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### Sorting, Peers and Achievement of Aboriginal Students in British Columbia

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# Sorting, peers and achievement of Aboriginal students in British Columbia<sup>1</sup>

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## Abstract

We use administrative data on students in grades 4 and 7 in British Columbia to examine the extent to which differences in school environment contribute to the achievement gap between Aboriginal and non-Aboriginal students as measured by standardized test scores. We find that segregation of Aboriginal and non-Aboriginal students is substantial, and that differences in the distribution of these two groups across schools account for roughly half the overall achievement gap on the Foundation Skills Assessment tests in grade 7. The substantial school-level segregation of Aboriginal and non-Aboriginal student across schools means that Aboriginal students on average have a higher proportion of peers who are themselves Aboriginal, as well as a higher proportion of peers in special education. We estimate the effect of peer composition on value-added exam outcomes, using longitudinal data on multiple cohorts of students together with school-by-grade fixed effects to account for endogenous selection into schools. We find that having a greater proportion of Aboriginal peers, if anything, improves the achievement of Aboriginal students.

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Keywords: Aboriginal education, peer effects

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## Executive Summary

We use administrative data on students in grades 4 and 7 in off-reserve schools in British Columbia (B.C.) to explore the factors that contribute to the achievement gap between Aboriginal and non-Aboriginal students. Our goal is to provide policy-relevant empirical evidence with respect to the factors that shape the academic achievement of Aboriginal children, with a specific focus on the organization of the off-reserve school system. Estimates based on data from the 2006 Census and the 2004 INAC Nominal Roll indicate that over 92% of Aboriginal students in British Columbia from that age group attend school off-reserve.

Our data follow three cohorts of students from their entry into grade 4 in 1999, 2000 and 2001 through their completion of grade 7. Over 9% of these students self-identify as Aboriginal. We find that the grade 7 achievement gap between Aboriginal and non-Aboriginal children is large in both reading and numeracy, reinforcing the perception that the educational needs of Aboriginal students warrant significant policy attention.

We find that although most of the test score gap observed in grade 7 is already established by grade 4, it continues to widen between grades 4 and 7. The incidence of assessed disabilities is two and half times higher among Aboriginal students compared to non-Aboriginal students, and those with disabilities on average have substantially weaker academic performance. However, regression results indicate that differences in disability rates explain a small proportion of the test score gap between Aboriginal and non-Aboriginal students. While important, services for disabled students will not, on their own, contribute substantially to closing the overall achievement gap.

The data show a high degree of segregation of Aboriginal and non-Aboriginal students across schools. We decompose the mean grade 7 test score gap into a between-school gap (the extent to which Aboriginal students attend schools in which both Aboriginal and non-Aboriginal students do poorly on the exams) and a within-school gap (the extent to which Aboriginal students do worse on the exam than non-Aboriginal students in the same school). Our results show that differences in the distribution of these two groups across schools account for roughly half of the overall achievement gap.

These results raise the possibility that differences in the learning environments of schools attended by Aboriginal and non-Aboriginal students could be important. If so, policies that move Aboriginal students into better schools could be helpful. However, the decomposition results may simply reflect an enrolment pattern whereby low-achieving non-Aboriginal students are more likely to attend schools in which Aboriginal students are concentrated, with the quality of the school environment playing little or no role. In this case, redistributing students across schools would have little effect on achievement.

One dimension in which the schools attended by Aboriginal and non-Aboriginal students may differ is the characteristics of their fellow students. Our data show that the average Aboriginal student has a substantially higher proportion of Aboriginal peers and a somewhat higher proportion of peers with disabilities. This peer environment may create a number of challenges: students may learn less when in contact with low-achieving peers; parents with limited resources of time, money, or skills may be unable to contribute to their child's school; and students with behavioral disorders or learning disabilities may take instruction

time or energy away from classmates. On the other hand, classes that are more homogeneous may allow teachers to provide more specialized services and may contribute to a more comfortable and supportive school community.

Recent research by Richards et al. (2008) finds that Aboriginal education outcomes are poorer when a schools' concentration of Aboriginal students is higher. The limitations imposed by their cross-sectional school-level data constrained these researchers to base their estimates of peer effects on comparisons between the average achievement of students in schools that have different proportions of Aboriginal students, at a single point in time. Unfortunately, this method will attribute all of the correlation between peer composition and achievement across schools to the effect of peers, whereas, in reality, there are likely to be many other factors driving the correlation. Where there are larger proportions of Aboriginal students, there may also be greater intensity of socio-economic and family characteristics known to be associated with lower achievement. Moreover, schools with larger proportions of Aboriginal students might also happen to be schools that are generally less effective.

To identify a true peer effect, we need a source of variation in peer composition that is not itself directly correlated with student achievement. Our analysis examines the variation in test score gains in response to (arguably random) variation from year to year in the Aboriginal share of students *within the same school*. We find that almost none of the test score gap can be explained by differences in peer group composition. If anything, Aboriginal students perform better when they attend school with a greater proportion of peers who are themselves Aboriginal, and experience limited if any disadvantage from attending school with a greater proportion of peers with disabilities. This result should be interpreted with the caveat that it is based on fairly small changes in peer composition. Policies that result in greater variation, such as creating exclusively Aboriginal schools, may have different effects if outcomes change when concentrations of Aboriginal students reach a 'critical mass'.

To summarize the lessons learned from this research: (1) Policy attention should be focused on Aboriginal students in the primary grades and earlier and should continue into the intermediate grades. (2) While support for students with disabilities is particularly important for the Aboriginal population, the achievement gap will not shrink perceptibly unless the achievement of non-disabled Aboriginal students improves. (3) A narrow focus on marginal changes to the distribution of Aboriginal students across schools *per se* will probably not lead to significant academic improvements.

Another lesson is more general. With a rich supply of longitudinal data on individual outcomes, researchers can deliver credible evaluations of policies and programs. Without such data, they must resort to less precise, and potentially misleading, methods, however conscientious their efforts. Detailed test score data is sometimes controversial; however, its singular value for policy research should not be underestimated.

John Richards, Jennifer Hove, and Kemi Afolabi, 2008. *Understanding the Aboriginal/Non-Aboriginal Gap in Student Performance: Lessons from British Columbia*. Toronto: C.D. Howe Institute.