Comments on Auditor of State's "Student Success" Analysis

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It has been well understood by social scientists since the 1966 "Coleman Report" that students' characteristics and socioeconomic factors play a pivotal role in student achievement. Consequently, any analysis of the link between any one factor (such as expenditures per pupil) and student achievement absolutely has to control for socioeconomic differences across students, schools and school districts.

There is well-established academic literature for conducting analyses of student achievement. The standard approach is multivariate regression analysis which allows for all of the various factors that influence achievement to be considered. This then allows for insights regarding the role of any single variable – such as expenditures or class size.

However, it is not clear if the Auditor of State's analysis took this approach or not. The report says that they analyzed more than 600 school districts in Ohio (Ohio currently has 609 K-12 school districts) and found that, "*Generally, on a statewide level higher per pupil spending was correlated to lower PI scores.*" The report later references a more in-depth analysis of 79 high performing districts where it appears that some form of regression analysis was in fact undertaken. It is not clear, however, if such an approach was taken for the initial analysis of the entire 600+ school districts in Ohio.

The preferred approach for the Auditor of State would have been to conduct the multivariate regression analysis on all 600+ districts as that is the standard accepted approach for researching this topic. Furthermore, this analysis should have included as a variable some measure of the percentage of students in each district that are economically disadvantaged, as more than 50 years of research has shown that student socioeconomic status is a prime driver of achievement. Also, the concentration of students in poverty contributes to the resources necessary to address students' needs. The auditor's report does indicate that median income was used as a variable in the analysis of the 79 high performing districts; however, median income is a very different measure than is the percentage of low-income students. Furthermore, it is not clear what socioeconomic variable – if any -- was used in the analysis of all 600+ school districts in order to reach the reported conclusion that expenditures are negatively correlated with student performance.

There is one more issue regarding the methodology of this analysis that calls into question the validity of the findings. The report states that the auditor's analysis was limited to variables found on the Cupp Report (aka the "District Profile Report"). The Cupp Report is a widely known and easily accessible data set. However, this is not the best source of data for this analysis.

ODE has been computing a second expenditure measure known as the Expenditure Per Equivalent Pupil (EPEP) since fiscal year 2010 as part of the state's Education Fiscal Data Project. Furthermore, this measure has been included on the state and local report card for at least the past five years. The EPEP computation adjusts expenditures by taking into account the

additional costs of educating students with disabilities, students that are English language learners, and economically disadvantaged students. Each of these categories of students requires additional resources to address a myriad of issues that make learning more challenging than it is for more "typical" students. *The expenditure per equivalent pupil provides a measure that adjusts for differences in spending across districts caused by student characteristics, thus creating an expenditure measure which is more directly comparable from one district to another.*

By making this adjustment, the EPEP measure provides much more of an "apples to apples" comparison of school district expenditures than that found by comparing unadjusted expenditures per pupil. Furthermore, the EPEP measure would be a more accurate apples to apples comparison of district expenditures if the base poverty were set at 0.3 (the consensus value of research by economists on the average additional cost of educating low-income students) rather than the 0.1 employed by ODE.

Had the Auditor of State used the ODE Expenditure Per Equivalent Pupil measure instead of unadjusted expenditures per pupil, their analysis would have greater validity. It is also highly likely that their fundamental finding of a negative correlation between spending per pupil and student performance would not have been evident.

Additionally, had they modified the ODE EPEP measure by using a higher and more accurate base weight for economically disadvantage students, the auditor's Student Success analysis would have been even more compelling – and even more likely to show that when differences between students are taken into account, variations in district spending levels are positively rather than negatively corelated with student achievement.