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Measuring Student Outcomes: The Case for Identifying Indigenous Students in Canada's PISA Sample

by

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- Based on the 2016 census, 7.5 percent of Canadians in the school-age cohort (ages 5 to 19) are Indigenous. The Indigenous share of this cohort ranges from 3 percent in Quebec to 10 percent in BC and Alberta, over 20 percent in the northern territories, and over 25 percent in Manitoba and Saskatchewan.
- The young adult cohort (ages 20 to 24) provides a snapshot of education levels among those who have recently attended high school. Among the non-Indigenous in 2016, 92 percent have at least high-school certification, among Métis 84 percent. Among those identifying as First Nation, 75 percent living off-reserve have completed high school, but only 48 percent living on-reserve have done so.
- The census provides evidence on education *levels* but not *outcomes*. The provinces gather some data on Indigenous student academic performance but the data are fragmentary, and do not permit interprovincial comparison.
- Inclusion of an Indigenous indicator in provincial samples for the forthcoming round of the Program for International Student Assessment (PISA) would provide evidence for Indigenous students age 15 (in reading, mathematics and science) – comparable across provinces and other OECD countries, and over time.
- Six provinces have agreed to add a voluntary question to their respective 2018 samples, inviting Indigenous students to identify themselves. Ontario, Quebec, New Brunswick, and Nova Scotia have decided not to do so. We recommend that these four provinces reconsider.

In an industrialized, high-income country such as Canada, escape from poverty requires children in poor families to complete, at a minimum, their secondary education and that the instruction be of decent quality. Unfortunately, weak K–12 education outcomes persist in Canada among ethnic groups that, for many reasons, have historically experienced discrimination and marginalization.

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In this E-Brief, we examine briefly the recently released 2016 census results on high-school completion levels among Indigenous Canadians, and discuss the pros and cons of identifying Indigenous students in the education data. We conclude that such identification is useful and should be pursued. We then summarize the state of existing provincial programs that gather evidence on Indigenous student outcomes at the K–12 level. While useful, these programs do not allow interprovincial or international comparison. Identifying Indigenous students in the Program for International Student Assessment (PISA) helps fill this knowledge gap (see Box 1 for more information on the PISA). In their respective samples for the forthcoming PISA round, the four western provinces, Newfoundland and Labrador and Prince Edward Island have agreed to include a question that identifies Indigenous students. We recommend that the remaining four provinces also include such a question in their own PISA samples. Provinces with large Indigenous student populations should also consider oversampling to enable reliable school district–level analysis.

Box 1: The Program for International Student Assessment (PISA)

Since 2000, the Organisation for Economic Co-operation and Development (OECD) has organized PISA “rounds” to assess school system performance in the 35 OECD member countries and in 35 non-member partner countries among upper secondary students, age 15, in three core subjects: reading, mathematics and science. In rotation, each “round” (the survey is conducted once every three years) concentrates on one of the three subject areas. The most recent round, in 2015, emphasized science; it posed fewer questions on reading and mathematics (OECD 2016a, 2016b). The worldwide sample comprised over 500,000 students. For the Canadian sample of over 30,000, schools were randomly selected in each province, and students were randomly selected within each school. The schools sampled included both provincially managed and non-government schools, but not reserve-based schools.

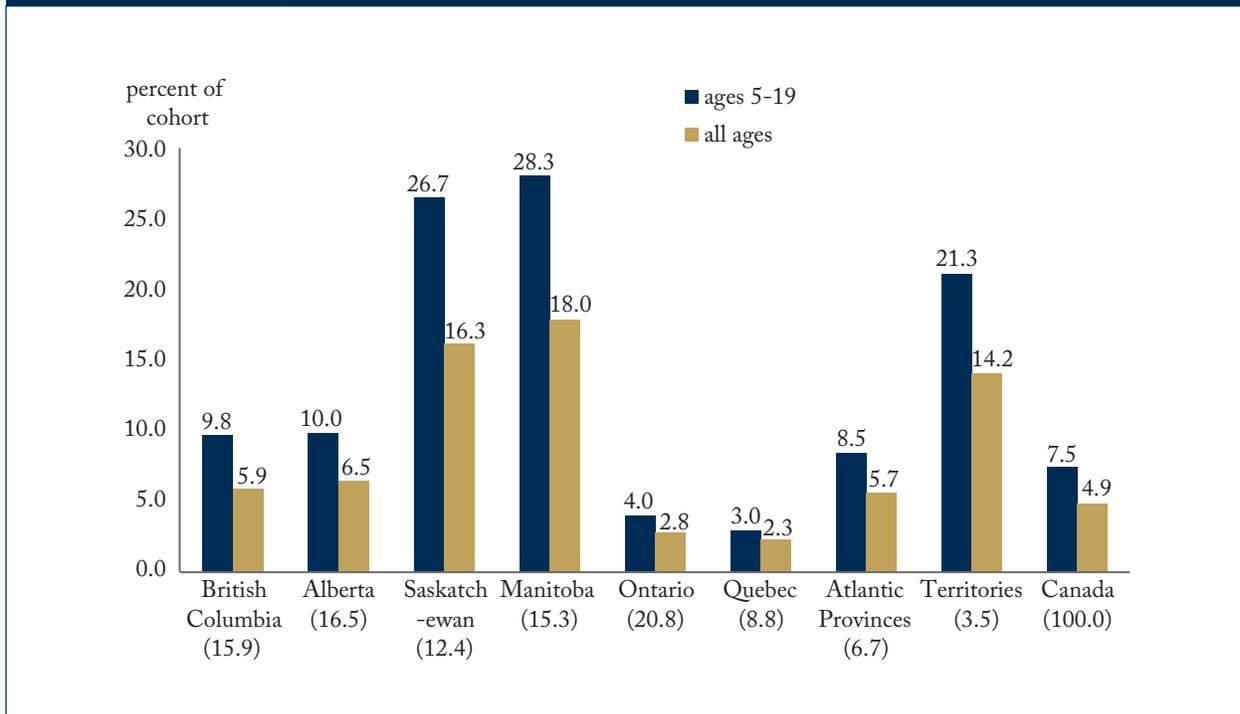
Two assumptions underlay this ambitious exercise. One was that the quality of school systems matters in explaining educational outcomes. The other assumption was that a common denominator of all schools is the teaching of reading, mathematics and science. Schools obviously have other important subjects to teach, such as literature and history, but these tend to be tailored to context. In schools with sizable numbers of Indigenous students, this requires due attention to Indigenous history and literature, the role of elders in schools, and so on.

Indigenous Education Levels: Evidence from the Census

Canada’s Indigenous population is overrepresented in the four western provinces and in the territories. Of particular relevance here is the Indigenous share, by province, of the school-age population (those ages 5–19). According to the 2016 census, in Alberta and British Columbia that share is 10 percent, in Manitoba and Saskatchewan it is over 25 percent and averaging across the three territories it exceeds 20 percent. Nationally, the Indigenous share of this cohort is 7.5 percent (Figure 1).

The youngest census cohort for which it is reasonable to expect high-school completion is those ages 20–24. Among the non-Indigenous population in this cohort, the 2016 census shows that 92 percent have at least high-school certification (Figure 2). Among those in this cohort who are experiencing weak education levels, however,

Figure 1: Indigenous Population Share, Canada and Selected Provinces, All Ages and K-12 School Cohort (Ages 5 – 19), 2016

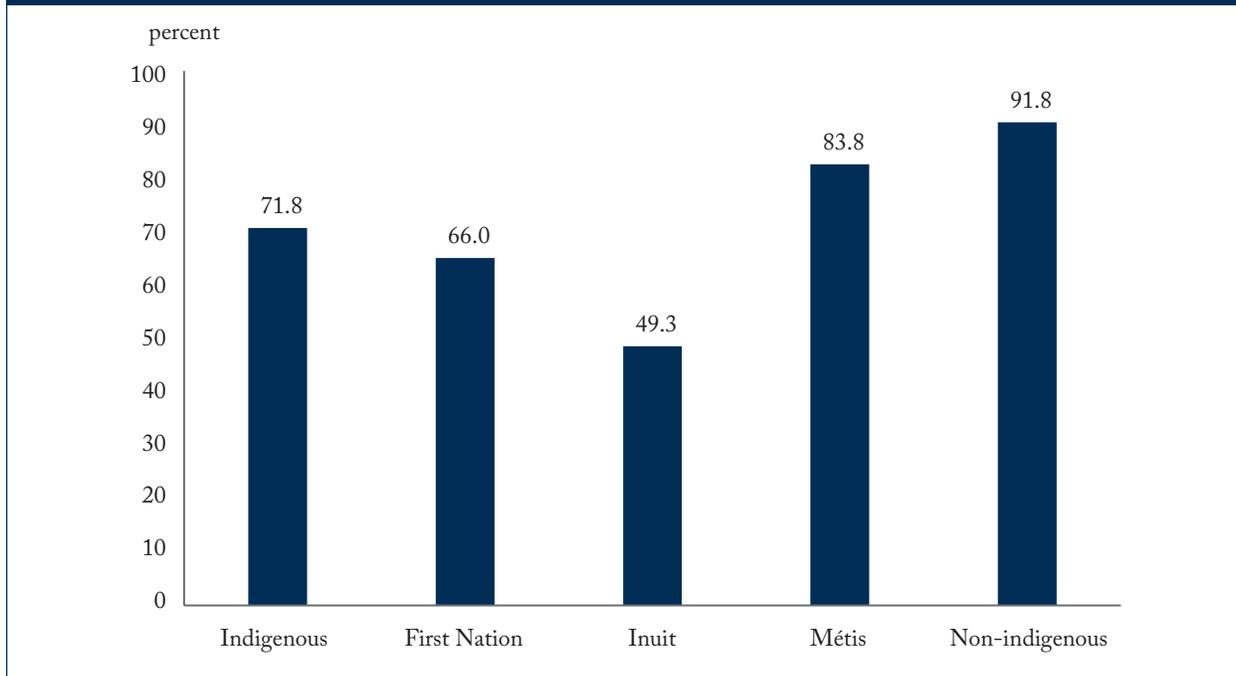


Note: Statistics in parentheses in horizontal axis labels indicate the jurisdiction's share of all K-12 Indigenous students.
Source: Statistics Canada (2017).

the largest ethnically defined group is the Indigenous population.¹ With the decline in the stigma associated with Indigenous identity, “ethnic migration” is occurring, particularly among those who have chosen in recent censuses to switch identity and define themselves as Métis. Indeed, the Métis identity population has increased over the past quarter-century by more than can be explained in terms of demographic factors that define natural increase (Siggner and Costa 2005, Statistics Canada 2017). This dynamic helps to explain why the high-school completion rate among Métis is only eight percentage points below that among the non-Indigenous population. In contrast, the corresponding gaps for First Nation and Inuit populations are twenty-six points and forty-three points, respectively. Moreover, as Figure 3 illustrates, there are large differences not only in high-school completion rates among the three Indigenous groups, but also between First Nation individuals residing on- and off-reserve and across provinces.

1 According to the 2011 census, high-school completion rates among young adult immigrants ages 20–24 were slightly above those for non-immigrant children. The lowest completion rate among immigrant groups was 84 percent, among Southeast Asians. Among the three Indigenous groups, in contrast, the highest share of adults with at least high-school certification was 80 percent, among Métis (Richards 2017a).

Figure 2: Share of Ages 20 – 24 Cohort with At Least High-School Certification, by Indigenous Identity, Canada, 2016



Source: Statistics Canada (2017).

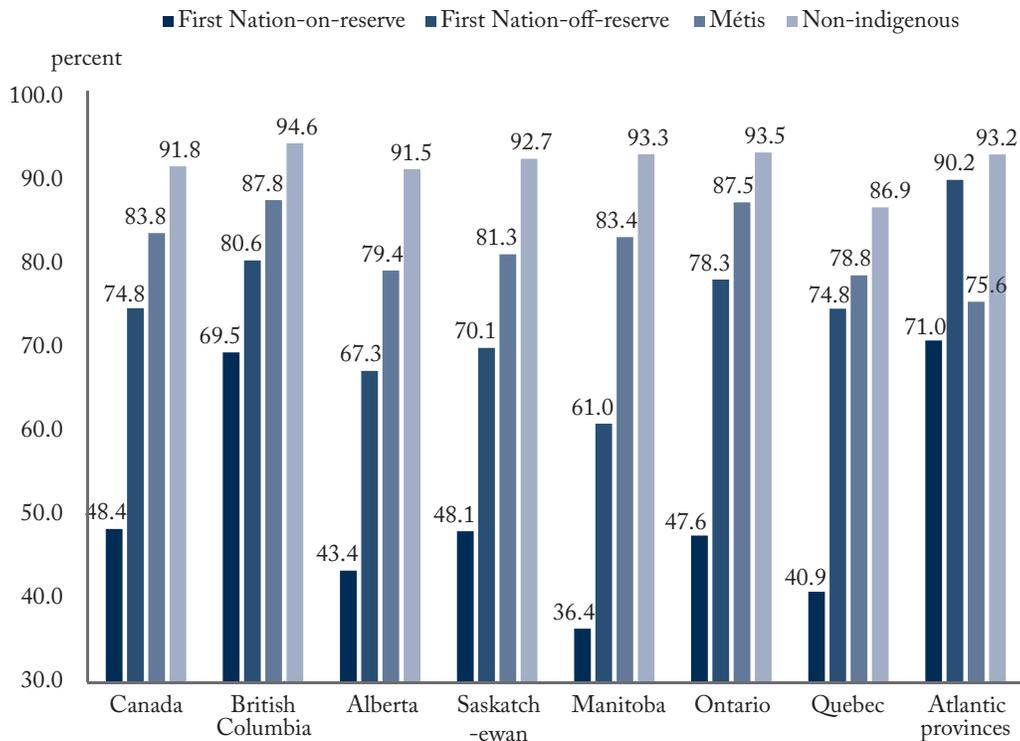
The Importance of Identifying Learning Outcome Gaps

Tracking education levels (such as high-school completion rates) over time is valuable, but it is also important to track learning *outcomes* (such as students' knowledge of core subjects at stages in the K–12 cycle). In the United States since the early 1970s, gaps in learning outcomes on core subjects have been tracked between, on the one hand, “white” and East Asian children and, on the other, Hispanic, African American, Hawaiian and Pacific Island, and native-American children (NAEP 2017). In Canada, however, there are no comparable data to enable the tracking over time of the relative learning outcomes of Indigenous and other students.

Canadians would like to have an education environment that eliminates the gap in both K–12 outcomes and levels between the Indigenous and non-Indigenous populations. An old maxim states that, “if you don’t know where you are, you’re unlikely to get where you want to go.” The PISA, due to the rigour of its analytic reports, its design (which enables tracking of results over time) and its very large sample size, has deservedly become the benchmark in making international comparisons of the outcomes of K–12 school systems, and in making subnational comparisons in the context of countries, such as Canada and United States, with decentralized school systems. Accordingly, if an indicator were added to the 2018 PISA round in all provinces, we would begin to know where we are in terms of learning outcomes in the core subjects of reading, mathematics and science, and could readily track progress at three-year intervals.² The Council of Ministers of Education, Canada (CMEC), via

² Answering the Indigenous self-identification question would be voluntary; Kathryn O’Grady, email communication with authors, 2017.

Figure 3: Share of Cohort Ages 20 – 24 with At Least High-School Certification by Indigenous Identity, Canada and Selected Provinces, 2016



Source: Statistics Canada (2017).

its Pan-Canadian Assessment Program (PCAP), has undertaken some national assessments to identify Indigenous outcomes in core subjects at a provincial level, but PCAP data do not enable international comparison, and provide little socio-economic evidence on Indigenous students.³

A central problem in interpreting learning outcomes is that school quality is only one of the relevant factors – family socio-economic conditions matter a great deal in determining the “supply” of educational services that children receive. Proximity to superior schools, better support from parents and private tutors and parents who are well educated and have high incomes generally lead to much better education outcomes for children of such families than is the case for children with low-income, poorly educated parents.

³ For sample PCAP evidence on Indigenous student outcomes, see CMEC (2012). The PISA attempts to capture family effects via an index of economic, social and cultural status (ESCS) derived from information gathered on students’ family background: parents’ education, parents’ occupations, a number of home possessions used as proxies for material wealth and the number of books and other educational resources available in the home. The ESCS index is a composite derived from these indicators (via principal component analysis). Further, the participants in the PISA are drawn from the same cohort of students who participated in the PCAP two years earlier. Thus, combining these data sets makes a cohort study possible to track the performance of students from the same cohort over a two-year period.

On the “demand side,” parental expectations for formal education matter, as do students’ own expectations as they become older (Thiessen 2009). As well, education expectations might be communicated indirectly to the children of other families via the influence of students on their peers within the school itself (Hanushek and Rivkin 2006). Students in a school where most come from families with high socio-economic status tend to fare well; in turn, these students tend to improve the education expectations and performance of students who, based on their family characteristics, would be expected to do less well. Conversely, in a school where most children come from families with low socio-economic status, students from families with higher socio-economic status tend to perform less well than expected. Using PISA results, Willms (2003) documents similar effects on students’ engagement in schools. Further compounding the impact of family dynamics and peer effects is discrimination, which plays a role in lowering students’ aspirations. Moreover, for Indigenous children in particular, an unfortunate legacy of the residential schools is widespread scepticism among their parents as to the value of formal education (see, for example, Canada 2003). For example, teachers might have lower expectations of Indigenous students than of other students, while non-Indigenous students might scorn and ignore their Indigenous classmates.

The factors discussed above reflect past history and present social conditions of Indigenous families. However, present school policy also matters. Although evidence on the role of school quality can rarely be measured by the standards of a randomized control trial, school-level interventions do matter. Anderson and Richards (2016) undertake a very simple exercise in explaining high-school completion rates among First Nation people ages 20–24 by province, using the employment rate among First Nation adults as a proxy for provincial family socio-economic conditions and location on-reserve as proxy for the difficulty in organizing effective schools. For example, in this exercise, actual completion rates in British Columbia exceed projections, particularly among the on-reserve population, while in Manitoba completion rates are well below projection, both on- and off-reserve. The differences between actual outcomes and projections are a measure, however, approximate, of differences in quality of provincial and reserve school systems in each province. For example, a school system might or might not make adequate efforts to design a culturally relevant curriculum for Indigenous students in core subjects and train teachers to use it (Waubageshig 2016). On-reserve schools might or might not hire and retain competent teachers – admittedly much harder to do in the context of isolated reserve communities than in urban schools. School systems in large cities that intentionally concentrate Indigenous students in a few schools tend to generate worse outcomes than if these students were to attend schools where they live, where in general there would be more interaction with non-Indigenous students.⁴

An administrative complication of the school environment for First Nation children living on-reserve is the existence of separate reserve and provincial school systems. “Registered Indians” pursuant to the *Indian Act* have the right to live on-reserve, and First Nations have a treaty right to establish and manage on-reserve schools.

4 In an assessment of student peer effects in 360 British Columbia schools (Richards, Hove, and Afolabi 2008), a higher share of Indigenous students in a school was associated with lower Indigenous outcomes on core competency tests (conducted in grades 4 and 7). The study controlled for socio-economic conditions in the school catchment area and for the performance of non-Indigenous students in the school. The 2015 PISA round (OECD 2016a, table 1.6.12a) estimated the impact on a composite science score of the value of a unit increase in an index that measures the socio-economic and cultural status of the student’s family. As a proxy for peer effects, the PISA also evaluated the impact of an increase in the average index value of the student’s school. For Canada, the PISA estimated that differences in the socio-cultural index value of a student’s family represented three-quarters of the total effect of the family index value plus the school index value. See also the regression analysis undertaken by the CMEC (2012).

These are mostly at the primary level; the majority of First Nation students who pursue secondary studies do so in an off-reserve provincial school. Combining the complication of two or more school systems with the higher mobility of First Nation families relative to non-Indigenous families means that many First Nation children pass back and forth between schools in different systems – hardly conducive to educational success (Clatworthy and Norris 2007; Newbold 2004).

Provincial education ministries have for many years tracked overall student performance in core subjects by school. Currently, however, only British Columbia also identifies and tracks core outcomes among Indigenous students in the provincial system and publishes the results.⁵ In the 1990s, British Columbia added an Indigenous indicator to the provincial core competency tests in reading, writing and arithmetic that are administered to all students in grades 4 and 7. Establishing links between gathering data and improving results admittedly is not obvious. In a case study undertaken to examine the role of education outcomes data in a sample of BC school districts, administrators and teachers appeared to use available evidence much more systematically in districts with above-average Indigenous student performance than in districts with below-average results (Richards, Hove, and Afolabi 2008). Barry Anderson argues that incremental innovations in British Columbia over the past quarter-century, by both the provincial education ministry and reserve schools, are central to understanding that province's superior First Nation secondary-school completion rates (Anderson 2013; Anderson and Richards 2016). He concludes that progress is almost always incremental – there is no “silver bullet” – and that access to reliable evidence on student outcomes is needed by school districts in defining priorities and by principals and teachers in assessing interventions.

The Current Picture

Table 1 summarizes existing programs at the provincial, territorial and national levels that are intended to identify Indigenous education outcomes on core subjects. Other than those of British Columbia, however, these programs provide information of limited usefulness – indeed, Quebec and New Brunswick collect no data at all on Indigenous identity. Most provinces administer annual standardized tests on core subjects to students at various grades in the K–12 cycle. Among the jurisdictions that employ an Indigenous identifier on these tests, Nova Scotia, Manitoba and Yukon make the test results to some extent publicly available. Unlike British Columbia, however, these provinces do not provide insights over time on the relative performance of Indigenous students at the school-district level. Ontario and Alberta provide no regular information to enable tracking the performance of Indigenous students.

Further, the lack of common Indigenous identifiers (CMEC 2008) and inconsistency in defining Indigenous groups considerably limit comparison across provinces. Most jurisdictions collect data on Indigenous ancestry, but might not distinguish among First Nation, Métis and Inuit; Nova Scotia, for instance, collects data based only on “Indigenous heritage.” As part of its tracking of Indigenous students, the Pan-Canadian Assessment Program assesses their grade 8 performance in mathematics, reading and science every three years, but the small sample sizes in these surveys limit our ability to draw solid conclusions.

5 See the website of the BC Ministry of Education, at <http://www.bced.gov.bc.ca/reporting/province.php>.

Table 1: Students Assessments on Core Subjects at a Provincial and National Level and Availability of Indigenous outcomes

Jurisdiction	Instru- ment(s)	Subjects Assessed	Grade(s) Tested	Indigenous Identifier in Provin- cial Core Assess- ments	Extent of Public Access to Indigenous Outcomes	Disaggregation Level of Publicly Available Data
British Columbia	Foundation Skills Assessment (FSA)	Reading, writing and numeracy	4 and 7	Yes	The results are publicly in annual reports (How Are We Doing?) available online since 2006 Data are available for researchers, subject to restrictions	Available at provincial and school district level (formerly also at school level) and data do not distinguish among First Nation, Métis and Inuit
Alberta	Student Learning Assessments (SLA) pilot Provincial Achievement Tests (PAT)	Literacy and numeracy Language arts, mathematics, science, and social studies	3 6 and 9	Yes	No public access to data A report is available for Indigenous students who participated in the 2016 Accountability Pillar Survey	At provincial level and the 2016 survey does not distinguish among First Nation, Métis and Inuit
Saskatch- ewan ^a	Reporting students' assessment levels	Math Writing and reading	All students 1,2, and 3	Yes	No public access to data	N/A
Manitoba	Middle Years Assessment	Reading, writing and math	3 or 4, 7, and 8	Yes	Partially available since 2008	At provincial level and data do not distinguish among First Nation, Métis and Inuit
Ontario	Provincial Assessments Ontario Secondary School Literacy Test	Reading, writing, and math Literacy	3, 6, and 9 10	Yes	Partially available in the 2013 progress report of "A Solid Foundation"	At provincial level and by First Nation, Métis, and Inuit
Quebec	Uniform exams	Science, language arts, math, and history	10 and 11 (Secondary IV and V)	No	N/A	N/A
New Brunswick	Provincial Assessment	Reading Math and science English language proficiency assessment	2, 4, and 6 4, 6, and 10 9	No	N/A	N/A

Table 1: Continued

Jurisdiction	Instru- ment(s)	Subjects Assessed	Grade(s) Tested	Indigenous Identifier in Provin- cial Core Assess- ments	Extent of Public Access to Indigenous Outcomes	Disaggregation Level of Publicly Available Data
Nova Scotia ^b	Program of Learning Assessment for Nova Scotia	Reading and writing	3, 6, and 8	Yes	Partially available since 2013	At provincial level for students with “Aboriginal Heritage”
		Math	4, 6, and 8			
Prince Edward Island	Provincial Assessments	Reading and writing	3 and 5 or 6	Yes	Not available	N/A
		Math	3, 5 or 6, 9			
Newfound- land and Labrador	Provincial Assessments	Reading, writing, and math	3, 6 and 9	Yes	Not available	N/A
Northwest Territories	Alberta Achievement Test (AAT)	Language Arts and math	3, 6 and 9	Yes	No public access to data (only to authorized individuals)	N/A
Yukon	B.C. Foundation Skills Assessment	Numeracy, reading and writing	4 and 7	Yes	Partially Available since 2014	At regional level for First Nation
Canada	The Pan- Canadian Assessment Program (PCAP): every three years	Math, reading, and science	8 or Secondary Two (in Quebec)	Yes	Contextual reports are available to public Data are available for researchers subject to restrictions	At national and provincial levels and by First Nations, Inuit and Metis, but sample sizes of Indigenous students are small

Note: Assessments for students in grade 12 are not reported. Nunavut does not perform any assessment below grade 12.

a Using the provincial rubric, all schools will be required to record and report writing levels in grades 4, 7 and 9 for the 2017–18 school year, and math levels in grades 2, 5 and 8 for the 2018–2019 school year, as per the assessment plan.

b Prior to the 2016–17 school year, students in grade 10 also participated in language and math.

Source: Ministries or Departments of Education websites and Table 1 in Friesen and Krauth (2012).

The Benefits of Adding an Indigenous Identifier to the PISA

A potential Indigenous identifier in the Canadian PISA survey would rely on a similarly small sample, but it would still be an improvement on current data gathering.⁶ The PISA collects more information than does the PCAP

6 Fewer than 2,000 (6 percent of the sample) identified themselves as Indigenous in the 2013 PCAP. Based on the 2016 census estimate of the Indigenous share of the 15–19 age cohort and a 30,000 PISA sample, the potential Indigenous subsample would be about 2,200 if all provinces participated and all Indigenous students self-identified.

on students' families and schools; its design enables tracking of outcomes from one round to the next, and it enables international comparisons, as the United States, Australia and New Zealand identify Indigenous students in their PISA samples. Australia, in particular, has oversampled Indigenous students, making reliable estimates possible, and has tracked the gap between Indigenous and non-Indigenous students over time (see, for example, Thomson, De Bortoli, and Underwood 2017).

It is important to appreciate that, at any time, provincial education ministries are responsible for educating the great majority (over 85 percent) of Indigenous students.⁷ Only 20 percent of those who identify as Indigenous are registered Indians under the *Indian Act* and living on-reserve, and approximately one-third of their children attend off-reserve provincial schools. About 90 percent of the Indigenous K–12 school-age cohort are scattered across six provinces, with the Indigenous share of the provincial cohort ranging from 3 percent in Quebec to 27 percent in Saskatchewan and 28 percent in Manitoba (see Figure 1). In the Atlantic provinces collectively, 8.5 percent of school-age students are indigenous. (Territorial schools do not participate in the PISA.) The six provinces with the largest Indigenous student populations should consider oversampling to increase the size of their potential Indigenous samples, which currently range from about 200 in Quebec to 500 in Ontario – large enough to make some meaningful interprovincial comparisons, but too small for detailed district-level or urban/rural analysis.⁸ Oversampling would enable such analysis.

Weighing the Case against Tracking Indigenous Educational Outcomes

The reason for tracking educational outcomes, whether those of Indigenous students or all students, is that this can provide evidence that enables better school management and improved outcomes. The suspicion inevitably arises, however, that the purpose lies elsewhere. Here we respond to some of the prevalent criticisms of tracking outcomes on core competencies in general, and by Indigenous criteria in particular.

1. The explanation for weak education outcomes lies with factors other than ethnicity.

A recent C.D. Howe Institute report on PISA 2015 results (Richards 2017b) highlights weak outcomes in Saskatchewan and Manitoba, and advances the thesis that, to improve overall outcomes, these provinces should focus on improving (probably) weak performance among their relatively large Indigenous K–12 cohorts. Some have challenged this thesis, stressing that correlation – between large Indigenous shares of provincial K–12 cohorts and weak provincial outcomes – is not an explanation and that poverty and racism are key to

7 Of the 1,674,000 people in Canada who identify as Indigenous, approximately 45 percent are “registered Indians” pursuant to the *Indian Act*, and hence eligible to live on-reserve; of these, 45 percent do so. For census estimates of the Indigenous identity population and its distribution on- and off-reserve, see Statistics Canada (2017). For the distribution of students living on-reserve between reserve and provincial schools, see Canada (2016).

8 If we assume, as in past PISA rounds, an aggregate national sample of 30,000, distributed by province in proportion to the 2016 census distribution of the total cohort of those ages 15–19, we can estimate approximate provincial PISA samples. Using the Indigenous share of provincial cohorts ages 15–19, we can generate estimates of Indigenous students in the provincial samples. Under these assumptions the total Indigenous sample would be 2,160 and the Indigenous samples in the six provinces identified in Figure 1 would range from 192 in Quebec to 480 in Ontario. In Atlantic Canada, Nova Scotia would have the largest Indigenous sample, at 63.

understanding Indigenous educational outcomes (see, for example, Martin 2017). Ethnic origin, of course, is never the sole explanation for educational outcome, but in most rigorous quantitative studies, after accounting for other factors, family ethnic origin still appears as a statistically significant and often important determinant of children's educational outcomes. To the extent that misgivings by some Indigenous leaders as to the value of formal education and low parental expectations for their children's education outcomes exist, these dynamics should be acknowledged (Canada 2003). Solutions lie in innovations such as adding culturally relevant context to the curriculum (Waubageshig 2016), not in resisting assessments and the publication of results.

2. Identifying ethnic differences might aggravate social fractures.

In opposing the BC Foundation Skills Assessment (FSA) tests in grades 4 and 7 – which provide by far the most detailed evidence on Indigenous student outcomes available from any provincial K–12 system – the BC Teachers' Federation argues that identifying schools with weak academic outcomes exacerbates problems of disadvantaged communities:

Large-scale assessments such as FSA... are not accurate enough to help teachers plan for individual students. Nor are they diagnostic; the results indicate which students have not done well on the tests, but do not provide information on the reasons, or even specific areas of weakness....

Comparing schools with other schools, as the Fraser Institute and the media do, does not help schools. In fact, it can cause considerable harm because such rankings tend to further disadvantage already disadvantaged communities. (BCTF 2009.)

Large-scale assessments, we agree, are not of much use in planning for individual students; their value lies in identifying school- or district-level trends. Furthermore, the relative performance of neighbourhood schools is a factor in parents' decisions about where to live and where to send their children. It would be better if such decisions were based on objective analysis of school performance, including that of Indigenous students, than on anecdotes, which distort by accentuating the exceptional. Educational policy can mitigate peer effects, but there is no denying that such matter, and the outmigration of families of higher socio-economic status from a school catchment area denies the remaining students of potentially positive peer effects. In US schools, this dynamic has made the closing of ethnically defined education gaps a Sisyphean exercise (Wilson 2012).

3. Emphasizing the “core” subjects of reading, math and science minimizes the importance of subjects that are culturally relevant for Indigenous students.

Education is more than the core subjects assessed via the PISA survey. Accordingly, nothing should prevent schools from devising instruments to measure student outcomes on culturally relevant subjects beyond the core. That said, important as is cultural learning, it is a complement to, not a substitute for, mastery of the core – reading, in particular – which is vital for virtually all other school-based learning and for children to succeed as adults in earning a decent income (Hanushek et al. 2015; Quintini 2014).

4. Core competency testing might be gamed by poor sampling techniques or outright fraud.

Although it would come at a higher cost, universal testing would avoid the problem of poor sampling design. The problem of fraud, for its part, arises in some contexts. A high-profile example of “gaming” core competency

testing is the prosecution of 11 senior educators in Georgia who inflated thousands of results among students in inner-city Atlanta schools.⁹ In justifying harsh penalties for those responsible, the judge referred to the importance of integrity in students' assessment. Grading students often entails some inflation of grades to enable marginal students to cross a critical threshold (Wong and Ross 2015) and, as with many aspects of school management, some discretion is desirable. But failure to recognize large gaps in ethnic outcomes is of no benefit to historically marginalized communities.

Conclusion

School systems are large bureaucracies; as such, they display similarities to large corporations. James Harrington, an often-quoted expert on strategies for improving business quality, has said, "Measurement is the first step that leads to control and eventually to improvement. If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it." (Harrington and McNellis ca.2013) The reluctance of Ontario, Quebec, Nova Scotia and New Brunswick to adopt an Indigenous identifier in their provincial sample of the PISA is, in effect, a refusal to measure and understand the most significant educational gap in Canadian K–12 education.

9 For an account of the court proceedings, see Brown (2015).

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