in geographical location (33%) and differences in homework time (20%). However, more than one-half of the difference in postsecondary participation between the generations remains unexplained by the variables available. Differences between generations in PISA reading scores and parents' education accounted for little of the participation gaps.

5.3.2 Differences by source region: Low performers

Among low-performing students, educational outcomes vary tremendously by source region in Canada, but less so in Switzerland. In Canada, low-performing students with Chinese backgrounds are 34-percentage-points more likely to pursue postsecondary education than their counterparts with Canadian-born parents (Table 5). Fully two-thirds of these students attended college or university (about one-half attended university). Performing poorly in secondary school appears to have little effect on the postsecondary participation of these students. Only about one-quarter of this large advantage in postsecondary participation by students with Chinese backgrounds over their Canadian-background counterparts can be accounted for by differences in family characteristics, PISA score, aspirations, and the other variables included in Model 3. Conditional on having similar characteristics (as controlled in Model 3), having a Chinese background continues to result in a 24-percentage-point advantage in postsecondary participation compared with low performers in the third-and-higher generations (Table 5).

Virtually identical results are evident for students with other Asian origins (except Indian). As in the case of students with Chinese backgrounds, these significant advantages are not explained by the variables included in the models. Other unmeasured factors are at play. Low-performing students from European immigrant families also show a substantial advantage over their Canadian-background counterparts regarding postsecondary participation. Little of this advantage can be explained by these models either.

In Switzerland, there is generally little difference to explain. Among low performers in secondary school, the unconditional differences (in the raw data) between immigrant-background students and Swiss-background students are much smaller and typically not statistically significant. Only among students with an Italian background is there a statistically significant difference in the likelihood of pursuing tertiary-level education (Table 3). In this case, virtually none of this 12-percentage-point gap is accounted for by the explanatory variables in Model 3.

5.4 What differentiates low performers who pursue postsecondary education from those who do not?

Besides immigrant status, many other variables differentiate low performers who pursue postsecondary education from those who do not. To address this issue, we compare the magnitude of the effect of various explanatory variables on the likelihood of attending a postsecondary institution (Tables 10 and 11).

Among Canada's low-performing secondary-school students, several variables differentiate those who pursue postsecondary education from those who do not: immigrant status; parents' and students' aspirations regarding postsecondary education; whether the family made financial

preparations for postsecondary education (likely a motivational effect); family structure; PISA reading literacy level; and parents' educational attainment.[15]

In Switzerland, the results are similar in Model 2. There is no variable related to the aspirations of parents or students in the Swiss data, but parents' education, family status, and PISA score all play a role in differentiating low performers who continue to postsecondary from those who do not. In Model 3, when variables for secondary-school stream and canton language are added, secondary-school stream is significant. This is not surprising, because the Swiss education system is designed to have such an effect. Low-performing students living in Italian-language cantons are also more likely to continue to the tertiary level than their counterparts in other cantons, all else being equal.

The results from the two countries suggest that the traditional variables such as parents' education and family type play a role in the likelihood of low performers continuing, even after controlling for PISA reading scores and other background variables. The Canadian results also suggest that variables related to motivation (such as parental and student aspirations) and the degree of financial preparedness play an even greater role in distinguishing those who continue from those who do not.

6   Conclusion

The finding that first- and second-generation students in Canada are more likely to continue to the postsecondary level than their counterparts with Canadian-born parents is consistent with earlier research. In Switzerland, first- and second-generation students are less likely to continue.

In Switzerland, this negative postsecondary-participation gap is due almost entirely to lower secondary-school performance among immigrant-background students, as measured by PISA reading literacy scores. When controls for PISA scores are applied, differences in family background and other variables become less important. When the secondary-school stream is included, it also explains a significant portion of the gap. However, academic performance works in part through this variable, since school stream is determined partly by academic performance.

But why did immigrant background students register lower PISA scores? This issue is beyond the scope of this paper. However, earlier research found that, in Switzerland, the difference in PISA scores between either the first and third generations or the second and third generations was explained in part by family background and individual characteristics (see Coradi Vellacott and Wolter 2002 and OECD 2006). Using the PISA score as the dependent variable, we find that about one-half of the difference in PISA scores between generations was explained by the background variables available in the TREE (Swiss) data set. Thus, lower PISA scores are, in part, a reflection of differences in family backgrounds, which in turn were influenced by Swiss immigration policy, at least until the early 2000s.

---

15. When both the parents and student held aspirations that the student would pursue postsecondary education, the student was about 20-percentage-points more likely to attend than students from families with no such aspirations, after controlling for parents' education and PISA score (Table 11). This is an important difference. Students in single-parent or blended families were about 10-percentage-points less likely to attend than their counterparts in two-parent families. A 10-percentage-point difference in PISA reading scores resulted in about a 0.8-percentage-point difference in the likelihood of attending. Students whose parents had high-school education or less were from 10-percentage-points to 15-percentage-points less likely to continue, compared to families where both parents had a postsecondary education.

Canada's story is very different. Differences in PISA scores play little role in the positive postsecondary-participation gap between students with and without immigrant backgrounds. Our analysis accounts for about one-half of the difference and finds that parents' and students' aspirations regarding students' postsecondary education account for much of this.

In both countries, there is significant variation in these results by source region. In Canada, Asian students participate at high levels in the postsecondary system even if they performed poorly in secondary school. The models presented in this paper explain little of this advantage among Asian students, even when parents' and students' aspirations are taken into account.

In Canada, a surprisingly large share of low performers with immigrant backgrounds continues to the postsecondary level. Once again, results vary significantly by source region, both in the unadjusted (raw) data and the adjusted data. Even with a rich set of PISA scores, family characteristics, and aspiration variables, we can account for only about one-third to one-half of the difference in postsecondary participation between low-performing students with and without immigrant backgrounds. Other unmeasured factors are also involved.

However, many other variables besides immigration status distinguish low performers who continue to the postsecondary level from those who do not. These variables are outlined in Section 5.

To the question as to why students with immigrant backgrounds have better relative educational attainment outcomes in Canada than in Switzerland, differences in the immigration systems are likely important. Since the 1960s, Canada has had the tools to encourage more highly skilled immigration. The educational attainment of immigrants exceeds that of the domestically born population by quite a wide margin. Although differences in educational attainment do not directly explain much of the gap, educational attainment likely works through other variables, such as parental aspirations. Furthermore, much of Canada's immigration over the last thirty years has been from Asian countries. These cultures place a very high value on educational attainment and professional occupations. Nonetheless, other factors are likely at work. As noted, when one includes variables influenced by the immigrant selection system, such as parental education, source region, and home language, only about one-half of the postsecondary-participation advantage of immigrant-background students is explained.

Until recently, Switzerland has generally received lower-skilled immigrants from less developed nations; this is reflected in educational outcomes, for reasons discussed earlier.

Differences in education systems, and the implications of these for students with immigrant-background, may also play a role. Academic performance and social background are factors in secondary-school streaming in the more structured Swiss system. This appears to have implications for the educational attainment of immigrant-background students in particular. In Canada, postsecondary education is nearly essential to acquire skills of value in the labour market. This is not the case in Switzerland. Unlike the case of most countries, vocational programs in Switzerland being in upper secondary school, students have a reasonable chance to obtain skilled jobs in the labour market without postsecondary education.

7 Appendix

Table 6

Coefficients of linear probability models with the dependent variable as the probability of attending any postsecondary institution or attending university — All students – Canada

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Attending postsecondary						
Intercept	0.522 ***	0.008	0.671 ***	0.032	0.361 ***	0.037
First generation	0.123 ***	0.032	0.071 ***	0.032	0.056	0.031
Second generation	0.182 ***	0.024	0.122 ***	0.025	0.106 ***	0.025
2.5 generation	0.105 ***	0.026	0.023	0.024	0.011	0.023
Girl	…	…	0.077 ***	0.012	0.069 ***	0.012
One parent with tertiary education	…	…	-0.090 ***	0.016	-0.081 ***	0.015
Both parents with upper secondary	…	…	-0.133 ***	0.019	-0.111 ***	0.019
One parent with upper secondary	…	…	-0.157 ***	0.020	-0.137 ***	0.020
Neither parent with higher than lower secondary	…	…	-0.188 ***	0.028	-0.146 ***	0.026
Both parents with lower than lower secondary	…	…	-0.187 ***	0.044	-0.138 **	0.043
Single parents	…	…	-0.091 ***	0.016	-0.088 ***	0.016
Blended families	…	…	-0.116 ***	0.023	-0.116 ***	0.023
Other families	…	…	-0.073	0.039	-0.055	0.036
Number of siblings	…	…	-0.016 ***	0.005	-0.011 *	0.005
Home language is official language	…	…	-0.015	0.026	-0.006	0.026
Educational resources at home	…	…	0.011 *	0.005	0.005	0.005
Time spent on homework	…	…	0.041 ***	0.006	0.028 ***	0.006
PISA reading level	…	…	0.129 ***	0.007	0.101 ***	0.007
Village or rural area	…	…	-0.047 *	0.023	-0.022	0.022
Town	…	…	-0.055 *	0.024	-0.043	0.023
Small urban areas	…	…	-0.053 *	0.022	-0.040	0.021
Other metropolitan areas	…	…	0.010	0.023	0.009	0.023
Next five largest metropolitan areas	…	…	-0.041	0.023	-0.036	0.022
Parents hope child take postsecondary education	…	…	…	…	0.145 ***	0.018
Parents made financial preparation	…	…	…	…	0.064 ***	0.012
Student hopes to complete postsecondary education	…	…	…	…	0.123 ***	0.017
Student wants a job requiring postsecondary education	…	…	…	…	0.025 *	0.013

See notes at end of table.

Table 6

Coefficients of linear probability models with the dependent variable as the probability of attending any postsecondary institution or attending university — All students – Canada (concluded)

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Attending university						
Intercept	0.316 ***	0.008	0.491 ***	0.028	0.211 ***	0.028
First generation	0.177 ***	0.035	0.118 ***	0.031	0.073 *	0.029
Second generation	0.173 ***	0.022	0.101 ***	0.021	0.072 ***	0.020
2.5 generation	0.139 ***	0.025	0.051 *	0.021	0.022	0.020
Girl	…	…	0.052 ***	0.011	0.041 ***	0.010
One parent with tertiary education	…	…	-0.107 ***	0.015	-0.078 ***	0.014
Both parents with upper secondary	…	…	-0.151 ***	0.016	-0.105 ***	0.015
One parent with upper secondary	…	…	-0.160 ***	0.018	-0.118 ***	0.017
Neither parent with higher than lower secondary	…	…	-0.179 ***	0.021	-0.121 ***	0.020
Both parents with lower than lower secondary	…	…	-0.182 ***	0.031	-0.106 *	0.030
Single parents	…	…	-0.050 ***	0.014	-0.046 ***	0.014
Blended families	…	…	-0.111 ***	0.018	-0.108 ***	0.017
Other families	…	…	0.012	0.032	0.010	0.028
Number of siblings	…	…	-0.011 *	0.004	-0.007	0.004
Home language is official language	…	…	-0.037	0.023	-0.011	0.022
Educational resources at home	…	…	0.010 *	0.004	0.002	0.004
Time spent on homework	…	…	0.041 ***	0.005	0.022 ***	0.006
PISA reading level	…	…	0.175 ***	0.005	0.122 ***	0.006
Village or rural area	…	…	-0.071 ***	0.019	-0.049 **	0.016
Town	…	…	-0.063 **	0.020	-0.046 *	0.019
Small urban areas	…	…	-0.046 *	0.019	-0.034	0.018
Other metropolitan areas	…	…	0.004	0.022	0.006	0.020
Next five largest metropolitan areas	…	…	-0.031	0.019	-0.030	0.017
Parents hope child take postsecondary education	…	…	…	…	0.121 ***	0.012
Parents made financial preparation	…	…	…	…	0.039 ***	0.009
Student hopes to complete postsecondary education	…	…	…	…	0.169 ***	0.012
Student wants a job requiring postsecondary education	…	…	…	…	0.060 ***	0.012

	Model 1	Model 2	Model 3
Diagnostic statistics			
Attending postsecondary			
Number of observations	13,705	13,705	13,705
Adjusted *R-squared* value	0.016	0.176	0.200
Attending university			
Number of observations	13,705	13,705	13,705
Adjusted *R-squared* value	0.022	0.255	0.311

* significant at p<0.05
** significant at p<0.01
*** significant at p<0.001
Note: PISA: Programme for International Student Assessment.
Source: Statistics Canada, Youth in Transition Survey.

Table 7

Decomposition of the gap in educational outcomes between first- and second-generation students and students of the third-and-higher generations — Canada

	All students				Low-performing students	
	University attendance		Postsecondary attendance		Postsecondary attendance	
	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
	percentage points					
First generation						
Observed gap	17.7	17.7	12.3	12.3	16.9	16.9
Explained gap	6.0	10.5	5.2	6.8	5.6	8.1
Gap explained by differences in						
Gender	0.2	0.1	0.3	0.2	0.5	0.4
Parents' education	2.0	1.5	1.8	1.6	0.7	0.7
Family structure	0.6	0.5	0.6	0.6	0.2	0.2
Number of siblings	0.0	0.0	0.0	0.0	-0.6	-0.4
Home language	2.2	0.7	0.9	0.3	-0.8	-1.3
Home education resources	0.3	0.1	0.4	0.2	0.1	-0.1
Homework time	1.8	1.0	1.8	1.3	2.3	1.7
PISA reading score	-3.3	-2.3	-2.5	-1.9	-0.5	-0.4
Geographic location	2.2	1.6	2.0	1.4	3.6	2.7
Parental expectation	…	2.7	…	1.5	…	2.3
Parents' financial preparation	…	-0.1	…	-0.1	…	-0.7
Student hopes of finishing university	…	3.9	…	1.6	…	2.9
Expecting a job requiring university degree	…	0.8	…	0.2	…	0.1
Second generation						
Observed gap	17.3	17.3	18.2	18.2	18.6	18.6
Explained gap	7.3	10.1	6.0	7.6	4.4	7.0
Gap explained by differences in						
Gender	0.3	0.2	0.4	0.4	0.0	0.0
Parents' education	0.4	0.4	0.3	0.3	0.5	0.6
Family structure	0.5	0.5	0.4	0.4	-0.1	0.0
Number of siblings	0.0	0.0	0.0	0.0	-0.1	-0.1
Home language	0.9	0.3	0.4	0.1	-0.4	-0.6
Home education resources	0.2	0.0	0.2	0.1	0.0	-0.1
Homework time	1.6	0.9	1.6	1.1	1.4	1.1
PISA reading score	1.3	0.9	0.9	0.7	0.1	0.1
Geographic location	2.0	1.4	1.8	1.2	2.9	2.1
Parental expectation	…	2.0	…	1.3	…	1.7
Parents' financial preparation	…	0.4	…	0.6	…	0.9
Student hopes finishing university	…	2.7	…	1.2	…	1.4
Expecting a job requiring university degree	…	0.4	…	0.0	…	0.0

Notes: "First generation" refers to foreign-born students; "second generation" refers to domestic-born students with two foreign-born parents; "2.5 generation" refers to domestic-born students with one foreign-born parent; and "third-and-higher generations" refers to students with two domestic-born parents. PISA: Programme for International Student Assessment.
Sources: Statistics Canada, Youth in Transition Survey; and Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Table 8

Coefficients of linear probability models with the dependent variable as the probability of attending any postsecondary institution or attending university — All students – Switzerland

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Attending postsecondary						
Intercept	0.348 ***	0.020	0.534 ***	0.053	0.702 ***	0.050
First generation	-0.181 ***	0.031	0.011	0.033	0.011	0.034
Second generation	-0.091 **	0.037	0.038	0.034	0.000	0.034
2.5 generation	0.008	0.037	0.006	0.031	0.015	0.029
Girl	…	…	-0.009	0.021	-0.011	0.020
One parent with tertiary education	…	…	-0.076	0.041	-0.056	0.038
Both parents with upper secondary	…	…	-0.193 ***	0.038	-0.167 ***	0.036
One parent with upper secondary	…	…	-0.148 **	0.049	-0.119 **	0.045
Neither parent with higher than lower secondary	…	…	-0.214 ***	0.040	-0.167 ***	0.038
Both parents with lower than lower secondary	…	…	-0.237 ***	0.042	-0.195 ***	0.037
Single parents	…	…	-0.077 **	0.029	-0.060	0.031
Blended families	…	…	-0.087	0.050	-0.046	0.050
Other families	…	…	-0.075	0.047	-0.069	0.044
Number of siblings	…	…	0.002	0.004	0.001	0.004
Home language is official language	…	…	-0.039	0.028	-0.011	0.028
Educational resources at home	…	…	-0.013	0.013	-0.005	0.013
Time spent on homework	…	…	0.017	0.011	0.013	0.011
PISA reading level	…	…	0.197 ***	0.013	0.119 ***	0.014
Village	…	…	-0.126 **	0.042	-0.106 *	0.046
Town	…	…	-0.019	0.033	-0.018	0.033
Location unavailable	…	…	-0.094	0.053	-0.019	0.050
Extended academic requirements	…	…	…	…	-0.270 ***	0.033
Basic academic requirements	…	…	…	…	-0.324 ***	0.041
No formal tracking	…	…	…	…	-0.194 ***	0.038
French-language region	…	…	…	…	-0.096 ***	0.028
Italian-language region	…	…	…	…	0.156 ***	0.024

See notes at end of table.

Table 8

Coefficients of linear probability models with the dependent variable as the probability of attending any postsecondary institutions or attending university — All students – Switzerland (concluded)

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Attending university						
Intercept	0.251 ***	0.018	0.496 ***	0.052	0.669 ***	0.048
First generation	-0.140 ***	0.023	0.022	0.026	0.011	0.024
Second generation	-0.051 *	0.026	0.058 *	0.027	0.005	0.028
2.5 generation	0.053	0.032	0.058 *	0.029	0.057 *	0.026
Girl	…	…	-0.021	0.017	-0.023	0.016
One parent with tertiary education	…	…	-0.118 **	0.038	-0.091 **	0.033
Both parents with upper secondary	…	…	-0.202 ***	0.036	-0.175 ***	0.031
One parent with upper secondary	…	…	-0.219 ***	0.037	-0.183 ***	0.031
Neither parent with higher than lower secondary	…	…	-0.245 ***	0.037	-0.184 ***	0.032
Both parents with lower than lower secondary	…	…	-0.234 ***	0.039	-0.183 ***	0.033
Single parents	…	…	-0.011	0.027	0.004	0.029
Blended families	…	…	-0.145 ***	0.029	-0.111 ***	0.028
Other families	…	…	-0.009	0.041	-0.006	0.039
Number of siblings	…	…	0.001	0.003	-0.003	0.004
Home language is official language	…	…	-0.058 *	0.025	-0.030	0.023
Educational resources at home	…	…	-0.009	0.011	0.002	0.010
Time spent on homework	…	…	0.013	0.009	0.008	0.008
PISA reading level	…	…	0.188 ***	0.011	0.104 ***	0.012
Village	…	…	-0.139 ***	0.040	-0.105 **	0.042
Town	…	…	-0.033	0.034	-0.025	0.032
Location unavailable	…	…	-0.038	0.055	0.006	0.048
Extended academic requirements	…	…	…	…	-0.304 ***	0.034
Basic academic requirements	…	…	…	…	-0.348 ***	0.040
No formal tracking	…	…	…	…	-0.241 ***	0.038
French-language region	…	…	…	…	-0.041	0.028
Italian-language region	…	…	…	…	0.182 ***	0.022

	Model 1	Model 2	Model 3
Diagnostic statistics			
Attending postsecondary			
Number of observations	3,979	3,979	3,979
Adjusted *R-squared* value	0.023	0.222	0.277
Attending university			
Number of observations	3,979	3,979	3,979
Adjusted *R-squared* value	0.019	0.240	0.322

* significant at p<0.05
** significant at p<0.01
*** significant at p<0.001
Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Table 9

Decomposition of the gap in educational outcomes between first- and second-generation students and students of the third-and-higher generations — Switzerland

	All students				Low-performing students	
	Attending university		Attending postsecondary		Attending postsecondary	
	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
	percentage points					
First generation						
Observed gap	-14.0	-14.0	-18.1	-18.1	-8.9	-8.9
Explained gap	-16.2	-15.1	-19.2	-19.2	-1.2	0.7
Gap explained by differences in						
Gender	0.1	0.1	0.0	0.0	0.0	0.1
Parents' education	-0.5	0.0	-0.9	-0.6	0.5	0.6
Family structure	-0.5	-0.3	-0.7	-0.4	0.0	0.1
Number of siblings	0.1	-0.3	0.2	0.1	0.0	-0.4
Home language	4.3	2.2	2.8	0.8	1.8	1.5
Home educational resources	0.4	-0.1	0.6	0.3	0.6	0.3
Homework time	0.0	0.0	0.0	0.0	0.1	0.1
PISA reading score	-21.3	-11.8	-22.3	-13.4	-4.6	-2.8
Geographic location	1.2	0.9	1.0	0.9	0.4	0.2
School streaming	…	-6.3	…	-6.0	…	0.1
Language regions	…	0.3	…	-0.8	…	1.0
Second generation						
Observed gap	-5.1	-5.1	-9.1	-9.1	-4.1	-4.1
Explained gap	-10.9	-5.6	-12.9	-9.1	-0.3	4.7
Gap explained by differences in						
Gender	0.1	0.1	0.1	0.1	0.0	-0.1
Parents' education	-2.8	-1.9	-2.6	-1.9	-0.5	-0.1
Family structure	0.0	0.1	-0.8	-0.6	0.3	0.4
Number of siblings	0.1	-0.1	0.1	0.0	0.0	-0.2
Home language	2.1	1.1	1.4	0.4	0.9	0.8
Home educational resources	0.2	0.0	0.3	0.1	0.2	0.1
Homework time	0.1	0.1	0.1	0.1	0.3	0.4
PISA reading score	-12.3	-6.8	-12.9	-7.8	-2.5	-1.5
Geographic location	1.6	1.1	1.4	1.1	0.9	0.9
School streaming	…	0.5	…	0.3	…	3.4
Language regions	…	0.1	…	-0.9	…	0.8

Notes: "First generation" refers to foreign-born students; "second generation" refers to domestic-born students with two foreign-born parents; "2.5 generation" refers to domestic-born students with one foreign-born parent; and "third-and-higher generations" refers to students with two domestic-born parents. PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Table 10

Coefficients of linear probability models with the dependent variable as the probability of attending any postsecondary institution — Low-performing students – Switzerland

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Variables						
Intercept	0.150 ***	0.031	0.326 ***	0.056	0.482 ***	0.076
First generation	-0.089 **	0.036	-0.077	0.041	-0.096 *	0.043
Second generation	-0.041	0.040	-0.038	0.044	-0.088 *	0.045
2.5 generation	-0.047	0.045	-0.050	0.046	-0.058	0.044
Girl	…	…	0.004	0.030	0.014	0.030
One parent with tertiary education	…	…	0.019	0.050	0.034	0.048
Both parents with upper secondary	…	…	-0.117 **	0.045	-0.107 *	0.043
One parent with upper secondary	…	…	-0.036	0.059	-0.019	0.058
Neither parent with higher than lower secondary	…	…	-0.053	0.039	-0.026	0.035
Both parents with lower than lower secondary	…	…	-0.095 **	0.034	-0.078 *	0.031
Single parents	…	…	-0.029	0.035	-0.021	0.038
Blended families	…	…	-0.117 ***	0.029	-0.124 ***	0.031
Other families	…	…	-0.048	0.039	-0.055	0.039
Number of siblings	…	…	0.000	0.004	-0.005	0.005
Home language is official language	…	…	-0.024	0.026	-0.020	0.027
Educational resources at home	…	…	-0.013	0.015	-0.006	0.015
Time spent on homework	…	…	0.019	0.011	0.020 *	0.010
PISA reading level	…	…	0.080 ***	0.021	0.049 *	0.022
Village	…	…	-0.058	0.056	-0.046	0.057
Town	…	…	-0.022	0.030	-0.031	0.028
Location unavailable	…	…	-0.130 ***	0.035	-0.140 ***	0.039
Extended academic requirements	…	…	…	…	-0.202 ***	0.055
Basic academic requirements	…	…	…	…	-0.212 ***	0.062
No formal tracking	…	…	…	…	-0.152 *	0.065
French-language region	…	…	…	…	0.032	0.034
Italian-language region	…	…	…	…	0.093 ***	0.031

	Model 1	Model 2	Model 3
Diagnostic statistics			
Number of observations	1,014	1,014	1,014
Adjusted *R-squared* value	0.014	0.068	0.103

* significant at p<0.05
** significant at p<0.01
*** significant at p<0.001
Note: PISA: Programme for International Student Assessment.
Source: Swiss Federal Statistical Office, Transition from Education to Employment Survey.

Table 11

Coefficients of linear probability models with the dependent variable as the probability of attending any postsecondary institution — Low-performing students – Canada

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Variables						
Intercept	0.317 ***	0.015	0.662 ***	0.075	0.400 ***	0.081
First generation	0.169 **	0.057	0.113	0.067	0.088	0.067
Second generation	0.186 **	0.057	0.142 *	0.060	0.116	0.060
2.5 generation	0.070	0.060	0.010	0.059	-0.013	0.056
Girl	…	…	0.050	0.027	0.043	0.027
One parent with tertiary education	…	…	-0.097 **	0.034	-0.084 *	0.032
Both parents with upper secondary	…	…	-0.131 **	0.043	-0.102 *	0.042
One parent with upper secondary	…	…	-0.173 ***	0.042	-0.151 ***	0.041
Neither parent with higher than lower secondary	…	…	-0.145 **	0.048	-0.111 **	0.046
Both parents with lower than lower secondary	…	…	-0.170 **	0.063	-0.124 *	0.062
Single parents	…	…	-0.115 ***	0.031	-0.104 **	0.032
Blended families	…	…	-0.089 *	0.041	-0.088 *	0.041
Other families	…	…	-0.046	0.071	-0.023	0.069
Number of siblings	…	…	-0.020 *	0.009	-0.015	0.009
Home language is official language	…	…	0.011	0.053	0.018	0.053
Educational resources at home	…	…	0.003	0.010	-0.005	0.009
Time spent on homework	…	…	0.045 ***	0.012	0.034 **	0.012
PISA reading level	…	…	0.107 ***	0.025	0.082 ***	0.024
Village or rural area	…	…	-0.085	0.046	-0.051	0.043
Town	…	…	-0.085	0.044	-0.061	0.042
Small urban areas	…	…	-0.082	0.045	-0.068	0.041
Other metropolitan areas	…	…	-0.043	0.049	-0.049	0.047
Next five largest metropolitan areas	…	…	-0.069	0.048	-0.059	0.046
Parents hope child take postsecondary	…	…	…	…	0.101 ***	0.028
Parents made financial preparation	…	…	…	…	0.080 **	0.026
Student hopes to complete postsecondary	…	…	…	…	0.102 ***	0.031
Student wants a job requiring postsecondary	…	…	…	…	0.010	0.028

	Model 1	Model 2	Model 3
Diagnostic statistics			
Number of observations	3,241	3,241	3,241
Adjusted *R-squared* value	0.009	0.102	0.128

* significant at p<0.05
** significant at p<0.01
*** significant at p<0.001
Note: PISA: Programme for International Student Assessment.
Source: Statistics Canada, Youth in Transition Survey.

Table 12

Sample size by generation status

	All students	Low-performing students
	number	
Canada		
First generation	569	175
Second generation	841	149
2.5 generation	871	157
Third-and-higher generations	11,424	2,760
Switzerland		
First generation	463	256
Second generation	472	192
2.5 generation	485	97
Third-and-higher generations	2,559	469

Sources: Statistics Canada, Youth in Transition Survey; and Swiss Federal Statistical Office, Transition from Education to Employment Survey.

References

Abada, T., F. Hou and B. Ram. 2009. "Ethnic differences in educational attainment among the second generation of immigrants." *Canadian Journal of Sociology.* Vol. 34. No. 1. p. 1–28.

Bauer, P., and R.T. Riphahn. 2007. "Heterogeneity in the inter-generational transmission of educational attainment: Evidence for Switzerland on natives and second generation immigrants." *Journal of Population Economics*. Vol. 20. No. 1. p. 121–148.

Bertschy, K., M.A. Cattaneo, and S.C. Wolter. 2009. "PISA and the transition into the labour market." *Labour.* Vol. 23. Special Issue. p. 111–137.

Bonikowska, A. 2008. *Explaining the education gap between children of immigrants and the native born: Allocation of human capital investments in immigrant families.* Canadian Economics Association 42nd Annual Meeting. Vancouver, British Columbia. University of British Columbia. June 6 to 8.

Boyd, M. 2002. "Educational attainments of immigrant offspring: Success or segmented assimilation?" *International Migration Review.* Vol. 36. No. 4. p. 1037–1060.

Childs, S., R. Finnie and R. Mueller. 2010. *Why do so many immigrants and their children attend university? Some (more) evidence for Canada.* Ottawa, Ontario. Graduate School of Public and International Affairs, University of Ottawa. Working paper.

Coradi Vellacott, M., and S.C. Wolter, 2002. "Origine sociale et égalité des chances." OFS/CDIP. *Préparés pour la vie ? Les compétences de base des jeunes : rapport national de l'enquête PISA 2000*. Neuchâtel, Switzerland. Swiss Federal Statistical Office. p. 88–109.

Coradi Vellacott, M., and S.C. Wolter. 2004. *Equity in the Swiss education system: dimensions, causes and policy responses. National report from Switzerland contributing to the OECD's review of "Equity in Education."* Aarau, Switzerland. Swiss Coordination Centre for Educational Research.

Falter, J.-M. 2009. *Transitions to Upper Secondary Education: Parental Background and Skills*. Geneva, Switzerland. Department of Economics, University of Geneva. Working paper.

Federal Office for Professional Education and Technology. 2011. *Vocational Education and Training in Switzerland 2011: Facts and Figures*. Bern, Switzerland. Federal Department of Economic Affairs. Federal Office for Professional Education and Technology.

Foley, K., G. Gallipoli and D. Green. 2010. *Ability, Parental Valuation of Education and the High School Dropout Decision*. Vancouver, British Columbia. Canadian Labour Market and Skills Researcher Network. Working Paper no. 60.

Haeberlin, U., C. Imdorf and W. Kronig. 2004. *Von der Schule in die Berufslehre: Untersuchungen zur Benachteiligung von ausländischen und von weiblichen Jugendlichen bei der Lehrstellensuche*. Bern, Switzerland. Haupt Verlag.

Heath A., C. Rothon and E. Kilpi. 2008. "The second generation in Western Europe: Education, unemployment, and occupational attainment." *Annual Review of Sociology.* Vol. 34. p. 211–235.

Hum, D., and W. Simpson. 2007. "The legacy of immigration: Labour market performance and education in the second generation." *Applied Economics.* Vol. 39. p. 1–25.

Meunier, M. 2011. "Immigration and Student Achievement: Evidence from Switzerland." *Economics of Education Review.* Vol. 30. p. 16–38.

Meyer, T. 2009. "Can 'vocationalisation' of education go too far? The case of Switzerland." *European Journal of Vocational Education.* Vol. 46. No. 1. p. 28–40.

Meyer, T., and K. Bertschy. 2011. "The long and winding road from education to labour market: The TREE cohort six years after leaving compulsory school." *Youth Transitions in Switzerland: Results from the TREE Panel Study.* M.M. Bergman, S. Hupka-Brunner, A. Keller, T. Meyer, and B.E. Stalder (eds.). Zurich, Switzerland. Seismo Verlag. p. 92–119.

Organization for Economic Cooperation and Development. 2001. *Manual for the PISA 2000 Database*. Paris. Organization for Economic Cooperation and Development.

Organization for Economic Cooperation and Development. 2006. *Where Immigrant Students Succeed – A Comparative Review of Performance and Engagement in 2003.* Paris. Organization for Economic Cooperation and Development.

Organization for Economic Cooperation and Development. 2009. *PISA Data Analysis Manual: SAS Second Edition*. Paris. Organization for Economic Cooperation and Development.

Organization for Economic Cooperation and Development. 2010*a*. *Pathways to Success: How Knowledge and Skills at Age 15 Shape Future Lives in Canada*. Paris. Organization for Economic Cooperation and Development.

Organization for Economic Cooperation and Development. 2010*b*. *PISA 2009 Results: Overcoming Social Background – Equity in Learning Opportunities and Outcomes*. Paris. Organization for Economic Cooperation and Development.

Picot, G., and F. Hou. 2010. "Seeking Success in Canada and the United States, Labour Market Outcomes Among the Children of Immigrants." *Equal Opportunities? The Labour Market Integration of the Children of Immigrants*. Paris. Organization for Economic Cooperation and Development.

Picot, G., and F. Hou. 2011*a*. *Preparing for Success in Canada and the United States: The Determinants of Educational Attainment Among the Children of Immigrants.* Statistics Canada Catalogue no. 11F0019M. Ottawa, Ontario. Analytical Studies Branch Research Paper Series. No. 332.

Picot, G., and F. Hou. 2011*b*. *Immigration Status and Secondary School Performance as Determinants of Post-Secondary Participation: A Comparison of Canada and Switzerland*. OECD Working Paper. Forthcoming.

Sacchi, S., S. Hupka-Brunner, B.E. Stalder and M. Gangl. 2011. "Die Bedeutung von sozialer Herkunft und Migrationshintergrund für den Übertritt in anerkannte nachobligatorische Ausbildungen in der Schweiz." *Youth Transitions in Switzerland: Results from the TREE Panel Study.* M.M. Bergman, S. Hupka-Brunner, A. Keller, T. Meyer and B.E. Stalder (eds.). Zurich, Switzerland. Seismo Verlag. p. 120–156.

Stalder, B.E., T. Meyer and S. Hupka-Brunner. 2011*a*. "Leistungsschwach - bildungsarm? Ergebnisse der TREE-Studie zu den PISA-Kompetenzen als Prädiktoren für Bildungschancen in der Sekundarstufe II." *Youth Transitions in Switzerland: Results from the TREE Panel Study.* M.M. Bergman, S. Hupka-Brunner, A. Keller, T. Meyer and B.E. Stalder (eds.). Zurich, Switzerland. Seismo Verlag. p. 201–216.

Stalder, B.E., T. Meyer and S. Hupka-Brunner. 2011*b*. "TREE Project Documentation." *Youth Transitions in Switzerland: Results from the TREE Panel Study.* M.M. Bergman, S. Hupka-Brunner, A. Keller, T. Meyer and B.E. Stalder (eds.). Zurich, Switzerland. Seismo Verlag. p. 66–85.

Statistics Canada. 2009. *Youth in Transition Survey (YITS), Cohort A – 23-year-olds, Cycle 5: User Guide*. Ottawa. http://www.statcan.gc.ca/imdb-bmdi/document/4435_D25_T1_V5-eng.pdf (accessed February 20, 2012)

Thompson, S., and K. Hillman. 2010. *Against the odds: influences on the post-school success of 'low performers.'* Adelaide, Australia. National Centre for Vocational Education Research. Research report.