



The purpose of this research brief is to address the question, compared to achievement, how much of the variability in school Median Growth Percentiles can be explained by school demographics. Additionally, what other factors can help explain the variability found in school MGPs?

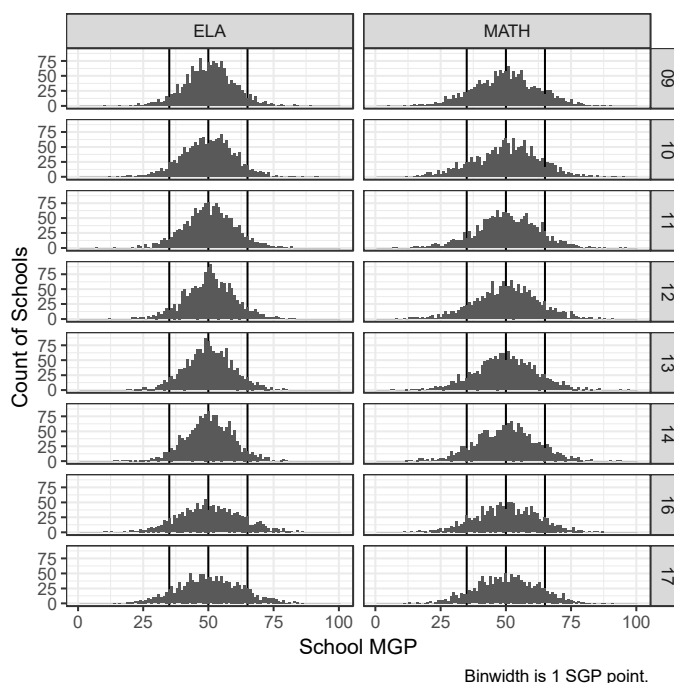
**Background**

The median growth percentile (MGP) can help educators and policymakers identify groups of students in subgroups, classes, grades, schools or districts, that are on average, making lower or higher growth. A question often asked of CDE by district-based stakeholders is to what extent observed differences in school level MGPs can be directly attributed to differences in the types of students attending these schools. This brief highlights findings from analysis examining this question about whether school demographics can explain the differential performance of schools on this indicator.

**Analysis & Findings**

Figure 1 below shows that the MGPs are approximately normally distributed across schools within each subject and year. The graph shows that the majority of schools had MGPs between 40 and 60 with a few schools located at the tails of the distribution. The graph also shows that there was a noticeable increase in the spread of English Language Arts (ELA) MGPs in 2016 and 2017 relative to earlier years; in 2016 and 2017 the distribution of ELA MGPs is more similar to the distribution of Math MGPs.

**Figure 1. Histograms of School-Level MGPs, by Subject and Year**



<sup>1</sup>: this technical brief was prepared by the Center for Assessment Design, Research and Evaluation at the University of Colorado-Boulder for the Colorado Department of Education. Additional related reports are available at: <http://www.cde.state.co.us/accountability/research>



To help answer the question of what can account for the variable performance of schools shown in the above graph, we ran two regression models to learn how well a small number of school demographic factors could explain the variability across schools. The first regression model looked at the extent to which the following demographic variables could explain the variability found in school-level MGP performance: percent of students classified as English language learners, percent of students eligible for free and reduced lunch, and percent of students whose race/ethnicity was identified as white. The second model extended the first model by adding each school's prior year average test scores. We applied these models to compare the extent to which these variables could explain variability in MGPs and current achievement across schools.

Overall, the models reinforced the finding that achievement data can be largely explained by demographic factors. School demographics alone can explain between 50-70% of the variability in average test scores, while school demographics plus prior year test scores can explain between 87 and 92 percent of the variation in average scale scores found across schools. In strong contrast to findings for achievement, the models indicated that demographics explain only 2 and 10 percent of the variability in MGPs, while demographics plus prior achievement can explain between 10-20 percent of the variability in school MGPs. More detailed results from the models can be obtained in Table 3 of the Summary Report.

If prior achievement and demographic variables do not appear to explain the differential performance found with MGPs across schools, what factors may be contributing to these differences? Without additional data or information, we can only speculate about what might be contributing to the different levels of growth across schools. The weaker correlation of MGPs with school demographics is consistent with the hypothesis that MGPs better represent in-school (rather than out of school) effects on student learning relative to average test scores, although these results cannot prove that hypothesis. Additional studies would be needed to better understand what school characteristics can explain differences in MGPs.

## Where can I learn more?

- For additional questions related to the Colorado Growth Model visit: <http://www.cde.state.co.us/accountability/coloradogrowth>.
- For questions about this fact sheet, contact Dan Jorgensen, PhD at: [Jorgensen\\_D@cde.state.co.us](mailto:Jorgensen_D@cde.state.co.us)