

# Explaining the Aboriginal – non-Aboriginal Gap in Student Performance in BC Schools

John Richards  
Simon Fraser University

Jennifer Hove

Kemi Afolabi

Presented at Session 2: Aboriginal Canadians and the Economy I: Education Issues  
Organized by the Centre for the Study of Living Standards and the CD Howe Institute

Annual Meeting of the Canadian Economics Association  
University of British Columbia, Vancouver  
June 6, 2008

## Abstract

British Columbia is the one province in Canada that, on an annual basis, assesses and publicizes performance in basic subjects (reading, writing and numeracy) among Aboriginal students in all off-reserve schools. (Ten percent of BC K-12 students identify as Aboriginal. Across Canada, approximately three quarters of Aboriginal students attend off-reserve schools under provincial jurisdiction.) This paper analyzes Aboriginal and non-Aboriginal student performance this decade in the 366 provincial schools with sizeable Aboriginal student cohorts. Province-wide, the Aboriginal - non-Aboriginal performance gap increases between initial tests conducted in Grade Four and subsequent tests in Grade Seven. Three variables are identified as significant in explaining the gap in these 366 schools: 1) different socio-economic conditions between Aboriginal and non-Aboriginal school catchment populations; 2) negative peer effects arising in schools with large Aboriginal student cohorts; and 3) performance of non-Aboriginal students in the respective schools. Elimination of differences in socio-economic conditions would eliminate about a quarter of the gap. Eliminating the negative peer effect would eliminate about one third of the gap. Finally, an increase in the average performance of non-Aboriginal students, as measured, is associated with a statistically significant increase in performance of Aboriginal students in the respective schools.

## **Explaining the Aboriginal – non-Aboriginal Gap in Student Performance in BC Schools**

John Richards, Jennifer Hove and Kemi Afolabi

Draft, 6 May 2008

Research for this paper has been financed, in part, by the SFU Community Trust Endowment Fund (CTEF). Furthermore, this paper incorporates research undertaken by Jennifer Hove for the project (Education Systems and Outcomes in Diverse Communities: An Interdisciplinary Approach) supported by the CTEF with Dr. Jane Friesen acting as Principal Investigator.

When Paul Martin, at the time Prime Minister, the provincial Premiers, and leaders of the major Aboriginal organizations met in Kelowna, British Columbia, in late 2005, they undertook to close within a decade the gap in high school completion rates between Aboriginal and non-Aboriginal students. The gap, it needs emphasizing, is very large. To quote a recent study by Michael Mendelson (2006,12):

the figures [on high school completion] are somewhat better for the Aboriginal population aged 20 through 24 than for the whole Aboriginal population over 15 years of age, but the absolute level of failure to complete high school in the new millennium remains shocking ... This is the age group that would have been in high school in the 1990s, not in some distant past of discredited old policies and old programs.

Mendelson is here referring to 2001 Census data. According to the 2006 Census, not much has changed: 40 percent of Aboriginals aged 20 to 24 are without a high school certificate, slightly better than the comparable statistic, 44 percent, for all Aboriginals over age 15. Among non-Aboriginal Canadians aged 20 to 24, only 13 percent are without a high school certificate; among all non-Aboriginals over age 15, 23 percent lack a high school certificate.<sup>1</sup> Closing this gap is crucial for obvious reasons. In a modern industrial economy, there are few well paying jobs accessible to those without formal education. A high school completion certificate is the minimum requirement for most jobs. And “good jobs” usually require further training, training not accessible without high school completion.

Not only do average employment incomes rise with community education levels, so too does the employment rate. Andrew Sharpe (2007) and colleagues estimate that, as of 2001, approximately half of both the Aboriginal/non-Aboriginal employment income gap and the employment rate gap are explicable in terms of low Aboriginal education levels. Our emphasis on the importance of education does not deny that factors other than education matter in explaining Aboriginal labour market outcomes. One such factor is age distribution. The Aboriginal population is younger than is the case for other Canadians. Hence, an Aboriginal will probably have less on-the-job experience than a non-Aboriginal employee. Since employment incomes rise with experience, expected Aboriginal incomes will be lower, after adjusting for education level. Another factor is the Aboriginal location disadvantage. While Aboriginals are increasingly living in cities, disproportionately they live in isolated rural areas, where well paying jobs are few. And, while racial discrimination has undoubtedly diminished over the last generation, Aboriginals still contend with it.

“Governments pursue goals that are measured” is an old maxim of public policy. While the Kelowna Accord suffers from a lack of programmatic commitments – the politicians put no new education policies in place – it has the virtue of stating a measurable goal. In outline, this paper proceeds as follows. We first illustrate the value of measuring Aboriginal student performance by discussing the province-wide tests in basic subjects conducted in British

---

<sup>1</sup> These statistics are derived from the interactive on line Statistics Canada web site (Canada 2008a).

Columbia. In the second part, we assess the extent to which three sets of variables explain the Aboriginal – non-Aboriginal gap in school performance. The three sets are socio-economic conditions among student families, in-school dynamics, and third, strategies pursued by regional school authorities.

Closing the gap in high school completion rates is an ambitious undertaking. It will require major initiatives pursued over many years both on- and off-reserve. On-reserve, responsibility for education resides ultimately with the Department of Indian Affairs. In practice, the Department delegates to individual bands (First Nations) nearly all responsibility for administration of on-reserve schools. Off-reserve, responsibility lies with provincial education departments. They in turn delegate much of their power to regional and municipal school districts. Based on interviews with personnel in eight British Columbia districts plus interviews with Aboriginal leaders in these districts, we offer tentative policy advice on strategies conducive to better Aboriginal education outcomes.

The great majority of Aboriginal children now attend off-reserve schools organized by provincial governments. According to the 2006 Census, slightly over half of “registered Indians” eligible to live on-reserve actually do so; 50 percent of women and 45 percent of men do not (Canada 2008b). Based on the Census, a quarter of the total Aboriginal population – including Metis and Inuit as well as those who identify as Indian – live on-reserve; three quarters do not.<sup>2</sup> Among children living on-reserve, about one third attend off-reserve provincial schools. Based on these ratios, approximately one Aboriginal child in five currently attend on-reserve schools; four in five, off-reserve schools. Among the cohort of young Aboriginal adults living off-reserve, high school completion rates are considerably better than among those on-reserve. But, in both cases, large gaps exist relative to non-Aboriginal children (Richards 2006, chapter 4; Mendelson 2006).

### **British Columbia’s Foundations Skills Assessment**

At present, available information about Aboriginal education achievements across Canada is woefully inadequate. The most comprehensive information comes from the national Census, conducted once every five years. The Census measures education levels among cohorts ages 15 and older. This is self-reported data and its reliability is further limited by less-than-complete on-reserve enumeration. If governments are to take seriously the Kelowna target, they cannot rely solely on somewhat blurred snapshots taken once every five years. They need evidence on the performance of Aboriginal students currently progressing through the K-12 system.

---

<sup>2</sup> The total Aboriginal identity population in 2006 was 1,200,000, 4 percent of the Canadian total. Among this population, approximately 700,000 identified as Indian, 400,000 as Metis and 50,000 as Inuit. Among those identifying as Indian, 43 percent resided on-reserve. This subgroup represents approximately one quarter of the total Aboriginal population. The majority, but not all, of those identifying as Indian are registered under the Indian Act and hence eligible to live on-reserve. As noted in the text, slightly over half of those registered actually live on-reserve (Canada 2008b, 2008c).

The one Canadian jurisdiction that assembles and regularly publishes detailed evidence on Aboriginal student progress is British Columbia. Starting with the 1999/2000 school year, the provincial education ministry has conducted annual province-wide tests in reading, writing and numeracy. Foundation Skills Assessment (FSA) results are available by school and by various characteristics of school student populations, including gender and Aboriginal identity. Currently, children sit these tests in grades four and seven.

-----  
insert Figures 1 – 3 approximately here  
-----

The most commonly used summary statistic from FSA results is the ratio of school test scores in which students “meet” or “exceed expectations.” (See the glossary for a fuller description.) Figure 1 illustrates province-wide meet-exceed ratios (MERs) over the five school years 2001/02 to 2005/06 in the three subjects tested and for both Aboriginal and non-Aboriginal students. In the 2005/06 academic year, 57,000 students, 9.5 percent of all students in provincial schools self-identified as Aboriginal. Of these students, one in five resided on-reserve; four in five off-reserve (British Columbia 2006b, 2-3). The Aboriginal – non-Aboriginal gap is largest in the case of reading, smallest for writing.

The FSA results have grim implications. Already, by grade four, a sizeable gap exists between average Aboriginal and non-Aboriginal student performance across the province. And, by grade seven, the gap in all three subjects has increased. On the other hand, the results imply some improvement over the decade. Figures 2 and 3 illustrate the gaps in each of the five school years between MERs for Aboriginal and non-Aboriginal students, by subject and by grade. In all cases except one, the gaps declined over the five years. In the one exception – reading results in grade four – the increase is small.

One policy implication to draw from the large gaps already present at the grade four level is the probable benefit to be derived from a well funded, province-wide early childhood education program targeted to Aboriginal children.

### **Explaining Aboriginal Results**

To learn more about Aboriginal student outcomes, we examined all provincial schools with Aboriginal student cohorts above a pre-specified threshold – 366 schools in total. For each of these schools, we obtained school-level FSA results (by grade, subject, student gender, and whether or not the student identified as Aboriginal) for the five school years 1999/00 to 2003/04. As noted, these data do not address individual students; the data are at the level of the respective school populations.

Aggregating scores for each school over the five years, all grades and all subjects, we generated two MERs per school, one for Aboriginal and another for non-Aboriginal students. Across the 366 schools, the average Aboriginal school-level meet-exceed ratio (MER) is 63.8 percent; the average non-Aboriginal MER, 78.5 percent.

To appreciate the significance of the difference between the two MER distributions, let us express it in percentiles of the two distributions. The 90<sup>th</sup> percentile among the 366 Aboriginal MERs is a score of 77.6 percent; the 50<sup>th</sup> (median) is a score of 64.5 percent. The 90<sup>th</sup> Aboriginal MER equals the 42<sup>nd</sup> percentile in the distribution of non-Aboriginal MERs; the Aboriginal median equals the 2<sup>nd</sup>. In other words, 98 percent of the 366 schools report, for their non-Aboriginal students, MERs above the median that schools report for their Aboriginal students.

A prominent feature of these results is the much higher dispersion across the schools in terms of MERs for Aboriginal relative to non-Aboriginal students. The standard deviation for Aboriginal MERs is 11.7 percentage points, nearly twice the comparable statistic of 6.0 percentage points for the non-Aboriginal MER distribution. Figure 4 shows the Aboriginal and non-Aboriginal school MERs by decile. At the top decile, the gap between Aboriginal and non-Aboriginal scores is 8.0 percentage points. At the bottom decile, it is a distressingly large 23.9 percentage points.<sup>3</sup>

The MER results can be disaggregated by gender as well as racial identity. Figure 5 illustrates the top and bottom deciles of the ensuing four distributions. The top deciles for school MERs among Aboriginal boys and girls exceed the respective medians (not shown) for non-Aboriginal boys and girls. Measured at the 9<sup>th</sup> deciles, the maximum gap, that between non-Aboriginal girls and Aboriginal boys, is 12.2 percentage points. At the bottom deciles, the performance gaps are much larger: the maximum, again between non-Aboriginal girls and Aboriginal boys, has grown to 32.0 points.

In system-wide performance tests on core academic subjects, girls typically outperform boys. This ranking obtains within both the Aboriginal and non-Aboriginal student populations. At the 9<sup>th</sup> deciles, whatever explains boys' weaker performance relative to girls has as much import as do obstacles to Aboriginal student success. The top decile value for Aboriginal girls exceeds – if only slightly – that for non-Aboriginal boys. By contrast, at the bottom deciles, the gaps based on racial identity clearly exceed those based on gender.

-----  
insert Figures 4 – 6 approximately here  
-----

### **Socio-economic explanation**

In assessing the role of socio-economic conditions, the procedure undertaken has been to estimate each school's catchment area in terms of Census enumeration units, and for each catchment area to generate average 2001 Census data. The data are disaggregated within each catchment area by whether families do or do not self-identify as Aboriginal. This procedure generates summary data on 732 catchment area populations, two per school. (See the Appendix for further elaboration of procedure adopted.)

---

<sup>3</sup> Note that each distribution ranks school MERs independently. Hence, the school rankings change, in general, between paired MER distributions illustrated in Figures 4 and 5.

### Socio-economic gradients

Two important variables pertinent to children's education prospects are parental education and family income. We constructed a simple index summarizing the average socio-economic status (SES) of each catchment population using Census data on these two variables.<sup>4</sup> The average index value for the 366 Aboriginal catchment populations is  $-0.6$ . Given an equal number of Aboriginal and non-Aboriginal populations, the non-Aboriginal average index value is, by construction,  $0.6$ .

Figure 6 plots the 732 school MERs for Aboriginal and non-Aboriginal students against their respective SES index values. Superimposed on the scatterplot are two socio-economic gradients. (These are regressions of school MERs, for Aboriginal and for non-Aboriginal scores, on the relevant SES index values.) The gradients provide an initial summary of the impact of catchment population socio-economic conditions on school outcomes. Ideally, the two gradients coincide and possess a shallow slope – indicating that the racial distinction and changes across schools in socio-economic status have little impact on student outcomes. Such is clearly not the case.

First, the Aboriginal gradient lies well below the analogous non-Aboriginal gradient. On the other hand, the gradients do have similar slopes. Which is encouraging. For both Aboriginal and non-Aboriginal families, improvements in socio-economic status are associated with similar improvements in children's school performance. The slope implies a substantial disadvantage to low socio-economic status families. For example, an Aboriginal family in a catchment area population at the top decile in terms of the overall SES index can expect their children's school to achieve a MER 10 percentage points above children from families in a catchment area population at the bottom decile.<sup>5</sup>

How important to Aboriginal families is that 10 percentage point increase between the forecast MER of a school at the bottom decile and one at the top decile? The first school's forecast MER places it at the 39<sup>th</sup> percentile among the Aboriginal MER distribution; the second school's forecast MER places it at the 72<sup>nd</sup> percentile.

### Multivariate regression analysis

For the Aboriginal and non-Aboriginal catchment populations of each school, we have available 2001 Census data on six variables: education level of family members, employment rate, prevalence of single parenthood, median family income, LICO poverty rate, and mobility rate. Several of these variables, alone and in combination, are statistically significant in explaining the Aboriginal MER results. The maximum explanatory power (in terms of  $R^2$  statistic from a logistic regression) from any regression using socio-economic variables alone is  $0.10$  – similar to the OLS regression result discussed above.

---

<sup>4</sup> This index is standard normal, with equal weighting for each variable.

<sup>5</sup> This calculation assumes the Aboriginal gradient slope of  $3.7303$  and that the community SES index rises from  $-1.28$  to  $1.28$ .

In univariate regressions using each of the socio-economic variables in turn as regressors, Aboriginal catchment population median family income, education level, and employment rate variables are highly significant; the Aboriginal poverty rate is also significant, but less so. Appendix regression (1) is a representative example of results arising from multivariate analysis using socio-economic variables. In summary, family education and income levels matter, and – to a lesser extent – so does the employment rate. However, socio-economic variables cannot account for much of the variance; other dynamics also matter.

### **The role of in-school dynamics**

If we turn to in-school dynamics, we have three variables of relevance: the MER among non-Aboriginal students in the school, the number of Aboriginal test scores, and the number of non-Aboriginal test scores.

The intuition behind inclusion of the non-Aboriginal MER as regressor is that a rising tide may raise all boats. Do Aboriginal students perform better in “good schools” characterized by superior performance among the school’s non-Aboriginal students? The intuition behind the two other variables is that peer influences matter. Other factors constant, do Aboriginal students perform better or worse when there are many Aboriginal students in the school, either absolutely or relatively to non-Aboriginal students? There is mixed evidence from US studies of Afro-American students: black students in schools with relatively large minority-race cohorts may benefit from an absence of racial stereotyping; they may suffer from non-academic expectations among peers.<sup>6</sup>

A rising tide does appear to raise all boats: alone and in combination, the non-Aboriginal MER turns out to be significant.<sup>7</sup> Explanation of Aboriginal results in terms of the non-Aboriginal MER (as instrumented) generates a better result (in terms of  $R^2$ ) than any combination of socio-economic variables alone. (See regression (2).) Combined, two variables proxying in-school dynamics achieve the maximum explanatory power (in terms of  $R^2$ ) of any regression run on the socio-economic and in-school data. (See regression (3).) However (as instrumented), the non-Aboriginal MER variable is a function of socio-economic conditions in the non-Aboriginal catchment populations, which in turn are positively correlated with Aboriginal catchment population conditions. Hence, the non-Aboriginal MER variable is presumably capturing, to some extent, the impact of Aboriginal socio-economic conditions.

---

<sup>6</sup> Hanushek (2002) provides a useful survey of this literature. Friesen and Krauth (2007) found no adverse peer effects in their study of Aboriginal student FSA outcomes in British Columbia schools. On the other hand, Cooley (2007) studied white and non-white students in North Carolina public elementary schools, and concluded that desegregating peer groups leads to small reductions in interracial achievement gaps.

<sup>7</sup> Unobserved variables may well influence both the Aboriginal and non-Aboriginal MER in a school. Hence, an OLS regression is subject to bias. To avoid this bias, we used the non-Aboriginal SES index value of the school catchment population as instrument for the non-Aboriginal MER.



We proxied the impact of peers in two ways: first with the Aboriginal share of test scores in a school, second with the count of Aboriginal test scores in a school. Both variables generate statistically significant results. Subject to the exception noted below and to the holding constant of other variables, Aboriginal children can be expected to perform less well in any school when either the share of Aboriginal student scores or the simple count of Aboriginal scores rises.

The more significant of the two variables is the count. There is evidence that the peer effect is non-linear. Modeled as a quadratic, the count variable implies the incremental peer effect declines in absolute value as the number of Aboriginal students rises, and that it ultimately turns positive. Across all but two schools included in the sample, a larger count means a lower forecast Aboriginal MER.<sup>8</sup> (See regressions (3) and (4).)

The seven regressions (5) – (11) incorporate both in-school and socio-economic variables. Regressions (5) – (7) each proxy socio-economic conditions by one of the three socio-economic variables previously highlighted. The most successful of these (regression (5)) specifies Aboriginal education levels as the sole socio-economic variable, but the coefficient value for the non-Aboriginal MER is much higher than for the remaining six regressions and, once again, the non-Aboriginal MER may be capturing Aboriginal socio-economic effects. Regressions (8) – (10) proxy socio-economic conditions by pairs of variables. Regression (11) relies on the simple SES index constructed as a standard normal variable with equal weighting of the Aboriginal education and income variables.

Clearly, both socio-economic and in-school explanations matter. There is no overwhelming reason to choose a particular regression as unambiguously best. Since the regression incorporating the SES index performed slightly better (in terms of  $R^2$ ) than any among regressions (8) – (10), we have employed it in proceeding to the next stage, incorporating fixed effects of particular school districts.

The implication of these results is that peer effects are more important than socio-economic conditions in explaining the observed MER gap. However, that conclusion should be qualified. The count variable is negatively correlated with the SES index and may be capturing socio-economic characteristics of the school Aboriginal catchment populations. And, in the context of good teaching practices, the peer effect may be substantially reduced.

### **Identifying school district effects**

At present, much of the “entrepreneurship” around Aboriginal education policy is taking place not at the level of provincial education ministries but below the radar at the level of particular school districts. In BC, the overall policy picture is one of broad provincial direction on Aboriginal education programs. Provided their decisions fall within the guidelines of Ministry-approved policy, school districts have discretion in determining the

---

<sup>8</sup> The incremental peer effect turns positive when the Aboriginal count exceeds 511. This threshold is calculated from coefficient values in regression (12).

content and direction of their programs. (See Figure 7 for a map illustrating location of BC school districts.)

-----  
insert Figure 7 and Table 1 approximately here  
-----

What evidence is there that district initiatives matter? In a regression incorporating a fixed effect for each district (using one district as benchmark), the coefficients for ten districts significantly differ from zero. Regression (12) illustrates the results from a regression utilizing the specification of regression (11), supplemented by fixed effects for these ten districts. Acknowledging the impact of the ten districts – districts in which school performance is significantly better or worse than forecast – dramatically increases the explanatory power of the exercise (in terms of  $R^2$  statistic). In two districts (containing a total of 16 schools) Aboriginal student performance is above, in a statistically significant sense, forecast values based on the regression (11) specification. In eight districts (containing a total of 36 schools) Aboriginal performance is, in a statistically significant sense, below analogous forecast values.

Table 1 summarizes an exercise in decomposing the Aboriginal – non-Aboriginal MER gap, based on regression (12) coefficients. For example, if the Aboriginal SES index value equaled that prevailing among non-Aboriginal catchment populations, then the forecast Aboriginal MER would rise sufficiently to reduce the actual 14.7 point gap by nearly one fifth (17.7 percent). If the negative peer effect could be eliminated, it would reduce the gap by nearly half (47.5 percent). All else equal, a one percentage point increase in the non-Aboriginal MER in a school is associated with a 0.8 percentage point increase in the school’s Aboriginal MER.

Without in any way changing the forecast impact of socio-economic characteristics and in-school dynamics among the 36 schools in the eight weak districts, raising the performance of these districts to the provincial average reduces the gap by 8.2 percent. And, if all school districts could perform as well as does Okanagan Skoha (district 67), then – without any other changes in the forecast impact of socio-economic conditions and in-school dynamics – two thirds (66.6 percent) of the gap would be eliminated.

From this regression exercise arise three broad policy recommendations:

- School boards should be cautious about concentrating Aboriginal students in one or a few schools. In general, concentration has lowered academic outcomes across the province for Aboriginal students.
- Providing Aboriginal parents with information about the academic performance of schools and enabling them to choose a “good school” with high non-Aboriginal student performance may well improve overall outcomes for Aboriginal students.
- There are lessons to learn from the strategies of school boards with superior performance.

These recommendations are very general. Why the pronounced negative peer effect? Why do some schools perform remarkably better – or worse – than forecast via the regressions? In the next session, we turn to the role of school districts in explaining outcomes.

### **What are school districts doing?**

In a recent survey of studies on the school district role, Stephen Anderson concludes that effective districts are not pursuing a particular list of reforms; rather, they are exercising comprehensive leadership over reform strategies whose elements may differ from one district to another. Maguire's (2003) study of four exemplary Alberta school districts provides an example. He chose districts that had demonstrated marked improvement in student performance over the years 1998-2003 in Alberta's equivalent to BC's Foundation Skills Assessment (FSA) tests. (Student performance was here measured over all students, not Aboriginals in particular.) Maguire summarizes his conclusions as follows:

- Vision statements [for the school district] that were more sharply focused on student learning and more widely promulgated and internalized at all levels.
- More links with community partners and agencies capable of supporting students.
- A collective culture in which school administrators and teachers took pride in their district because they shared in its planning, decision-making and achievements.
- The determination to measure schools against district-level expectations, not the parochial yardsticks of individual principals or teachers.
- Greater emphasis on improving the understanding and use of assessment data among school staff.
- Successful implementation of a curriculum-based, collaboratively developed and instruction embedded model of staff development. (Maguire 2003,10)

Another study – this one conducted in the US – selected five districts that had achieved significant improvement in student performance in math and/or reading over a minimum of three years, that drew students from low-income catchments, and that enjoyed a reputation for effective professional development. The authors came up with a similar list of conclusions:

- Districts had the courage to acknowledge poor performance and the will to seek solutions.
- Districts put in place a systemwide approach to improving instruction — one that articulated curricular content and provided instructional supports.
- Districts instilled visions that focused on student learning and guided instructional improvement.
- Districts made decisions based on data, not instinct.
- Districts adopted new approaches to professional development that involved a coherent and district-organized set of strategies to improve instruction.
- Districts redefined leadership roles.
- Districts committed to sustaining reform over the long haul. (Togneri & Anderson

2003, 4-5)

Table 2 provides further evidence, beyond regression (12), on the potential importance of district-level strategies. In the short run, administrators in any district must take the socio-economic status of school catchment populations and the geographic distribution of Aboriginal students across their district as more-or-less fixed. Each of 366 schools is here classified as to whether its actual Aboriginal school MER exceeds or falls short of its forecast, the forecast based on the socio-economic and in-school variables available and coefficients generated by regression (12) – here ignoring the district fixed effects. In turn, the schools are aggregated into their respective school districts. The table ranks the school districts, 43 in all, in terms of the proportion of district schools performing better than forecast.

-----  
insert Table 2 approximately here  
-----

The range – from 0 percent to 82 percent – in the proportion of schools in a district that outperform forecast Aboriginal school MERs is obviously large. In the top 10 school districts by this ranking are 92 schools, 63 of which perform above forecast levels. In the bottom 10 districts are 44 schools, only 2 of which perform above forecast levels.

Neither this ranking exercise nor the fixed-effect regression (12) explains why schools in particular districts are performing better than schools in others. The relationship between district-level Aboriginal programs and Aboriginal student FSA performance in individual schools is obviously indirect; many other intervening factors inform what takes place in schools and in classrooms. Still, district policies do probably help explain differences in Aboriginal student performance between schools and between districts.

In order to explore differences among districts, we conducted interviews with district personnel and stakeholders in eight provincial school districts at the close of the 2006/07 school-year. Districts were selected to represent the range of provincial demographic variation. In the districts selected, for instance, Aboriginal students constitute from 4 percent to 98 percent of the student body. Total student district enrolment also varies from just over 500 students to 65,000. To respect confidentiality, we have not identified the eight districts in which interviews were conducted. Of the eight, three are located in the Fraser River valley (Lower Mainland), one in the southern interior, and four in the northwest. In terms of the ranking in Table 2, some districts ranked high; others low. Interviewees include district Principals of Aboriginal Education, an administrator of a district First Nations Education Council, school support workers, Band Councilors, an Aboriginal school board trustee and the former Director of the Aboriginal Education Branch of the Ministry of Education.

In 1994-95, the province began targeted education funding to districts designated for Aboriginal students and programs. School districts must demonstrate that Aboriginal funding is spent on “Aboriginal language and culture programs, Aboriginal support services or other Ministry-approved Aboriginal programs” (British Columbia 2003). Audits of school districts

do take place, and loss of funding may occur where districts are unable to account for expenditures. The Ministry of Education also requires all school districts in the province to develop and implement Aboriginal Education Enhancement Agreements, which are working documents between districts, local Aboriginal communities and the Ministry. As their name suggests, Enhancement Agreements are designed to enhance the academic achievement of Aboriginal students, and to improve collaboration between districts and Aboriginal communities.

The conclusions that we draw from interviews are based on a relatively simple comparative exercise: we compared responses on key questions, grouped them based on identified themes, and cross-referenced with district rankings in Table 2. Although this approach does not capture all dimensions on which districts differ, nor the specific effects of such differences on student performance, our conclusions are supported by other district-level studies (Maguire 2003; Togneri & Anderson 2003). The first conclusion from this comparative exercise is that collaboration between school district personnel and local Aboriginal communities is a crucial prerequisite to improved academic outcomes. While many districts recognize this, others remain reluctant to share decision-making. The involvement of Aboriginal communities has important beneficial consequences not only with respect to the responsiveness of programs to Aboriginal students, but also in terms of buy-in from Aboriginal families and the local Aboriginal leadership.

In some basic respects, districts with more ambitious Aboriginal student programming have independently developed similar collaborative paths with local Aboriginal communities. Certain districts appear much farther along than others in this dynamic. District personnel active in Aboriginal student programming may be unaware of programs deemed effective by other districts, since information-sharing across districts is limited – especially across districts that are not geographically close one to the other.

Another important piece of the equation is the role of individual schools. Although most program decisions are made by districts, there are differences in “take up” at the school level. District decision-makers point to the importance of leadership and commitment by school-level administrators and by teachers in incorporating Aboriginal content into curriculum, improving relations with Aboriginal families and community-members, and transforming expectations in schools. Despite the crucial roles played by teachers and principals, school-level procedures appear largely ad hoc. Unless committed teachers and administrators are present and active, district policies will not lead to fundamental school engagements. This overall picture is consistent with the finding reported above of wide variance across districts in percent of schools performing above or below forecast Aboriginal MERs. It is consistent also with the limited ability of socio-economic conditions to explain Aboriginal student performance.

When comparing the eight districts involved in the survey, a number of similarities emerge in core programs offered to Aboriginal students. In all districts, the performance of core staff – which include District Principals of Aboriginal Education, Aboriginal support workers and counselors, and teachers assigned to curriculum development and academic support – is crucial. Academic skill-development and literacy programs, ranging from full-day

kindergarten to summer reading programs and in-class small group instruction, also figure prominently in all districts. Language instruction and Aboriginal culture programs represent another dimension of programming. Curriculum development is required for both the revitalization of First Nations language instruction and for the inclusion of Aboriginal culture and history in classrooms. Also important are events that bring Aboriginal community members into schools to promote cross-cultural awareness. Such events may take the form of “elders in residence” programs or cultural presentations.

What sets districts apart from one another appears less related to programs themselves (although these undoubtedly matter), and more related to how decisions are formulated, and to how decision-makers and stakeholders interact. In other words, the differences across schools and districts are best captured by the differences in how priorities are translated into action. Some of the key features are outlined below.

#### *Influence of Key District-Level Actors*

Many districts have created the position of District Principal of Aboriginal Education to provide leadership on the ground, and to spearhead the monitoring and improvement of Aboriginal programming. Although districts with these positions are not necessarily more committed to Aboriginal education than those without, interviewees did speak of the importance of a “principal” in the context of district politics and hierarchy. As relatively high-ranking positions charged with district-wide coordination, District Principals appear to signal to schools and to the wider community that the district considers Aboriginal Education a key priority.

Support workers represent another group in district-level programming. Support workers may be assigned to a single school or to multiple schools, depending on the percentage of Aboriginal students in any given school. Since support workers are not themselves teachers, teachers may not recognize their value, particularly if the support workers are only intermittently available. A subtle distinction is whether support workers are viewed as providing primarily services to Aboriginal students, or providing services to the entire school community in terms of cross-cultural awareness and generation of respect.

More successful districts speak of relationship-building between Aboriginal and non-Aboriginal communities. This exercise aims to overcome the effects of racism and the mistrust of public schooling that exists among some First Nations community members. It is a misconception to consider such exercises as directed solely at Aboriginal students. They are equally important in creating for non-Aboriginal students and teachers an understanding of Canadian Aboriginal heritage and in creating a culturally sensitive school environment.

#### *Influence of Aboriginal communities*

Some districts benefit from good working relationships with Aboriginal stakeholders who are themselves committed to improving educational outcomes for Aboriginal children. In other districts, these working relationships are more tenuous, either because of cultural differences among the First Nations present, or because of unwillingness and rigidity on the part of non-Aboriginal district personnel. Interviewees also spoke of difficulties specific to urban areas, including problems of families living in low-income neighbourhoods and in these

neighbourhoods the high mobility of Aboriginal families. Although these challenges exist in all provincial cities, they are most acute in inner-city schools of major urban centres.

All persons interviewed spoke of the importance of trust building and the forging of consensus among the local Aboriginal leadership. Two major issues appear to be at play. First, in some districts the legacy of Aboriginal exclusion from decision-making in the public school system is much more acute than in others. Second, it is an advantage for a school district if high profile Aboriginal leaders have championed the importance of education and have advocated change.

#### *Shared Decision-Making*

Arguably, the most crucial element of decision-making is the connection between district personnel and Aboriginal communities, particularly those Aboriginals in leadership roles. In some districts there is a relatively long history of shared decision-making and the promotion of ownership over funding and program decisions among local Aboriginal communities. In others, decision-making is fractured and still marked by mistrust.

In those districts with effective decision-making structures, not only are Aboriginal communities involved in program decisions but they may also be responsible for oversight of funding allocations. The extent of shared control over the “purse strings” is symbolic of the overall degree of collaboration between district officials and local Aboriginal communities. In districts characterized by high levels of shared decision-making two effects are visible: first, the creation of influential positions dedicated to Aboriginal education and second, the willingness of school district authorities to shift ownership of decision-making to Aboriginal communities. Successful collaboration is also enhanced in those districts where local Aboriginal leaders place high importance on core educational outcomes in the basics of reading, writing and arithmetic.

#### *Buy-in from all Parties, particularly Teachers*

Interviewees also spoke of the particular role played by teachers in either aiding or hindering the implementation and development of collaborative relationships. Some district personnel pointed to the actions of local teachers’ unions in obstructing Aboriginal community members from classroom instruction. More broadly, some teachers appear reluctant to modify teaching practices.

This is not to suggest that teachers hold primary responsibility for improving the outcomes of Aboriginal students in provincial schools. Indeed, at the district level, superintendents, board members, union leaders and principals all play crucial roles in formulating and implementing programs, and in creating the will to improve instruction for Aboriginal students. It is important to recognize, however, that the improvement of educational outcomes and attainment among Aboriginal students is simply unattainable without buy-in from teachers.

#### *Attention to Data and Innovative Programming*

The potential to change the learning environment in a district for the better is enhanced when the factors discussed above – influence, shared decision-making and teacher buy-in – converge in the creation of programs. Certain districts have undertaken to increase the

number of Aboriginal teachers employed in the district (a goal shared by nearly all those interviewed); other districts are involved with university research projects aimed at rethinking educational practices to better address the needs of Aboriginal learners. This type of innovative programming tends to emerge when district-level actors are endeavoring to fulfil specific objectives that they have identified in the district, rather than simply adhering to provincial guidelines.

Although all districts must collect certain data for provincial reporting purposes, some are more systematic in monitoring a broader spectrum of performance measures (such as attendance), and use this exercise to push for district-wide and school-based improvements. All districts cite FSA results and other district- or Ministry-generated achievement measures as ways of monitoring Enhancement Agreements and overall student progress. They all refer to closing the gap between Aboriginal and non-Aboriginal student performance. However, some districts are far more willing than others to evaluate programs using assessment data, and to create new ones aimed at improving along specific dimensions of student performance.

## **Conclusion**

Earlier, we introduced several recommendations arising from the statistical analysis: targeted early childhood education programs may lower the FSA gaps evident at early grades; school district policies that concentrate Aboriginal students in one or a few schools may yield disappointing outcomes; enabling Aboriginal families to choose a “good school” with high non-Aboriginal student performance may improve overall outcomes; and finally, there are lessons to learn from school districts displaying superior performance.

After allowing for socio-economic characteristics and in-school dynamics, some districts appear to play critical roles in creating impressive Aboriginal education outcomes; other districts are achieving much less impressive outcomes.

These district-level roles appear less precise than the policies often associated with education reform, such as school choice or accountability measures. This poses a challenge in attempting to generalize what successful districts are doing right. Nonetheless, assessing district-level strategies is almost certainly worth greater policymaking attention. We conclude with the following four themes.

### *Creating the will to change*

Leadership matters. Among the more successful districts, administrators take Aboriginal education success seriously. Ideally, the district superintendent is ready to spearhead change; the district appoints a relatively high-ranking coordinator of Aboriginal programming, and thirdly, teachers and school-level administrators share the desire to change.

### *Involving community stakeholders*

Improvements to student performance are more likely if Aboriginal stakeholders are incorporated into decision-making structures. Although all of the district-level personnel



interviewed emphasized the importance of involvement by Aboriginal community-members, the higher-performing districts were more visibly successful at realizing it. In addition to engagement of Aboriginal representatives, there are gains from greater participation of the broader community, especially parents and relatives, in the school system.

*Formulating and implementing new options*

The formulation of program options is where “the rubber hits the road” in aligning the parties involved – district staff, teachers, principals, families, Aboriginal leaders, and the wider community. The ability to implement new programs, once adopted, is also crucial.

*Setting targets for improvement*

A feature of successful districts is their use of performance measures: to celebrate the achievements attained, and to exert continued pressure for further improvement. Lower-performing districts are less likely to make data public, presumably for fear that they will be used as a means of shaming specific schools and the district as a whole. Yet, recall the adage that policymakers pursue goals that are measured. The formulation of clear pictures of student performance is invaluable in setting measurable goals, and in strengthening ownership over their realization.

In sum, successful districts take the goal of Aboriginal education success seriously, involve community stakeholders, formulate and implement options, and set measurable targets for improvement.

This investigation strongly suggests that the school district represents an important foundation on which to base improvements. District-level strategies are not the only piece in the puzzle surrounding Aboriginal student outcomes. They are, however, an important piece of the puzzle, and an area where greater policymaking attention should be devoted.

## References and Data Sources

- Anderson, S. 2006. "The School District's Role in Educational Change." International Journal of Educational Reform, Vol. 15, No. 1, pp.13-37.
- British Columbia. 2003. Policy Document: K-12 Funding – Aboriginal Education. Victoria: Ministry of Education. Available at [http://www.bced.gov.bc.ca/policy/policies/funding\\_abed.htm](http://www.bced.gov.bc.ca/policy/policies/funding_abed.htm)
- British Columbia. 2006a. Foundation Skills Assessment data, 1999/00 – 2003/04, prepared by Ministry of Education.
- British Columbia. 2006b. Aboriginal Report, 2005/06: How are We Doing? Victoria: Ministry of Education. Available at <http://www.bced.gov.bc.ca/abed/performance.htm>
- British Columbia. 2007. "Foundation Skills Assessment (FSA)." Available at <http://www.bced.gov.bc.ca/assessment/fsa/>
- Canada. 2001a. 2001 Census Dictionary. Ottawa: Statistics Canada. Available at <http://www12.statcan.ca/english/census01/Products/Reference/dict/index.htm#dictionary>
- Canada. 2001b. Illustrated Glossary. Ottawa: Statistics Canada. Available at: [http://geodepot.statcan.ca/Diss/Reference/COGG/Index\\_e.cfm](http://geodepot.statcan.ca/Diss/Reference/COGG/Index_e.cfm)
- Canada. 2001c. Reference Maps. Ottawa: Statistics Canada. Available at: [http://geodepot.statcan.ca/Diss/Maps/ReferenceMaps/index\\_e.cfm](http://geodepot.statcan.ca/Diss/Maps/ReferenceMaps/index_e.cfm)
- Canada. 2007. Custom tabulation of 2001 Census data, prepared by Statistics Canada.
- Canada. 2008a. "Aboriginal Identity (8), Highest Certificate, Diploma or Degree (14), Major Field of Study - Classification of Instructional Programs, 2000 (14), Area of Residence (6), Age Groups (10A) and Sex (3) for the Population 15 Years and Over of Canada, Provinces and Territories, 2006 Census - 20% Sample Data." 97-560-XWE2006028. Ottawa: Statistics Canada. Available at <http://www.statcan.ca:80/bsolc/english/bsolc?catno=97-560-X2006028>
- Canada. 2008b. "Aboriginal Peoples in Canada in 2006: Inuit, Metis and First Nations, 2006 Census: First Nations People." Ottawa: Statistics Canada. Available at <http://www12.statcan.ca/english/census06/analysis/aboriginal/fewer.cfm>
- Canada. 2008c. "Aboriginal Identity (8), Area of Residence (6), Age Groups (12) and Sex (3) for the Population of Canada, Provinces and Territories, 2006 Census - 20% Sample Data." Aboriginal Peoples, 2006 Census. 97-558-XWE2006006. Ottawa: Statistics Canada. Available at <http://www.statcan.ca/bsolc/english/bsolc?catno=97-558-X2006006>

- Cooley, J. unpublished. "Desegregation and the Achievement Gap: Do Diverse Peers Help?" Available at <http://www.ssc.wisc.edu/~jcooley>
- Friesen, Jane and Brian Krauth. 2007. "An empirical exploration of aboriginal student test scores in British Columbia." Working paper.
- Hanushek, Eric. 2002. Publicly Provided Education. NBER Working Paper 8799. Cambridge, MA: National Bureau of Economic Research.
- Maguire, P. 2003. District Practices and Student Achievement: Lessons from Alberta. Kelowna, BC: Society for the Advancement of Excellence in Education. Available at: <http://www.sae.ca>
- Mendelson, Michael. 2006. Aboriginal Peoples and Postsecondary Education in Canada. Ottawa: Caledon Institute of Social Policy. Available at <http://www.caledoninst.org>
- Richards, John. 2006. Aboriginal Choices: Rethinking Aboriginal Policy. Toronto: C.D. Howe Institute. Available at <http://www.cdhowe.org>
- Sharpe, Andrew, Jean-Francois Arsenault and Simon Lapointe. 2007. The Potential Contribution of Aboriginal Canadians to Labour Force, Employment, Productivity and Output Growth in Canada, 2001-2017. Available at <http://www.csls.ca>
- Togneri, W. and S. Anderson. 2003. Beyond Islands of Excellence: What Districts Can Do to Improve Instruction and Achievement in All Schools – A Leadership Brief. Baltimore: Association for Supervision and Curriculum Development.

## **Glossary**

Catchment area. The catchment area for a school located in a large urban centre is defined as the census tract in which the school is located plus adjacent census tracts from which the school is assumed to draw students. The catchment area for a school in a medium or small urban area is defined as the individual school's census subdivision and adjacent census subdivisions.

Census Subdivision and Census Tract. A Census subdivision is a municipality or other area considered to be equivalent to a municipality for statistical reporting purposes (for example, a reserve or an unorganized territory). Census tracts are small areas in cities (of 50,000 or more) that are relatively stable and usually have a population of 2,500 to 8,000.

Economic and Census Family. The economic family concept requires only that family members be related by blood, marriage, common-law or adoption. On the other hand, the census family concept requires that one member be a male or female spouse, a male or female common-law partner, a male or female lone parent, or a child with a parent present. Note that all members of census families are members of economic families.

Economic Reference Person. One person in each economic family is designated as the reference person. The male spouse or partner is designated as the reference person in couple families. In lone parent families, the male or female lone parent is the reference person. In same-sex couple families where one of the partners is the reference person, the first person in the couple listed on the questionnaire is the reference person. In all other economic families, either a male or female non-census family person is designated as the reference person.

Foundation Skills Assessment (FSA). The provincial education ministry describes the assessment program as follows: “an annual province-wide assessment of British Columbia students' academic skills; [it] provides a snapshot of how well BC students are learning foundation skills in Reading Comprehension, Writing, and Numeracy” (British Columbia 2007). Originally, the education ministry administered FSA tests in grades four, seven, and ten; now, in grades four and seven.

Meet-exceed ratio (MER). Published FSA results classify student performance in terms of three broad grades: exceeds expectations, meeting expectations, and not meeting expectations. The most frequently used statistic to summarize outcomes in any population is the meet/exceed ratio, defined as the proportion of test scores that either meets or exceeds expectations. For this study, FSA results have been aggregated across the three subjects and relevant grades within particular schools. Hence, the MER ratios reported refer to results at the level of schools, or larger populations comprising several schools. The school-level FSA scores can be disaggregated by several characteristics of students within the school: gender, grade, subject, and racial identity (Aboriginal or non-Aboriginal).

Socio-economic gradients. They provide a summary measure of the ability of a jurisdiction's

school system to overcome socio-economic disadvantages and generate decent education outcomes among all students. More specifically, gradients measure student education performance in a jurisdiction as a function of the socio-economic status of students' families. In our case, data are aggregated to the level of average school performance and average socio-economic conditions in the estimated school catchment populations. In any comparative analysis of student performance, the shallower is the slope of the gradient the better the school system's ability to overcome socio-economic disadvantage; the higher the gradient curve the more effective is the system in teaching children at the measured stage in their careers.

Socio-economic status index. For this initial study, we summarized socio-economic conditions in school catchment populations via a simple index constructed from an equal weighting of two sub-indices defined over the 732 (= 2 x 366) catchment populations. Each sub-index and the socio-economic index are standard normal (zero mean and unit standard deviation):

- Education sub-index: This index is derived from the share of families in the catchment population whose most educated member has trades certificate or higher education level.
- Income sub-index: This index is derived from the median family income of each catchment area population.

## Appendix 1

### Data Sources and Preparation

The BC Ministry of Education provided school-level Foundation Skills Assessment (FSA) scores for over 1000 schools for each of the five school years between 1999/00 and 2003/04. For this study, we extracted all schools with a minimum of 30 Aboriginal scores. This reduced the population of relevant schools to 609. Within each of these schools, the FSA results have been aggregated over all five years, over all test subjects, and over all relevant grades. The school-level scores are disaggregated, for some purposes, by gender and racial identity (Aboriginal or non-Aboriginal).

Estimated school catchment areas have been constructed by matching the street address and postal code of each school with Statistics Canada Postal Code Conversion File to identify the relevant census tract or census subdivision. This information is used to determine adjacent codes with the help of Statistics Canada's Census Geography Reference Maps. Adjacent codes are census tracts or subdivisions located geographically close to the census tract or subdivision in question. Each school has a defined catchment area comprising one to six codes. Secondary schools have larger catchment areas than do elementary schools. In general, catchment areas are more easily defined in large urban areas with census tracts. The construction of catchment area estimates is less precise in small towns and rural areas in which Census subdivisions cover larger geographic areas. A total of 134 schools have been eliminated as they are located where catchment areas could not be constructed.

For the remaining 475 schools, Statistics Canada prepared a custom tabulation using the 20 percent sample database of the 2001 Census. The tabulated data pertain to economic families residing in the estimated catchment areas with children between the ages of 8 and 17. For these families, Statistics Canada provided the following socio-economic information, disaggregated by catchment area and by racial identity (Aboriginal or non-Aboriginal):

- *Education level.* The highest level of education of the most educated family member. The hierarchy of education levels are as follows: without high school certificate, high school certificate, some post-secondary education, trades certificates, college certificate, and university degree.
- *Median family income.* Total income includes all sources: employment income, income from government transfers, pension income, investment income and any other money income.
- *Mobility.* The number of families where a child moved within a Census subdivision or from another subdivision in the year prior to the Census.
- *Family structure.* The number of lone-parent, couple, and other families.
- *After-tax low-income cut-off (LICO) rate:* The LICO statistic provides a measure of the severity of poverty in a catchment area.
- *Employment:* total number of families with at least one employed economic family member.

Some catchment area populations are small and the tabulation generated unreliable income and education data. Due to such problems, we eliminated 109 schools. This reduced the final sample size on which the analysis is based to 366 schools.

## Appendix 2

### Alternate Regressions to Explain Aboriginal Foundation Skills Assessment Scores across 366 British Columbia Schools a.

	(1)	(2)	(3)	(4)	(5)	(6)
abcount			-4.06E-03 (-5.33)	-5.00E-03 (-6.25)	-3.65E-03 (-4.73)	-3.79E-03 (-4.77)
abcount_2			4.49E-06 (3.24)	5.64E-06 (3.67)	3.86E-06 (2.76)	3.96E-06 (2.74)
abed	6.54E-03 (3.13)				5.24E-03 (3.19)	
abemp b.	1.02E-03 (0.50)					
abincome	7.25E-06 (3.28)					5.44E-06 (3.14)
nabmer c.		3.74E-02 (3.87)	2.82E-02 (2.89)		2.49E-02 (2.53)	1.73E-02 (1.62)
adjusted R <sup>2</sup>	.09	.31	.38	.17	.38	.33

	(7)	(8)	(9)	(10)	(11)	(12)
abcount	-4.14E-03 (-5.22)	-3.50E-03 (-4.38)	-3.80E-03 (-4.79)	-3.91E-03 (-4.83)	-3.49E-03 (-4.40)	-2.64E-03 (-3.84)
abcount_2	4.53E-06 (3.14)	3.53E-06 (2.44)	4.03E-06 (2.80)	4.11E-06 (2.79)	3.53E-06 (2.45)	2.58E-06 (2.06)
abed		4.35E-03 (2.51)	4.03E-03 (2.21)			
abemp	4.34E-03 (3.00)		3.03E-03 (1.97)	2.62E-03 (1.55)		
abincome		4.47E-06 (2.53)		4.02E-06 (1.98)		
abses					1.25E-01 (4.56)	9.72E-02 (4.04)
nabmer c.	1.65E-02 (1.59)	1.65E-02 (1.55)	1.75E-02 (1.71)	1.30E-02 (1.21)	1.76E-02 (1.68)	3.48E-02 (3.96)
district34						2.84E-01 (2.36)
district41						-4.84E-01 (-2.11)
district44						-7.29E-01 (-2.62)
district47						-5.07E-01 (-2.23)
district48						-6.19E-01 (-2.62)
district63						-1.21E01 (-5.18)
district67						4.24E-01 (2.39)
district79						-5.50E-01 (-3.90)
district82						-3.08E-01 (-2.36)
district85						-5.06E-01 (-2.56)
adjusted R <sup>2</sup>	.33	.34	.34	.31	.35	.53

## Notes

- a. In all cases, the estimation is for a logistic curve. The dependent variable is the log of the odds ratio of the Aboriginal MER in the respective school.
- b. Correlation between the employment rate and median family income variables is above 0.5. Which explains that the employment rate has negligible significance in regression (1).



- c. The variable nabmer (non-Aboriginal meet/exceed ratio) is instrumented on nabses (non-Aboriginal socio-economic index).

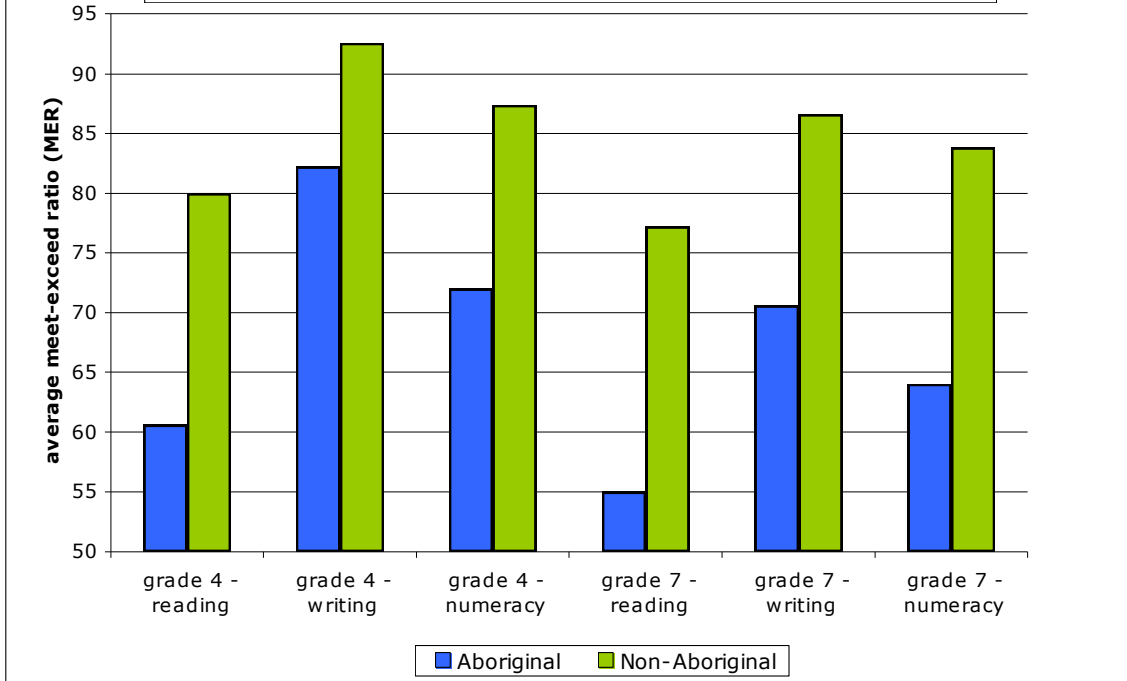
---

**Variable legend**

---

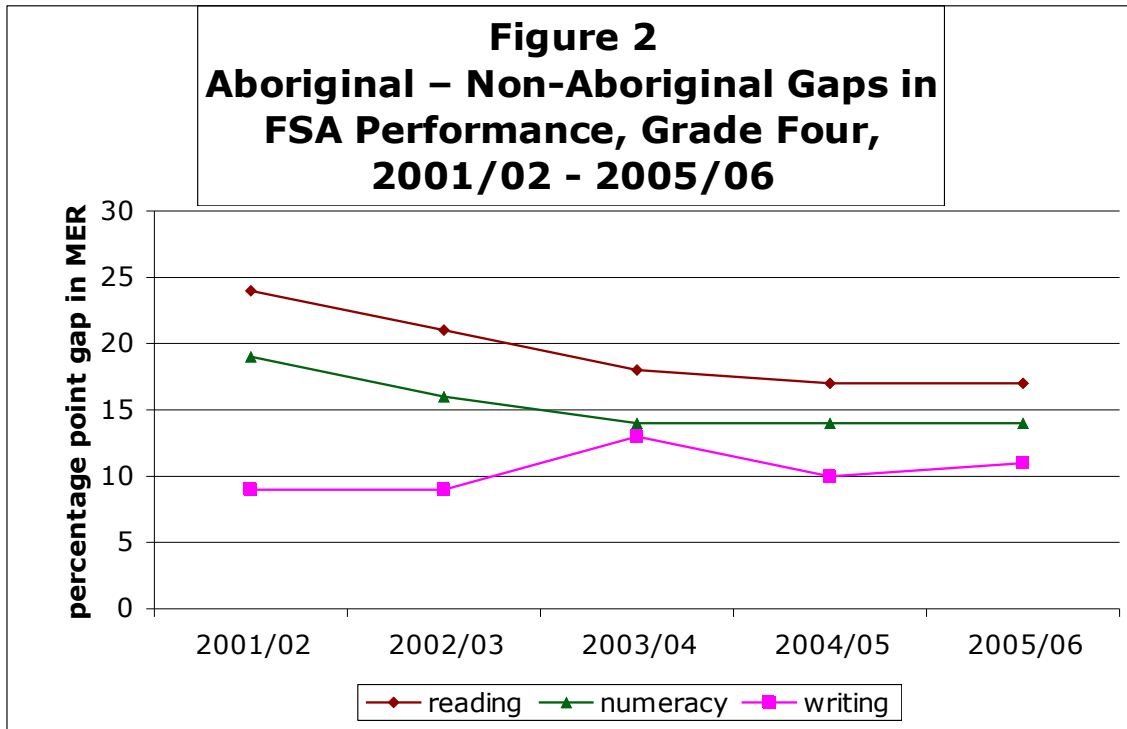
abcount	number of Aboriginal test scores
abcount_2	square of abcount
abed	percent Aboriginal families with trades and above as highest education level
abemp	Aboriginal employment rate
abincome	median Aboriginal family income
abmer	Aboriginal meet/exceed ratio (MER)
abses	Aboriginal SES index
dist34	Abbotsford school district
dist41	Burnaby school district
dist44	North Vancouver school district
dist47	Powell River school district
dist48	Howe Sound school district
dist63	Saanich school district
dist67	Okanagan Skaha school district
dist79	Cowichan Valley school district
dist82	Coast Mountains school district
dist85	Vancouver Island North school district
nabmer	non-Aboriginal meet/exceed ratio (MER)
nabses	non-Aboriginal SES index

**Figure 1**  
**Average FSA Performance, Aboriginal and Non-Aboriginal Students, by Subject and Grade, 2001/02 - 2005/06**

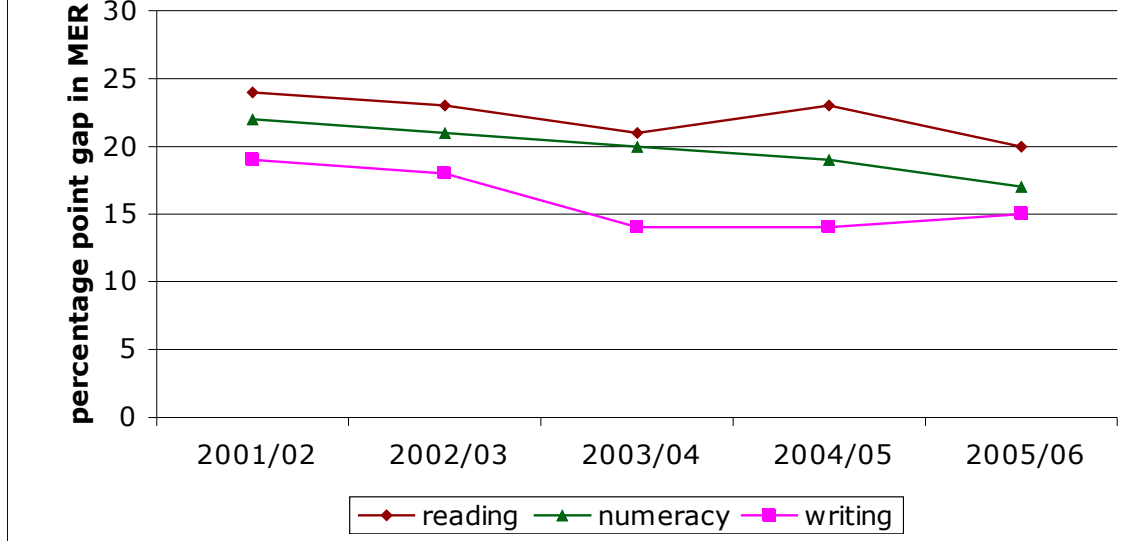


Source: authors' calculations from British Columbia (2006b)

Source: authors' calculations from British Columbia (2006b)

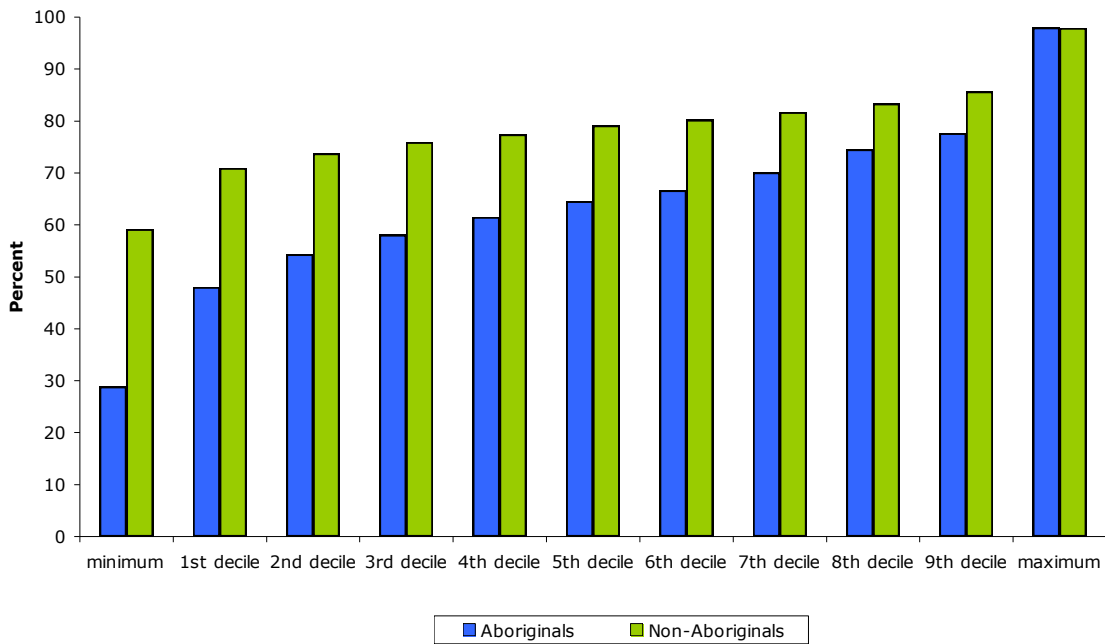


**Figure 3**  
**Aboriginal – Non-Aboriginal Gaps in FSA**  
**Performance, Grade Seven,**  
**2001/02 - 2005/06**



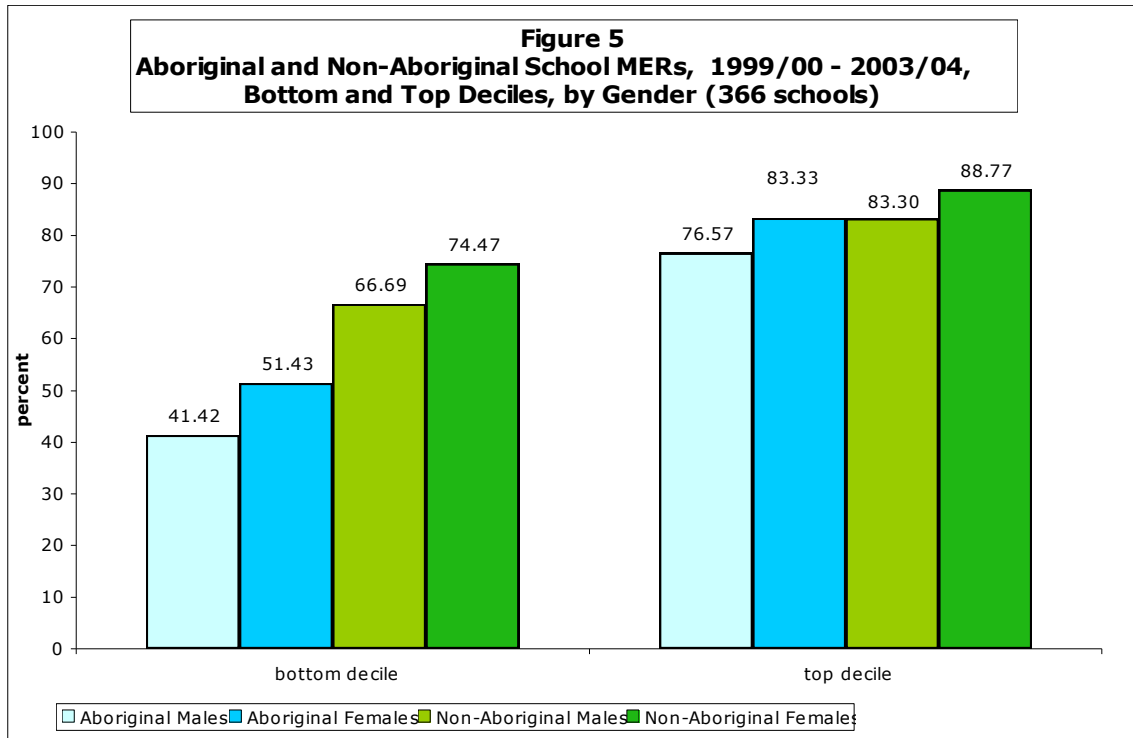
Source: authors' calculations from British Columbia (2006b)

**Figure 4**  
**Aboriginal and non-Aboriginal School MER Scores, by Deciles and Maxima-Minima, 1999/00 - 2003/04 (366 schools)**

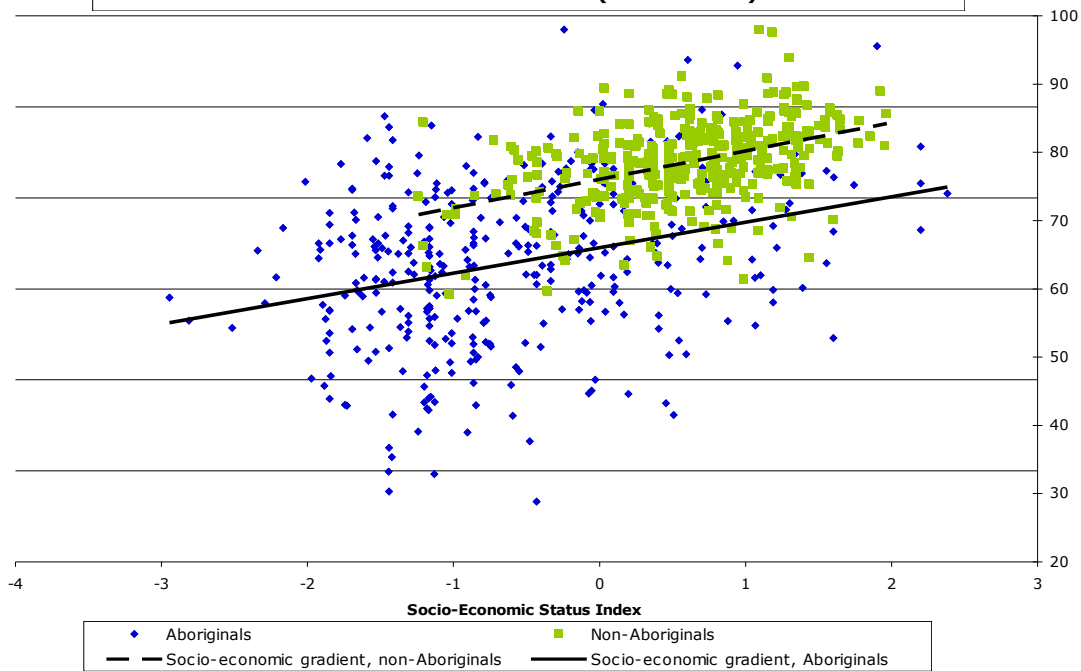


Source: authors' calculations from FSA data supplied by BC Education Ministry

Figure 5



**Figure 6**  
**Aboriginal and Non-Aboriginal School Meet-Exceed Ratios (MERs), by Socio-Economic Status Index (366 schools)**

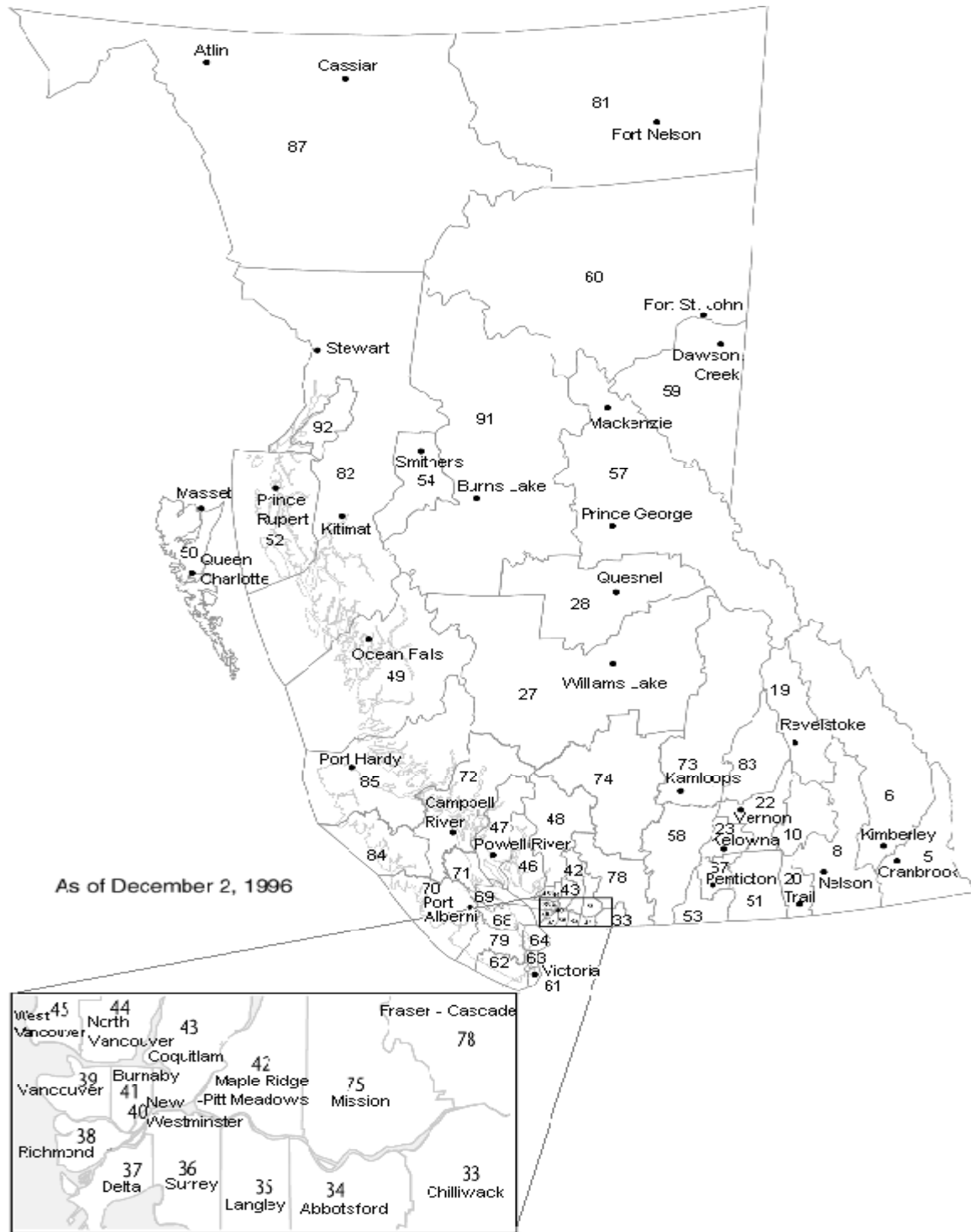


Source: authors' calculations from data prepared by Statistics Canada (2007) and British Columbia (2006a)

**Note:** The gradients are OLS regressions of MER scores on the relevant socio-economic status index values. (See variable legend at Appendix 2.)

	Aboriginal	Non-Aboriginal
constant	66.02 (64.67)	76.03 (190.93)
abses	3.73 (6.13)	
nabses		4.16 (8.94)
adjusted R <sup>2</sup>	.09	.18

**Figure 7**  
**British Columbia School Districts**





**Table 1**  
**Decomposition of Aboriginal – non-Aboriginal MER Gap**

Reduction of MER gap arising from a. ...	(% of gap)
Elimination of gap in average SES index values b.	17.7
Elimination of negative peer effect c.	47.5
Elimination of negative district fixed effect among eight weak school districts d.	8.2
Replication of positive district fixed effect in district 67 among all districts e.	66.6

**Notes:**

- a. The gap between the observed average non-Aboriginal and Aboriginal MER is 14.7 percentage points (= 78.5 – 63.8). The calculations use the forecast Aboriginal MER at average regressor values as benchmark. Each line gives the result from changing the indicated regressors, expressed as a percentage of the Aboriginal – non-Aboriginal gap.
- b. The Aboriginal SES index rises from its actual average of –0.6 to 0.6, the average among non-Aboriginal catchment populations.
- c. The Aboriginal test count variable falls from its actual average of 141 to a value of 0. Equivalently, the coefficients on the Aboriginal count variables fall to zero.
- d. Eight school districts record Aboriginal MER scores that are below forecast values by a statistically significant amount. Among these districts, this negative district effect is eliminated. (Under this and the following scenario, the district schools remain subject to the other variables affecting forecast Aboriginal MER performance.)
- e. District 67 recorded the largest positive school district effect. This scenario envisions all districts achieving a comparable positive effect.

**Table 2**  
**School Districts, Ranked by Share of Schools with Aboriginal MER above Forecast a.**

District Number and Name	A Aboriginal MER (percent)	B Non- Aboriginal MER (percent)	C District MER gap (A-B)	D schools above forecast	E schools below forecast	F % above forecast MER (D/(D+E))
034 <b>Abbotsford b.</b>	72.5	79.2	6.7	9	2	81.8
067 <b>Okanagan Skaha b.</b>	75.1	80.2	5.1	4	1	80.0
078 Fraser-Cascade	68.6	83.9	15.3	4	1	80.0
071 Comox Valley	68.2	78.9	10.7	7	3	70.0
073 Kamloops/Thompson	67.5	81.3	13.7	11	5	68.8
008 Kootenay Lake	75.4	83.3	7.8	2	1	66.7
043 Coquitlam	70.8	80.0	9.2	7	4	63.6
022 Vernon	63.5	77.2	13.6	5	3	62.5
023 Central Okanagan	66.3	79.3	13.0	8	5	61.5
052 Prince Rupert	59.8	81.5	21.6	6	4	60.0
069 Qualicum	71.8	79.9	8.1	3	2	60.0
059 Peace River South	57.6	76.1	18.5	4	3	57.1
042 Maple Ridge-Pitt Meadows	71.0	80.0	9.0	7	6	53.8
033 Chilliwack	60.1	77.7	17.6	8	7	53.3
005 Southeast Kootenay	58.7	77.7	19.0	3	3	50.0
028 Quesnel	63.9	75.1	11.2	6	6	50.0
037 Delta	68.3	86.3	18.0	1	1	50.0
039 Vancouver	58.4	78.4	20.0	5	5	50.0
040 New Westminster	70.3	80.2	10.0	1	1	50.0
060 Peace River North	65.7	81.2	15.6	5	5	50.0
072 Campbell River	62.0	77.1	15.1	5	5	50.0
027 Cariboo-Chilcotin	60.1	80.4	20.3	5	6	45.5
057 Prince George	59.2	79.0	19.9	13	18	41.9
035 Langley	63.8	78.3	14.6	5	7	41.7
068 Nanaimo-Ladysmith	57.7	76.1	18.3	8	12	40.0
036 Surrey	61.4	73.1	11.6	9	15	37.5
041 <b>Burnaby c.</b>	59.2	77.8	18.6	1	2	33.3
083 North Okanagan- Shuswap	68.7	82.5	13.7	2	4	33.3
019 Revelstoke	70.6	75.9	5.3	1	2	33.3
020 Kootenay-Columbia	73.1	76.3	3.1	3	0	33.3
082 <b>Coast Mountains c.</b>	51.1	75.9	24.8	3	7	30.0
075 Mission	65.6	78.3	12.7	2	5	28.6
070 Alberni	55.3	77.7	22.5	2	6	25.0
062 Sooke	60.5	75.6	15.1	1	5	16.7
061 Greater Victoria	52.6	75.3	22.7	1	6	14.3
044 <b>North Vancouver c.</b>	49.3	80.9	31.6	0	2	0.0

047 <b>Powell River c.</b>	57.7	78.7	20.9	0	3	0.0
048 <b>Howe Sound c.</b>	52.1	72.3	20.2	0	3	0.0
054 Bulkley Valley	53.4	82.2	28.8	0	3	0.0
058 Nicola-Similkameen	57.0	76.1	19.1	0	5	0.0
063 <b>Saanich c.</b>	35.6	82.9	47.4	0	3	0.0
079 <b>Cowichan Valley c.</b>	44.5	75.5	30.9	0	8	0.0
085 <b>Vancouver Island North c.</b>	49.8	75.9	26.1	0	4	0.0

**Notes:**

- a. Forecast values based on regression (12) specification of socio-economic conditions and in-school dynamics and coefficients, ignoring fixed effects estimated for ten districts.
- b. School districts whose school Aboriginal MER scores are significantly above forecast values.
- c. School districts whose school Aboriginal MER scores are significantly below forecast values.