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Institute of Education Sciences

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Summary

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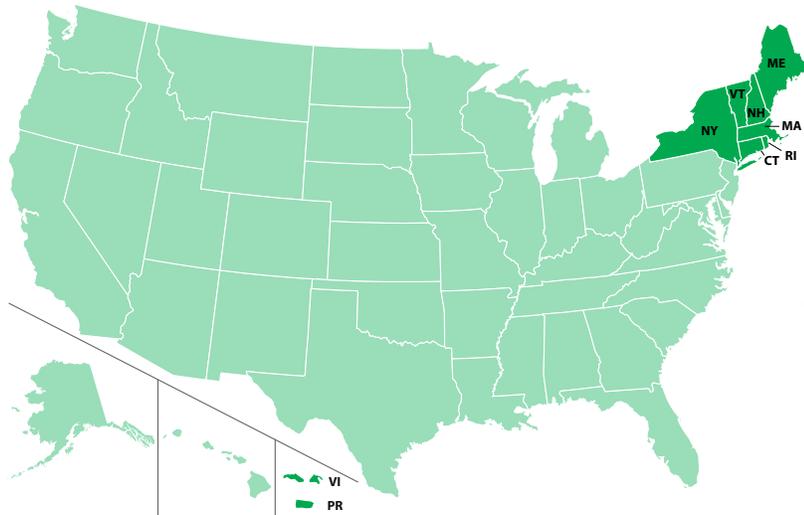
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Analyzing performance by grade 10 Hispanic high school students on the Massachusetts state assessment

The report examines Hispanic high school students' performance on the Massachusetts Comprehensive Assessment System tests in English language arts and mathematics over 2002/03–2005/06. It compares the scores of grade 10 Hispanic and non-Hispanic students and uses multilevel regressions to examine associations between the Hispanic students' scores and student- and school-level characteristics.

Massachusetts policymakers have been concerned about the consistently lower scores of Hispanic students compared with students in other subgroups on the state assessment—the Massachusetts Comprehensive Assessment System (MCAS) tests. To better understand Hispanic student characteristics and achievement patterns, the Massachusetts Department of Elementary and Secondary Education asked the Regional Educational Laboratory Northeast and Islands to analyze the performance of Hispanic students on the MCAS tests in English language arts and mathematics in high school.

Two research questions drove this study:

- How did the performance of grade 10 Hispanic students on the MCAS English language arts and mathematics tests over

2002/03–2005/06 compare with that of grade 10 non-Hispanic students?

- Among grade 10 Hispanic students, which student- and school-level characteristics were associated with performance on the MCAS English language arts and mathematics tests over 2002/03–2005/06?

Descriptive analyses and *t*-tests were conducted to examine MCAS test performance for grade 10 Hispanic and non-Hispanic students in Massachusetts. Multilevel regression modeling was then used to analyze associations between Hispanic student MCAS achievement and student- and school-level characteristics. A different cohort of grade 10 Hispanic students was assessed for each school year.

For the multilevel regressions the Office of Strategic Planning, Research, and Evaluation of the Massachusetts Department of Elementary and Secondary Education provided student-level MCAS test performance data and background data for all grade 10 Hispanic students in Massachusetts over 2002/03–2005/06. Publicly available school-level performance and background data on all high schools in Massachusetts for the same period were accessed through the Massachusetts Department of Elementary and Secondary Education web site (profiles.doe.mass.edu) and the Common

Core of Data of the U.S. Department of Education, National Center for Education Statistics (2006).

In each school year from 2002/03 through 2005/06 grade 10 Hispanic students scored significantly lower on the MCAS English language arts and mathematics tests than did grade 10 non-Hispanic students. However, the average scores for grade 10 Hispanic students in Massachusetts did increase over time by a statistically significant amount in both content areas—a trend that has helped narrow this performance gap.

The data for grade 10 Hispanic students were analyzed using multilevel regressions to determine which student- and school-level variables showed a statistically significant relationship with student performance on the MCAS test over 2002/03–2005/06. For each school year statistically significant associations were found between several student-level variables and MCAS test scores:

- Female Hispanic students scored significantly higher on the English language arts test than did male Hispanic students. Male Hispanic students scored significantly higher on the mathematics test than did female Hispanic students.
- Hispanic students who were from low-income households, in special education, or limited English proficient or formerly limited English proficient—categorized as English proficient in the previous two years—scored significantly lower on both the English language arts and mathematics tests than did students without those characteristics. (These associations mirror

those typically reported in research on academic achievement for all racial/ethnic groups.)

- Hispanic students from Caribbean countries, Central American countries, and Mexico scored significantly lower on the English language arts test than did U.S.-born Hispanic students. Hispanic students from South American countries other than Brazil scored significantly higher on the mathematics test than did U.S.-born Hispanic students.

For each year from 2002/03 through 2005/06 a statistically significant association was found between MCAS test performance and only one school-level variable:

- Hispanic students in schools with higher attendance rates scored significantly higher on both the English language arts and mathematics tests than did Hispanic students in schools with lower attendance rates, all other variables held constant.

The study has several limitations, four of them especially important. The multilevel regressions describe statistical associations rather than causal relationships between student- and school-level characteristics and Hispanic students' MCAS test scores. The large share of data excluded from the analyses—most of it missing data—might have biased the findings, since excluded students appear to have lower achievement than included students. Many variables that could help to explain differences in academic achievement patterns for Hispanic students were not analyzed. And the analyses do not account for possible associations between

Hispanic students' test scores from 2002/03 through 2005/06 and a change in federal testing policy in February 2004.

To better understand the academic achievement of Hispanic high school students, further research is suggested. Such research should examine additional statistical

relationships—both among various demographic and student- and school-level characteristics (some of which this study did not consider) and between certain characteristics and the MCAS test scores of Hispanic and non-Hispanic students.

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