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Predictors of Access to Advanced Learning: What Makes for a Successful School?

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ABSTRACT

A wide research base has documented the unequal access to and enrollment in K-12 gifted and talented services and other forms of advanced learning opportunities. This study extends that knowledge base by integrating multiple population-level datasets to better understand correlates of access to and enrollment in gifted and talented services, seventh-grade Algebra 1, and eighth-grade Geometry. Results show that states vary widely with some serving 20% of their students as gifted while others serve 0%. Similarly, within-district income segregation, income-related achievement gaps, and the percent of parents with a college degree are the dominant predictors of a school offering these opportunities and the size of the school population served.

Availability of Advanced Learning Opportunities

Advanced educational opportunities have been a fixture of the American educational system since the early 20th century. Within this larger category of services are K-12 gifted and talented (GT) programs, accelerated K-12 coursework where students take courses earlier or faster than is typical, dual-enrollment courses where students are enrolled in college courses while still in high school, and stand-alone, exam-based selective high schools. These services are not universally mandated across states in the same way as services for students with disabilities (special education) or those who are from low-income families (Title 1). Instead, states, districts, and even individual schools make choices on what they offer based on criteria that are not well understood.

Gifted and Talented Services

According to the 2018 – 2019 State of the States of Gifted Education Report (Rinn et al., 2020), 24 states mandate gifted programming or services and 11 leave the decision to individual school districts. Similarly, 38 states mandate the identification of gifted and talented students, although only eight of those states prescribe the specific identification process to be used. Just focusing on these two variables (mandated identification and mandated services), there is wide diversity in what happens across as well as within states. The end result is highly-variable availability of services depending in large part on where a student lives or the particular school he or she attends.

Programs for GT students have long been disproportionately dominated by students from White, Asian American, and upper-income families (Grissom et al., 2019; Yoon & Gentry, 2009). In a 2019 article based on the 2014 – 2015 U.S. Office of Civil Rights Data Collection, Peters et al. found that 42% of American schools identified zero students as gifted and talented, including schools in states with mandated identification policies. For example, despite relatively strong state mandates, Alabama, New Mexico, and Ohio reported 30%, 26%, and 28% of schools as having zero identified students. Gentry et al. (2019) further disaggregated these data and showed that 61% of Title I schools provided access to gifted services while only 56% of non-Title I schools did so. Students of color (Black and Latinx) were those most disadvantaged by a lack of access. Specifically, Peters et al. found that Black and Latinx students were represented in K-12 gifted programs at a rate of only 57% and 70%, respectively, compared to their representation in the larger K-12 population. Students who were still learning English or who were receiving special education services (IDEA) showed even lower representation rates (.27 and .21 respectively).

Gentry et al. (2019) noted that the population of students who have access to school-based GT programs, meaning such programs were at least offered at their school, does not mirror the larger student population. Assuming that identification rates would be similar in schools that do not provide access to those that do not, they calculated that anywhere from 63% to 74% of Black students and 53% to 66% of Latinx students are going unidentified, specifically because they attend schools that do not offer GT services. This finding highlights a lack of understanding as to why schools choose to offer GT services.

Absent strong, consistently-enforced policies, parents can use their cultural or socioeconomic capital in order to gain advantages (Walsh, 2008). These advantages can be deployed through deliberate choices by parents to prepare their children to do well in the selection process, or even directly intervening with teachers or administrators to influence their child's chances of getting into the program. This latter option can take the form of parents appealing negative placement decisions or soliciting outside private testing that is available only to families with financial capital. These parental behaviors are consistent with work that finds middle-class and well-off parents carefully planning and negotiating advantages for their children through direct contact with schools by marshalling resources to give their children experiences that help them in schooling (Murray et al, 2020; Calarco, 2018; Lareau, 2011). This direct intervention tactic is effective. Walsh (2008) found that parental lobbying was a successful mechanism to get a child into a GT program and that the result was an increase in the false negative rate as otherwise deserving students were “crowded out” from the program.

The lack of consistent access to advanced learning opportunities, even within states that mandate them, points to a lack of understanding what motivates a school or district to offer such services. Districts may be utilizing these programs as attractions for families who might otherwise leave the district. A 2019 article in the *New York Times* noted that if gifted programs in New York City were discontinued, wealthy White and Asian families might leave the district, resulting in an even-more segregated school system than it already is (Shapiro, 2019). Davis et al. (2010) showed strong quasi-experimental basis for such a concern. Among students who did not receive free or reduced-price lunch, those who scored above the cutoff for admission to gifted services were more likely to remain in the district in the following year than those who scored just below. This suggests that student need for the service is not the sole factor driving its availability.

Who is identified for a gifted service has been studied more than where GT or other advanced learning services are available. Grissom and Redding (2016) applied a conditional probability approach to understanding the state of disproportionality in gifted education via the Early Childhood Longitudinal Study (both the ECLS:K-1999 and ECLS:K-2011 cohorts). They found that by third grade, approximately 7% of White students and 14% of Asian American students were identified as gifted compared to only 2% of Black and 5% of Latinx students. However, what makes their study different from Peters et al. (2019) was that Grissom and Redding included a range of additional predictor variables in their multi-level regression. Specifically, after accounting for student-level achievement in mathematics and reading, the identification gap between White and Latinx students was statistically insignificant, as was the gap between Asian American and White students. However, even controlling for achievement, sex, socio-economic status (SES), health, and age at school entry did little to change the Black – White identification gap. Black students remained about half as likely to be identified as similar-achieving, similar-SES, White peers.

Although the Grissom and Redding (2016) study was exceptional in its use of a wide range of student-level covariates, the ECLS-K dataset does not allow researchers to understand if students were not identified because of lack of access (i.e. they attend a school that offers no GT services) or because they didn't meet actual criteria for identification. The state, district, or school in which the student is enrolled as well as a number of other district- or school-specific criteria are likely predictive of identification as well.

In one of the few papers to evaluate the predictors of access, Hodges and Lamb (2019) analyzed historical data from Washington state from 2006 to 2013 to evaluate the effect of the 2008 financial crisis, and changes to state accountability rules for GT that followed, on the availability of GT services. Across that time period, the percentage of schools offering GT services declined from 77% to 62%, even in the presence of a state mandate. Interestingly, 80% of the school districts discontinuing services were those that did not make adequate yearly progress in increasing student achievement under the No Child Left Behind law, pointing to low average achievement at the building level as a likely predictor. Similarly, Hodges et al. (2019)

showed the overall budget cuts due to the great recession did not have an effect on the overall GT identification rate of schools in Texas. This was true for Black and Latinx students as well as White students, suggesting that overall school funding levels are not a major driver of access. Texas and Washington are similar in two important ways: 1) they provide per-pupil funding for students identified as gifted, thereby incentivizing the provision of gifted services, and 2) they legally mandate such services.

Texas served as the context for a natural experiment on the effects of gifted education and policy oversight due to changing legal requirements and enforcement between 1999 and 2013 (Warne & Price, 2016). Texas made three changes to state law related to gifted education. In 2003, Texas terminated the prior state mandate that included on-site audits by teams of external evaluators. This resulted in a six-year period of no mandated gifted education services. Then, in 2009, gifted identification and services were again mandated, but without the audits. These changes resulted in an ideal natural experiment on the effects of different policy mandates on the availability of services.

The results from Warne and Price (2016) were relatively clear: when accountability systems were removed, the percentage of students identified in the state decreased and the percentage of schools with zero gifted students increased. Although these changes were relatively small, when taken in the context of other research on the effects of state policies in other areas of K-12 education, they suggest that legal mandates and oversight have an impact on the availability of services and the size of the population identified in each school.

Advanced Placement

Gifted and talented programs are not the only advanced learning opportunity to show differential access across schools. Advanced Placement courses have a long history of disproportional access and enrollment across schools as well as success on the resulting exams across demographic groups (Kolluri, 2018). Nationwide, for the 2013 graduating class, 14.5% of students were Black, 9.2% of AP exam takers were Black, but only 4.6% of those students who scored 3+ on an AP exam were Black. The comparable numbers for White students were 58.3% of the graduating class, 55.9% of AP exam takers, and 61.3% of students who earned a 3+ on an AP exam (College Board, 2014). In 2020, the Education Trust created an interactive tool to examine these exact data for each state. For example, in Virginia only 59 African American students were enrolled in AP classes for every 100 African American students who were eligible. Importantly, this was not due to lack of access as Black students in Virginia have a high rate of attending high schools that offer AP classes. This highlights the importance of looking at distinct outcomes: 1) access to a service, and 2) enrollment in a service for those who had access.

Early Mathematics Access

Although Advanced Placement and GT have all received significant attention with regard to unequal placement rates, the same cannot be said of other advanced or accelerated coursework. Some schools offer courses at the elementary- or middle-school levels that are meant for students at higher grade levels (e.g., Algebra 1 offered in grade seven). Patrick et al. (2020) did examine disproportionality within eighth-grade Algebra 1 enrollment. They found that despite being 15% and 25% of the overall eighth-grade population, Black and Latinx students make up only 10% and 18% of student enrolled. What predicts access to and enrollment in even earlier forms of these courses (e.g., Algebra I in seventh-grade and Geometry in eighth-grade) has yet to be examined, in part because until recently population-level data were not collected.

Summary

Although several studies have documented unequal access to GT or AP course enrollment, no study has sought to understand what factors across policy levels are associated with schools offering these services or predict the size of a school population served. Further, academic acceleration has long been presented as the most-effective advanced learning intervention available (Steenbergen-Hu et al., 2016). Despite a push for broader access to accelerated learning, options such as early algebra or early geometry have received much less attention than have GT or AP. Although a 2020 report from the Education Trust (Patrick et al., 2020) did investigate enrollment differences in advanced learning opportunities such as AP and GT, it, like many past reports (e.g., Peters et al., 2019), it did so without controlling for relevant factors at the school or community level that might explain these differences. For this reason, the present study sought to understand what state, district, and school-level variables were associated with greater access to GT as well as the accelerated mathematics options of seventh-grade Algebra 1 and eighth-grade Geometry. As the field of K-12 education better understands what variables are associated with access, it can then begin to mitigate barriers and improve the equity of access to advanced learning opportunities. This study is particularly unique in that it incorporates data from several new, population-level datasets to investigate what variables at the state, district, and building levels made for a successful, equitable school for advanced learners.

Methods

The overall goal of this study was exploratory in nature – to understand what state, district, and school-level variables are most associated with access to advanced learning opportunities and the percentage of a school and state served by those opportunities. Specifically, we posed the following research questions:

Research Questions

1. What is the general distribution of advanced learning opportunities and how does this distribution vary by level (school, district, or state)?
2. How do segregation, school and district demographics, achievement, and funding correlate with advanced learning opportunities?
3. How do these relationships (#2) change when controlling for the presence of legal mandates to provide access to GT, average district achievement, and average school-level achievement?

For the purposes of this study, we operationalize "advanced learning opportunities" as access to, and enrollment in, gifted and talented programs, Algebra I in seventh grade, and Geometry in eighth grade.

Data Sources

To answer our research questions, we merged data from several population-level datasets:

- The biannual United States Office of Civil Rights Data Collection (OCR) is the only source for information on the gifted and talented identification rates for every school and district in the country. The dataset includes the demographic breakdown of students served as gifted as well as the same breakdown for students served in a number of other "advanced" learning opportunities (e.g., offering Algebra I in seventh grade and/or Geometry in 8th grade). This study used the 2017 – 2018 OCR data, which was released on October 15, 2020.
- The National Center for Education Statistics (NCES) Common Core of Data (CCD) is an annual database of nearly all public schools and school districts in the United States.

Information about school demographics and the distribution of students across districts came from the CCD.

- The Stanford Education Data Archive (SEDA) version 3.0 (Reardon et al., 2017) provided school-level measures of average achievement and district-level measures of achievement and achievement gaps for student subgroups in grades three through eight. Built from the Department of Education's EDFacts data and National Assessment of Education Progress (NAEP), these data provided a way to compare student achievement across school districts and states.
- The NCES' Education Demographic and Geographic Estimates (EDGE) project data from the American Community Survey and the decennial Census onto areas contiguous with school district boundaries. These data described district-level social and economic conditions and were included as district-level independent variables.
- State-level Policies for Gifted Education are taken from the National Association for Gifted Children 2018 - 2019 State of the States Report (Rinn et al., 2020). This allowed us to assign a dichotomous variable to each state for whether that state mandated the identification of gifted and talented students.

We merged all of the individual datasets resulting in a cross-sectional data file for nearly all public schools in the United States from the 2017-2018 school year. For the 2017 - 2018 OCR data collection, 99.81% of LEAs with 99.9% of schools certified their submissions. This included 17,604 LEAs and 97,632 schools. OCR also suppresses certain data, but for the 2017 – 2018 year, none of these included the variables used in our analyses.

Exclusion Criteria

As noted above, the OCR dataset includes nearly all school districts in the United States. However, some schools were excluded from our analyses. These included 602 Juvenile Justice schools (0.62% of the dataset), 4123 magnet schools (4.22%), 7049 charter schools (7.22%) and 3343 "alternative" schools (3.42%). An alternative school was defined as

> A public elementary or secondary school that addresses the needs of students that typically cannot be met in a regular school program, and is designed to meet the needs of students with academic difficulties, students with discipline problems, or both students with academic difficulties and discipline problems (U.S. Office of Civil Rights, n.d., p. 8).

Note that some of these classifications overlapped. The result was a reduction in analytic sample of 13.89%. We exclude these sites due to the inconsistency across states of whether these types of schools must meet the same legal mandates and general policies for services as traditional schools.

Variables

While this study was exploratory in nature, the independent variables were all chosen because of a range of prior research showing the correlation between them and common academic outcomes of disproportionality in use of school discipline (USGAO, 2018), receipt of special education services (Morgan et al., 2017), and GT identification rates (Hamilton et al., 2018; Grissom & Redding, 2016; Grissom et al., 2019). Variables in our analyses fell into three overall categories: 1) those used for merging datasets (e.g., school ID number), 2) independent variables (e.g., average district achievement), and 3) dependent / outcome variables (e.g., student enrollment in eighth-grade Geometry). The independent variables were further disaggregated to the state, district, and school level, such as whether or not the state mandated gifted education, the rate of Bachelor's degree holding (district level), and building enrollment data by race (school level). These independent variables capture school and community measures of resources/resource distribution, school district mean achievement / achievement gaps, and student demographics/distribution.

Below is a short description of the different types of independent variables:

Segregation: We use measures of segregation as provided in the SEDA covariate files. These Thiel information theory indices are measures that compare a school's diversity to the diversity of the school's district. In our analyses, we standardized these measures to have mean 0 and standard deviation 1 with smaller valued representing less within-district segregation and larger values representing more. There are segregation variables for White-Black segregation, White-Hispanic segregation, and Free/Reduced Price Lunch - Non Free/Reduced Price Lunch segregation.

Achievement: Achievement measures are taken from the SEDA 3.0 (Reardon et al., 2017). Achievement and achievement gaps at the school and district level are measured in standard deviation units. Also, from the SEDA, we included measures of district achievement gaps including White-Black, White-Hispanic, White-Asian, and Economic Disadvantage-Non Economic Disadvantage.

Demographics: From the CCD, we constructed school level demographics including the proportion of each school's enrollment that was Black, White, Hispanic, Asian and eligible for Free or Reduced Price Lunch. Additionally, from the SEDA, we use their SES composite measure and the proportion of adults living in the geographic area of each LEA that have Bachelor's (or higher) degrees.

Funding: We take district level funding and expenditure data from the NCES F-33 files. These data provided measures of revenue from federal, state and local sources as well as district expenditures. These files also have the amount of funding from states that is specifically directed towards gifted education. In our analyses, these variables are all converted to log scale.

Table 1 presents the independent variables in our analyses as well as their respective means and standard deviations.

Table 1 Here

Our six dependent variables related to access to or enrollment in K-12 GT services, seventh-grade algebra, or eighth-grade geometry. The two mathematics courses were of interest because they are courses that are typically taken at a later grade. Taken in grade seven or eight represents a form of subject acceleration in mathematics, access to which has yet to be explored. This is why we included these as outcomes but did not include Advanced Placement enrollment. While Advanced Placement courses are by definition "advanced," they are not the same form of academic acceleration as are early courses.

Data Analysis

American K-12 schools exist within national, state, district, and individual school context. Of these, only national policies apply to all schools. For this reason, we implemented a three-level hierarchical linear model of schools nested within districts nested within states. To establish the baseline level and distribution of the variation in our dependent variables, we estimated the following three-level unconditional model with dependent variables measured for each school *i* in district *j* in state *k* (RQ1):

$$Y_{ijk} = \pi_{0jk} + e_{ijk},\ e_{ijk} \sim N(0, \sigma_e^2) \qquad (1)$$

$$\pi_{0jk} = \beta_{00k} + r_{0jk}, r_{0jk} \sim N(0, \tau_\pi^2) \qquad (2)$$

$$\beta_{00k} = \gamma_{000} + u_{00k},\ u_{00k} \sim N(0, \tau_\beta^2) \qquad (3)$$

The intraclass correlation of these models, one for each of the six outcome variables, allowed us to quantify the level of variation in each outcome observed at school, district, and state level. Following these basic descriptives at each level, we built models to understand simple correlations between state-, district-, and school-level independent and our dependent variables. To do so we estimated models of the following form -- changing the outcome variables one at a time and interpreting the fixed effects from these models -- to answer our research questions:

$$Y_{ijk} = \pi_{0jk} + \pi_{1jk}\big([Variable]_{ijk}\big) + e_{ijk} \qquad (4)$$

$$\pi_{0jk} = \beta_{00k} + r_{0jk} \qquad (5)$$

$$\pi_{1jk} = \beta_{10k} + \beta_{11k}\big([Variable]_{1jk}\big) + r_{1jk} \qquad (6)$$

$$\beta_{00k} = \gamma_{000} + u_{00k} \qquad (7)$$

$$\beta_{10k} = \gamma_{100} + \ \gamma_{101}([Variable]_{10k}) + u_{10k} \qquad (8)$$

$$\beta_{11k} = \gamma_{110} \qquad (9)$$

Each model contains one independent variable, and we estimated models on the full set of independent variables for each dependent variable. This resulted in a series of bivariate relationships between each outcome and each variable in our set of independent variables (RQ2).

We did this not only to understand simple bivariate relationships, but also because these initial models served as a baseline through which the conditional models addressing RQ3 could be compared.

Lastly, we estimated models with all of the same independent variables as above but after controlling for whether or not the school exists in a state with a legal mandate for GT, the average achievement of the district, and the average achievement of the school (RQ3). We controlled for these variables because of their expected relationship with both service availability and enrollment. Logically, we expected that whether or not a school existed in a state with a legal mandate to provide GT services to explain much of the variability in both the percentage of schools offering GT services as well as the percentage of students served. Similarly, we expected district- and school-level achievement to explain much of the variability in whether or not a school offered Algebra I in seventh-grade or Geometry in eighth-grade. Controlling for state mandates allows us to test which variables remained relevant in explaining which schools have access to or enrolled larger percentages of students in advanced learning opportunities.

Results

First, we calculated intraclass correlations for all six of our outcome variables with schools nested in districts nested in states. These values are presented in Table 2.

Table 2 Here

Table 2 shows that 59% of the variance in whether or not a school offers GT falls at the district and school levels leaving about 40% of the variance at the state level. This makes intuitive sense given many states have mandates to offer such services, and yet not all schools in those states do. The actual variance in the proportion of a school served by GT fell more at the individual school level (46%). Offering either advanced mathematics course was less centralized – 49% of the variance in offering seventh-grade algebra and 52% of the variance in eighth-grade geometry fell at the school level. This was the reverse of the proportion enrolled in those courses. Whereas the school level was more important for offering GT than it was for advanced mathematics courses, the school level was more important for proportion enrolled in GT and less important for enrollment in the advanced mathematics courses. These findings add confidence that the HLM approach was essential for this study as the large ICCs make it clear the nested structure is important to understanding our relationships of interest.

Access to and Enrollment in Gifted and Talented Services

To better understand how advanced learning opportunities are distributed across states, districts, and schools (RQ1), we calculated 1) the percentage of schools that provided access to a gifted and talented program, 2) the percentage of schools serving seventh-graders that provided access to seventh-grade algebra, and 3) the percentage of schools serving eighth-graders that provided access to eighth-grade geometry. These results are presented in the first three columns of Table 3. Next, for those schools that did provide access, we calculated the average proportion of the school's students enrolled (GT, seventh-grade algebra, and eighth-grade geometry). These results are presented in the middle three columns of Table 3. Finally, we calculated the statewide proportion of students enrolled in these three advanced learning opportunities. These values are found in the last three columns of Table 3.

Table 3 Here

Table 3 shows wide variability in both access to and enrollment in advanced learning opportunities at the state level. For example, in the 2017 – 2018 school year, North Carolina had the highest percentage of schools offering GT services (96.2%), Virginia had the highest number of schools offering seventh-grade algebra (74.1%) and eighth-grade geometry (73%). Similarly, among those schools offering GT services, Kansas had the highest average school proportion served at 22%. Montana showed the highest average proportion of its students served in seventh-grade algebra and eighth-grade geometry (41% and 55% respectively), though there is some important nuance to these advanced mathematics findings since only 14% and 8% of Montana's schools offer these options at all. The "average school proportion" for each state is only calculated for those schools that have one-or-more students enrolled. Finally, in the last three columns of Table 3, Maryland has the greatest proportion of its overall K-12 student population served by GT services (19%), while Virginia had the greatest proportion of its seventh-graders enrolled in Algebra 1 (15%) and Utah had the greatest proportion of its eighth-graders in Geometry (16%).

Research Question 2 focused on state, district, and schools correlates of access to and enrollment in the three advanced learning opportunities. Table 4 presents these estimates with the independent variables broken down by segregation, achievement, demographics, and revenue. Note that while Table 1 reports the three within-LEA segregation variables on their original scale, for analysis they have now been standardized to a mean of zero and a standard deviation of one to aid in interpretation.

Table 4 Here

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Within Table 4, the independent variables are represented by different units. For this reason, direct comparisons between size of parameter estimates are most valid within each category. For example, FRL-segregation has the strongest relationship with access among the segregation variables. It's also the strongest correlate of enrollment proportion in GT or algebra at the school level, with White-Black segregation being the strongest correlate of Geometry. As a reminder the segregation variables have been standardized such that the coefficients represent the relationship between the outcome variables and a one standard deviation increase in segregation with larger values indicating more segregated districts (districts where the schools look less like the overall district demographics). Among achievement variables, school-level achievement was the strongest correlate of proportion served by each service, while the LEA FRL achievement gap had, by far, the strongest relationship with access to all three services at the school level. Other noteworthy findings are the universally-positive relationship between the school proportion White or Asian with all six outcomes and the universally-negative relationship between school proportion Hispanic, Black, or FRL with five of the six outcomes. Parental college education (proportion of parents with a college degree at the district level) also emerged as a strong correlate of access.

Research Question 3 moved beyond bivariate correlations to examine the effect of independent variables after controlling for whether or not the state had a mandate for gifted identification, average LEA achievement, and average school achievement. Table 5 presents the estimated coefficients in terms of whether or not a building offered GT services. Table 6 presents the same independent variables on the outcome of the proportion of a school served by GT (for those schools that offered GT services). The last few rows of all of the conditional predictor tables indicate which controls were used in each of the four models tested. Model 1 controlled for whether or not the school was in a state with a mandate for gifted education. Model 2 added average LEA achievement. Model 3 substituted school average achievement for district achievement. And Model 4 included both LEA and school average achievement as well as state GT mandate. Each model tests the inclusion of different covariates in an exploratory fashion.

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Tables 5 & 6 Here

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We removed school- and LEA-level achievement as independent variables in Tables 5 through 10 as they were now included as covariates in Models 2, 3, and 4. This allowed for a more-direct evaluation of whether or not school- or LEA-level achievement explained service availability at the building level. These tables are best interpreted by moving from Model 1 to Model 2 and Model 4 (controlling for mandate, adding LEA average achievement, adding school-level achievement) or by moving from Model 1 to Model 3 to Model 4 (controlling for mandate, adding school achievement, adding LEA achievement). In this way the addition of each covariate can be tested in terms of change to individual parameters. For example, in Table 5, moving across models makes clear that none of the three covariates has much of an effect on the explanatory power of within-district FRL segregation. The parameter estimates are almost identical for all four models (~0.085). Alternatively, the proportion of a school that is FRL-eligible has a small effect in moving from Model 1 to Model 2 (-0.126 and -0.102), but a much larger effect on Models 3 and 4 (-0.038 and -0.033). This suggests school achievement explains much more of whether a building provides access to GT services than does LEA achievement.

Table 6 shows that the achievement class of variables were the strongest predictors of proportion of a building served in GT given that most of the segregation and revenue variables were not statistically significant. For example, the proportion of a building eligible for FRL remained a negative predictor of the proportion of a building served by GT in Models 1 (-0.176) and 2(-0.185), but in Models 3 and 4, the size of the estimate dropped by more than half (-0.074 and -0.077). Similarly, school proportion Black was no longer a significant predictor once school achievement was added to the model and the parameter estimates for both Models 3 and 4 rounded to zero. While the proportion of parents with a college degree remained a significant, positive predictor across all four models (0.09 in Model 1), it too shrank in size after school achievement was added to the model (0.043 in Model 4).

Access to and Enrollment in Advanced Mathematics

As of the 2017 OCR data collection, 5591 of the total 15200 schools that reported serving students in grade seven had seventh-grade students enrolled in Algebra 1 (just over 1/3 or schools). Similarly, 4718 out of 21982 that reported serving students in grade eight reported having eighth-graders enrolled in Geometry (21.4%). These base rates are important to consider in the context of state, district, and school-level predictors since this smaller number of schools are scattered across all 50 states and an even larger number of districts. For example, Table 2 shows that the average Montana school enrolls 41% of its seventh-grade students in Algebra 1 and 55% of its eighth-grade students in Geometry. However, across Montana, only 24 of more than 800 schools offer eighth-grade Geometry at all. For this reason, all of the results in Table 8 and 10 need to be understood in the context of the percentage of schools in each state that offer these services (see the second and third column of results in Table 3). In some states (e.g., Arizona) the average percent enrolled in seventh-grade algebra is lower (11.4%), but it is available in a larger percentage of schools (23.2% in Arizona) in states that have more schools overall (approximately 2000 in Arizona). This is less relevant for the GT proportion served (Table 6) because most states had large numbers of schools offering GT (see column one of Table 3).

The same independent variables and covariates used to evaluate access to and enrollment in GT services were also used to evaluate access to and enrollment in seventh-grade algebra and eighth-grade geometry. Tables 7 and 8 present the findings with regard to seventh-grade algebra and Tables 9 and 10 present the findings related to eighth-grade geometry.

Tables 7, 8, 9, & 10 Here

Seventh-Grade Algebra

Across all four models in Table 7, school-level proportion of students eligible for FRL is negatively associated with that school offering seventh-grade Algebra 1 (-0.513 in Model 1). However, the estimates drop by about half in Models 3 (-0.196) and 4 (-0.159) when school achievement is added. LEA-level SES shows a similar pattern, dropping in Model 2 (from 0.146 to 0.075) when LEA achievement is added. This shows that schools with overall lower SES are less likely to offer seventh-grade algebra, but that about half of the variance can be explained by school achievement differences as Models 2 and 3 showed similar estimates of 0.075 and 0.073. The proportion of families with a college degree were positive predictors even after controlling for LEA- and school-level achievement (1.317 in Model 4). All forms of segregation are positively associated with seventh-grade algebra, meaning as the schools within a district become more segregated, the school was more likely to offer Algebra 1 to seventh graders.

With regard to the proportion of a school's seventh graders enrolled in Algebra 1 (Table 8), the story flips. Segregation becomes a negative predictor of the proportion enrolled as does average LEA SES and the percentage of families in the LEA with a college degree. Similarly, whereas all forms of revenue were positive predictors across all four models when predicting access (Table 7), they are negative predictors of school-level proportion of seventh-grade students served in Algebra 1 (Table 8). While comparing Tables 7 and 8 is complicated by the fact that Table 8 only includes a subset of the schools from Table 7 (those that offer seventh-grade algebra at all), clearly what motivates schools to provide access is not the same as what drives enrollment in these advanced learning opportunities.

Eighth-Grade Geometry

Similar to access to seventh-grade algebra, the proportion of a school eligible for FRL is a negative predictor of access to eighth-grade Geometry (-0.175 in Model 4) and both the composite LEA SES and the proportion of the parents in the LEA with a college degree are positive predictors even after controlling for LEA and school-level achievement (0.055 and 1.136 in Model 4 respectively). However, whereas school proportion eligible for FRL and LEA SES become less predictive after achievement is added to the model, the proportion of district parents with a college degree remains similarly predictive (~1.0 across all models). Demographic predictors related to race and ethnicity have a similar if somewhat smaller influence on early Geometry than early Algebra 1. We observe the same changes in direction of prediction between access to Geometry and school proportion served as we did with regard to Algebra. Whereas school-level FRL is a negative predictor of access to Geometry (-0.175), in Table 10 it shows a positive association with the proportion of a school served in Models 3 (0.186) and 4 (0.170). Similarly, whereas LEA SES and the proportion of parents with a college degree are positively associated with access to Geometry, they are negatively associated with the proportion of students so served, though not significantly so in the case of parental education. In a final similarity to algebra, revenue is positively associated with access, but negatively associated with proportion of students served at the school level.

Discussion

Gifted and Talented Services

In reviewing the findings from Table 3, one clear take-away is the wide variability in access to GT services. Even after controlling for the level of achievement at the LEA and school levels (Table 5), variables such as the composite SES of the district, the proportion of parents with a college degree, and the proportion of the school that is Black remain significant predictors of whether or not a school offers GT services. In fact, when it came to explaining access to GT, seventh-grade Algebra, or eighth-grade Geometry, the percent of the school eligible for FRL remained a negative predictor of access while the LEA SES and percentage of parents in the district with a college degree remained positive predictors. At least with regard to GT, these findings seem to support Grissom et al. (2019) who found having a parent in a high prestige occupation was one of the most consistent predictors of a child being identified as gifted. In our study it was a consistent predictor of a school offering GT services. Similarly, Hamilton et al. (2018) found that within districts, schools with higher poverty rates had lower identification rates even after controlling for achievement. Grissom et al. also found that only family incomes greater than $200,000 per year remained a significant predictor in their final model, which might help explain why aggregate LEA SES was not a significant predictor of the percentage of students identified as gifted as the building level (Table 6).

Despite a number of predictors remaining significant in Model 4 of Tables 5 and 6, it is a positive finding that many decreased in magnitude after controlling for mandate and average achievement. For example, school percent White, percent Asian, and percent FRL all decreased in magnitude after achievement was added to the model. This suggests at least part of differences in rates of access can be explained by schools serving populations who have differing average achievement levels and not solely due to demographic differences. Grissom and Redding (2016) found that after controlling for achievement and background demographic factors, the identification gap between Asian-White and Hispanic-White disappeared, but that it remained for Black-White. In contrast, Model 4 in Table 6 showed that after controlling for LEA and school-level achievement, percent Black was no longer a significant predictor of the percentage of the school served as gifted, whereas percent Asian was a positive predictor and percent Hispanic was a small, negative predictor. Also in a departure from Hamilton et al. (2018), within-district segregation, including economic segregation, were not significant predictors of the percentage of a building served by GT.

Access to Advanced Mathematics

With regard to access to and enrollment in advanced mathematics courses, the story is less clear. In Table 4, achievement variables stood out as correlates of access. This was especially true for access to seventh-grade algebra where the coefficients were slightly larger even if they were always in the same direction as eighth-grade Geometry. Controlling for school and LEA average achievement in Table 7 shrank the size of the coefficients in Model 4, but achievement gaps of all types remained significant – particularly income-related achievement gaps. The same was true for access to eighth-grade geometry. Moving from Model 1 to Model 4 shrunk the economic achievement gap coefficient from .606 to .486, but it remained a significant predictor (Table 9). Revenue variables were predictive of access to both advanced mathematics courses (Table 4) and adding in GT mandates, LEA achievement, or school achievement did little to change the size of the coefficients.

Demographic variables tell an interesting and somewhat surprising story in Tables 7 and 9 with regard to access to advanced mathematics. Despite starting out as negative predictors in Model 1, school proportion Hispanic and Black became positive predictors of access after controlling for achievement. This seems to support prior findings by Dougherty et al. (2015) who found that when students were automatically placed in advanced math courses based on prior achievement, placement gaps across groups shrank, pointing to achievement differences across schools in the case of the present study as more of a driver of access than demographics. It seems logical that enrollment in advanced mathematics courses would be more-strongly related to average building achievement than would access to GT.

Proportion Served in Advanced Mathematics

With regard to school-level proportion of students served, income-related achievement gaps were again negative predictors, becoming even larger in magnitude after controlling for achievement. Perhaps even more noteworthy and surprising, school proportion Black and FRL were positively associated with proportion served in both seventh-grade algebra and eighth-grade geometry, but only in Models 3 and 4 of Tables 8 and 10, which added school-achievement to the model. In Models 1 and 2, these variables were negative predictors. This is contrary to what would be expected given that a wide research base has shown that Black and Hispanic students are underrepresented in gifted programs (Peters et al., 2019) and in advanced mathematics courses (USDOE, 2014). While simple bivariate correlations (Table 4) show negative relationships between percent Black, Hispanic, and FRL and proportion served in advanced mathematics courses, five of the six become positive predictors in Models 3 and 4 of Tables 8 and 10 while one is now not significant (percent Hispanic and seventh-grade algebra). This again highlights the importance of controlling for relevant covariates (like achievement) when looking at disproportional enrollment.

Parental education and overall district SES appear to be stronger predictors of access than of enrollment. In Tables 8 and 10 they become less important moving from Model 1 to 4, even to the point of parental education no longer being a significant predictor of eighth-grade geometry enrollment (Model 4 of Table 10). This is especially strange given the large estimate for parental education on access to seventh-grade algebra (1.317 in Model 4 of Table 7). This could be a manifestation of opportunity hoarding (Kelly & Price, 2011) whereby higher-SES families advocate for advanced learning opportunities, thereby causing the increase in access, despite this advocacy having less of an effect on actual enrollment numbers. While educated families can use their capital to advocate for services to be offered, these advocacy efforts have less of an effect on whether their students are ready for these advanced mathematics classes.

Policy Implications

One of the clearest signals from this research is the wide school-level variability of access to advanced learning opportunities even after controlling for building achievement level. In the case of access to advanced mathematics, the majority of variation fell at the school level, pointing to substantial school discretion in whether to offer these services – discretion that, even after controlling for building achievement, is strongly related to levels of parental education and within-district income-related achievement gaps. This points to a need for clear, automatic access and enrollment mechanisms discussed by Dougherty et al. (2015) and put into law by states like Washington (Brazile, 2019) where students are placed in advanced mathematics courses based on achievement readiness thereby removing some of the school-level discretion. As with advanced mathematics, there is a need to provide access to GT services based on whether or not the students need and would benefit from them, instead of whether or not their parents have the social and cultural capital to advocate for them. Universally screening students for GT eligibility has been shown to identify more students overall, particularly students from traditionally disadvantaged groups (Card & Giuliano, 2016; McBee et al., 2016). Such a policy also removes the level of teacher discretion that was correlated with the underrepresentation of Black students in Grissom and Redding (2016) and resulted in increased identification rated in Card and Giuliano (2016). Any time parents can insert their own initiative or sociocultural capital into the placement process to advantage their child, they are likely to do so, and this will continue to exacerbate inequalities. In a similar finding to Calarco (2020), this suggests policies targeted at reducing the power of privileged families are necessary to actually reduce the inequality of access to and enrollment in advanced learning opportunities.

Limitations

While the use of several, population-level datasets is a strength of this paper it does also create an important limitation. For example, two datasets represent two independent, self-reported data collections from individual schools and school districts. This creates opportunities for numbers that don't agree. In our case, the total number of students enrolled in seventh- or eighth-grade comes from the CCD, while the number of seventh- and eighth-grade students enrolled in algebra or geometry comes from the OCR dataset. As these numbers were relatively small in some schools (i.e. not that many eighth-grade students were enrolled in geometry in any given school), small incorrect values could have a substantial impact on the results presented in Table 3. It's also important to emphasize that this paper is exploratory in nature. From reviewing the conditional probability tables alone, it is clear that many relationships were tested. This creates the possibility for Type I errors or other spurious findings. This is why we focused on consistent trends across models or outcome variables rather than on comparing specific parameter estimates. This is why future research should take the form of registered reports (Reich et al., 2020) and cross-validate these findings.

Additionally, measures of FRL in National datasets flatten the distribution of students' family resources into a dichotomous measure. While this is not ideal, research suggests that there are measures of educational disadvantage that are captured by FRL that are still informative (Domina et al, 2018; Michelmore & Dynarski, 2017). Again, this points to a need for further research that better captures the degree of socio-economic disadvantage and socio-cultural capital as a predictor of access to and enrollment in advanced learning opportunities.

References

Brazile, L. (2019, May). WA schools to make advanced classes more accessible to students – but will it close the opportunity gap?. *Crosscut*, https://crosscut.com/2019/05/wa-schools-make-advanced-classes-more-accessible-students-will-it-close-opportunity-gap

Calarco, J. M. (2018). *Negotiating opportunities: How the middle class secures advantages in school*. Oxford University Press.

Calarco, J. M. (2020). Avoiding us versus them: How schools' dependence on privileged "helicopter" parents influences enforcement of rules. *American Sociological Review, 85*(2), 223–246. https://doi.org/10.1177/0003122420905793

Card, D., & Giuliano, L. (2016). Universal screening increases the representation of low-income and minority students in gifted education. *Proceedings of the National Academy of Sciences, 113*(48), 13678-13683. https://doi.org/10.1073/pnas.1605043113

College Board. (2014). *The 10th Annual AP report to the nation*. Retrieved from: https://secure-media.collegeboard.org/digitalServices/pdf/ap/rtn/10th-annual/10th-annual-ap-report-to-the-nation-single-page.pdf

Domina, T., Pharris-Ciurej, N., Penner, A. M., Penner, E. K., Brummet, Q., Porter, S. R., & Sanabria, T. (2018). Is free and reduced-price lunch a valid measure of educational disadvantage?. *Educational Researcher*, 47(9), 539-555. https://doi.org/10.3102/0013189X18797609

Education Trust. (2020). *Advanced coursework in your state*. Retrieved from https://edtrust.org/resource/advanced-coursework-tool/

Gentry, M., Gray, A., Whiting, G. W., Maeda, Y., & Pereira, N. (2019). *System failure: Access denied*. https://www.dropbox.com/s/0lxzznnyh5u0jj1/Access%20Denied.pdf

Grissom, J. A., & Redding, C. (2016). Discretion and disproportionality: Explaining the underrepresentation of high-achieving student of color in gifted programs. *AERA Open, 2*(1), 1–25. https://doi.org/10.1177/2332858415622175

Grissom, J. A., Redding, C., & Bleiberg, J. F. (2019). Money over merit? Socioeconomic gaps in receipt of gifted services. *Harvard Education Review, 89*(3), 337-369. https://doi.org/10.17763/1943-5045-89.3.337

Hamilton, R., McCoach, D. B., Tutwiler, M. S., Siegle, D., Gubbins, E. J., Callahan, C. M., Brodersen, A. V., & Mun, R. U. (2018). Disentangling the roles of institutional and individual poverty in the identification of gifted students. *Gifted Child Quarterly, 62*(1), 6–24. https://doi.org/10.1177/0016986217738053

Hodges, J., & Lamb, K. (2019). Washington's High-Ability programs during the No Child Left Behind era. *Journal for the Education of the Gifted, 42*(4), 283–302. https://doi.org/10.1177/0162353219874422

Hodges, J., Tay, J., Lee, H., & Pereira, N. (2019). The influence of the Great Recession on the identification of students from non-White populations in the State of Texas. *Journal of Advanced Academics, 30*(2), 124–143. https://doi.org/10.1177/1932202X19825802

Kelly, S., & Price, H. (2011). The correlates of tracking policy: Opportunity hoarding, status competition, or a technical-functional explanation? *American Educational Research Journal, 48*(3), 560-585. https://doi.org/10.3102/0002831210395927

Kolluri, S. (2018). Advanced Placement: The dual challenge of equal access and effectiveness. *Review of Educational Research*, *88*(5), 671-711. https://doi.org/10.3102/0034654318787268

Lareau, A. (2011). *Unequal childhoods: Class, race, and family life*. Univ of California Press.

McBee, M. T., & Peters, S. J., & Miller, E. M. (2016). The impact of the nomination stage on gifted program identification: A comprehensive psychometric analysis. *Gifted Child Quarterly, 60*(4), 258-278. https://doi.org/10.1177/0016986216656256.

Michelmore, K., & Dynarski, S. (2017). The gap within the gap: Using longitudinal data to understand income differences in educational outcomes. *AERA Open*, 3(1), https://doi.org/10.1177/2332858417692958.

Morgan, P. L., Farkas, G., Hillemeier, M. M., & Maczuga, S. (2017). Replicated evidence of racial and ethnic disparities in disability identification in U.S. schools. *Educational Researcher, 46*(6), 305-322. https://doi.org/10.3102/0013189X17726282

Murray, B., Domina, T., Petts, A., Renzulli, L., Boylan, R. (2020). "We're in this together": Bridging and bonding social capital in elementary school PTOs. *American Educational Research Journal* 57 (5), 2210-2244. https://doi.org/10.3102/0002831220908848

Patrick, K., Socol, A., & Morgan, I. (2020, January 9). *Inequities in advanced coursework.* https://edtrust.org/resource/inequities-in-advanced-coursework/

Peters, S. J., Gentry, M., Whiting, G. W., & McBee, M. T. (2019). Who gets served in gifted education? Demographic proportionality and a call for action. *Gifted Child Quarterly, 63*(3), 273-287. https://doi.org/10.1177/0016986219833738

Reardon, S. F., Ho, A. D., Shear, B. R., Fahle, E. M., Kalogrides, D., Jang, H., Chavez, B., Buontempo, J., & DiSalvo, R. (2017). Stanford Education Data Archive (Version 3.0). http://purl.stanford.edu/db586ns4974

Reich, J., Gelbach, H., & Albers, C. J. (2020). "Like upgrading from a typewriter to a computer": Registered reports in education research. *AERA Open, 6*(2), 1-6. https://doi.org/10.1177/2332858420917640

Rinn, A. N., Mun, R. U., & Hodges, J. (2020, July). *2018-2019 State of the states in gifted education.* National Association for Gifted Children and the Council of State Directors of Programs for the Gifted.

Shapiro, E. (2019, August). Desegregation plan: Eliminate all gifted programs in New York. *New York Times*. https://www.nytimes.com/2019/08/26/nyregion/gifted-programs-nyc-desegregation.html

Steenbergen-Hu, S., Makel, M. C., & Olszewski-Kubilius, P. (2016). What one hundred years of research says about the effects of ability grouping and acceleration on K-12 students' academic achievement: Findings of two second-order meta-analyses. *Review of Educational Research*, *86*(4), 849-899. https://doi.org/10.3102/0034654316675417

United States Government Accountability Office. (2018, March). Discipline disparities for black students, boys, and students with disabilities. Retrieved from https://www.gao.gov/assets/700/690828.pdf

United States Office of Civil Rights. (n.d.). *2017 – 2018 Civil Rights Data Collection – School Form*. https://www2.ed.gov/about/offices/list/ocr/docs/2017-18-crdc-school-form.pdf

Walsh, P. (2008). Are involved parents providing public goods or private goods?. *Public Finance Review*, *36*(6), 678-705. https://doi.org/10.1177/1091142107308298

Warne, R. T., & Price, C. J. (2016). A single case study of the impact of policy changes on identification for gifted programs. *Journal for the Education of the Gifted, 39*(1), 49–61. https://doi.org/10.1177/0162353215624159

Yoon, S., & Gentry, M. (2009). Racial and ethnic representation in gifted programs: Current status of and implications for gifted Asian American students. *Gifted Child Quarterly, 53(2)*, 121-136. https://doi.org/10.1177/0016986208330564

Table 1.

Variable Descriptive Statistics

Variable Description	Variable	Mean	SD
LEA White-Black Segregation	wb_seg	0.111	0.138
LEA White-Hispanic Segregation	wh_seg	0.089	0.109
LEA FRL Segregation	frl_seg	0.065	0.076
Average School Achievement	s_ach	-0.003	0.408
Average District Achievement	l_ach	-0.002	0.333
LEA White-Asian Achievement Gap	l_ach_wag	-0.158	0.276
LEA White-Black Achievement Gap	l_ach_wbg	0.595	0.246
LEA White-Hispanic Achievement Gap	l_ach_whg	0.446	0.240
LEA Economic Achievement Gap	l_ach_neg	0.564	0.200
School Percent White	pct_wht	0.598	0.331
School Percent Asian	pct_asn	0.039	0.083
School Percent Hispanic	pct_hsp	0.204	0.258
School Percent Black	pct_blk	0.139	0.224
School Percent FRL	pct_frl	0.509	0.255
Log Total Revenue	ln_tot_rev	18.346	1.813
Log Federal Revenue	ln_fed_rev	15.625	2.021
Log State Revenue	ln_st_rev	17.512	1.845
Log State GT Revenue	ln_st_rev_gt	13.129	2.743
Log Local Revenue	ln_loc_rev	17.403	1.933
Log Total Expenditure	ln_tot_exp	18.341	1.825
Log Total Instructional Expenditure	ln_exp_ins	17.661	1.823
LEA SES	lea_ses	0.120	0.936
LEA Percent Parents with College Degree	lea_baplus	0.268	0.136
State Gifted Mandate	st_gt_law	0.731	0.443

Table 2.

Dependent Variable Intraclass Correlations

	Offer			Proportion		
	GT	7th Grade Alg	8th Grade Geo	GT	7th Alg	8th Geo
School	0.31	0.49	0.52	0.46	0.21	0.37
LEA	0.28	0.41	0.38	0.41	0.64	0.41
State	0.41	0.10	0.10	0.13	0.15	0.22

Table 3.

State Level Proportion of Schools Offering Advanced Services and Proportion of Students Enrolled

	Offer			Average School Proportion			Statewide Proportion		
State	**GT**	**7th Grade Alg**	**8th Grade Geo**	**GT**	**7th Grade Alg**	**8th Grade Geo**	**GT**	**7th Grade Alg**	**8th Grade Geo**
AK	0.447	0.154	0.102	0.067	0.115	0.128	0.050	0.059	0.043
AL	0.713	0.066	0.049	0.086	0.079	0.068	0.061	0.007	0.004
AR	0.929	0.045	0.038	0.100	0.026	0.015	0.095	0.002	0.001
AZ	0.693	0.232	0.212	0.072	0.114	0.092	0.057	0.029	0.024
CA	0.634	0.161	0.101	0.074	0.242	0.132	0.065	0.035	0.019
CO	0.892	0.349	0.317	0.065	0.116	0.117	0.076	0.049	0.049
CT	0.337	0.266	0.217	0.061	0.100	0.097	0.022	0.038	0.028
DC	0.000	0.152	0.121	0.000	0.082	0.129	0.000	0.032	0.056
DE	0.291	0.389	0.333	0.059	0.159	0.131	0.016	0.056	0.058
FL	0.906	0.673	0.564	0.064	0.132	0.139	0.064	0.107	0.082
GA	0.956	0.109	0.113	0.092	0.019	0.021	0.106	0.003	0.004
HI	0.307	0.259	0.113	0.039	0.024	0.030	0.012	0.007	0.004
IA	0.931	0.248	0.197	0.108	0.064	0.062	0.100	0.023	0.023
ID	0.553	0.257	0.196	0.057	0.220	0.134	0.037	0.081	0.031
IL	0.208	0.193	0.142	0.142	0.169	0.129	0.038	0.055	0.033
IN	0.844	0.310	0.265	0.126	0.117	0.097	0.124	0.050	0.043
KS	0.772	0.152	0.157	0.220	0.068	0.193	0.142	0.022	0.061
KY	0.922	0.140	0.282	0.136	0.107	0.075	0.134	0.022	0.030
LA	0.781	0.061	0.038	0.040	0.053	0.035	0.038	0.006	0.003
MA	0.028	0.081	0.071	0.150	0.187	0.129	0.005	0.016	0.009
MD	0.870	0.355	0.404	0.168	0.205	0.169	0.190	0.105	0.096
ME	0.720	0.296	0.207	0.066	0.111	0.141	0.055	0.041	0.043
MI	0.098	0.324	0.234	0.109	0.091	0.077	0.015	0.035	0.028
MN	0.455	0.407	0.304	0.147	0.292	0.152	0.092	0.138	0.086
MO	0.599	0.144	0.094	0.051	0.085	0.066	0.040	0.017	0.012
MS	0.725	0.024	0.014	0.089	0.078	0.073	0.065	0.003	0.002

Table 3 Continued

	Offer			Average School Proportion			Statewide Proportion		
State	GT	7th Grade Alg	8th Grade Geo	GT	7th Grade Alg	8th Grade Geo	GT	7th Grade Alg	8th Grade Geo
MT	0.251	0.138	0.079	0.067	0.412	0.550	0.033	0.031	0.010
NC	0.962	0.259	0.262	0.102	0.069	0.072	0.112	0.027	0.028
ND	0.171	0.062	0.058	0.070	0.046	0.096	0.018	0.011	0.013
NE	0.718	0.179	0.167	0.118	0.126	0.078	0.110	0.039	0.037
NH	0.070	0.187	0.060	0.102	0.111	0.115	0.009	0.026	0.012
NJ	0.552	0.257	0.218	0.095	0.161	0.139	0.056	0.059	0.043
NM	0.748	0.222	0.169	0.045	0.077	0.037	0.047	0.021	0.012
NV	0.632	0.281	0.192	0.046	0.063	0.073	0.026	0.029	0.021
NY	0.129	0.088	0.082	0.109	0.039	0.049	0.017	0.006	0.006
OH	0.736	0.256	0.223	0.105	0.069	0.072	0.086	0.031	0.028
OK	0.942	0.102	0.117	0.141	0.111	0.063	0.144	0.028	0.024
OR	0.845	0.335	0.279	0.056	0.169	0.074	0.068	0.050	0.029
PA	0.875	0.403	0.258	0.035	0.190	0.126	0.037	0.109	0.052
RI	0.022	0.157	0.157	0.119	0.055	0.127	0.002	0.010	0.025
SC	0.912	0.384	0.352	0.144	0.112	0.094	0.155	0.053	0.041
SD	0.091	0.045	0.029	0.071	0.024	0.029	0.018	0.006	0.004
TN	0.527	0.089	0.083	0.028	0.078	0.071	0.016	0.012	0.011
TX	0.949	0.207	0.218	0.079	0.052	0.044	0.083	0.017	0.015
UT	0.304	0.232	0.241	0.145	0.334	0.361	0.058	0.061	0.163
VA	0.944	0.741	0.730	0.124	0.171	0.155	0.135	0.150	0.132
VT	0.017	0.139	0.139	0.086	0.294	0.263	0.001	0.047	0.034
WA	0.787	0.481	0.384	0.062	0.125	0.136	0.059	0.093	0.083
WI	0.479	0.338	0.275	0.078	0.077	0.072	0.049	0.035	0.030
WV	0.765	0.073	0.045	0.024	0.042	0.039	0.019	0.005	0.003
WY	0.288	0.170	0.138	0.081	0.072	0.068	0.028	0.028	0.028

Table 4.
Bivariate Correlations Between Predictors and Advanced Learning Offerings and Enrollment

	Offer			Proportion		
Segregation Variables	**GT[1]**	**7th Grade Alg[1]**	**8th Grade Geo[1]**	**GT[1]**	**7th Grade Alg[1]**	**8th Grade Geo[1]**
White-Black Segregation - Std	0.050 (0.006)***	0.054 (0.009)***	0.039 (0.006)***	0.001 (0.002)	-0.002 (0.006)	0.012 (0.005)***
White-Hispanic Segregation - Std	0.059 (0.005)***	0.062 (0.008)***	0.049 (0.006)***	0.001 (0.002)	-0.014 (0.006)**	0.004 (0.004)
FRL Segregation - Std	0.084 (0.005)***	0.123 (0.008)***	0.108 (0.005)***	0.005 (0.002)***	-0.023 (0.005)***	-0.001 (0.004)
Achievement Variables						
School Level Achievement	0.102 (0.004)***	0.320 (0.010)***	0.246 (0.007)***	0.102 (0.001)***	0.106 (0.005)***	0.103 (0.004)***
LEA Level Achievement	0.163 (0.009)***	0.417 (0.015)***	0.314 (0.010)***	0.039 (0.004)***	-0.027 (0.012)**	0.012 (0.009)
LEA White-Asian Gap	-0.053 (0.018)***	-0.174 (0.028)***	-0.129 (0.023)***	-0.003 (0.005)	-0.007 (0.013)	0.003 (0.011)
LEA White-Black Gap	0.149 (0.017)***	0.474 (0.028)***	0.409 (0.022)***	0.058 (0.005)***	0.045 (0.015)***	0.043 (0.013)***
LEA White-Hispanic Gap	0.146 (0.017)***	0.440 (0.026)***	0.364 (0.019)***	0.035 (0.006)***	0.004 (0.016)	0.038 (0.013)***
LEA Economic Gap	0.308 (0.017)***	0.779 (0.026)***	0.606 (0.018)***	0.056 (0.007)***	-0.094 (0.020)***	0.004 (0.015)
Demographic Variables						
School Proportion White	0.079 (0.007)***	0.091 (0.016)***	0.060 (0.011)***	0.120 (0.002)***	0.079 (0.010)***	0.070 (0.010)***
School Proportion Asian	0.254 (0.021)***	0.987 (0.056)***	0.874 (0.039)***	0.234 (0.008)***	0.227 (0.029)***	0.233 (0.030)***
School Proportion Hispanic	-0.013 (0.008)	-0.162 (0.022)***	-0.088 (0.014)***	-0.112 (0.003)***	-0.108 (0.014)***	-0.080 (0.014)***
School Proportion Black	-0.120 (0.008)***	-0.099 (0.021)***	-0.072 (0.013)***	-0.099 (0.003)***	-0.076 (0.013)***	-0.092 (0.013)***
School Proportion FRL	-0.126 (0.006)***	-0.512 (0.017)***	-0.394 (0.011)***	-0.176 (0.002)***	-0.123 (0.010)***	-0.115 (0.010)***
LEA SES	0.051 (0.003)***	0.145 (0.005)***	0.110 (0.004)***	0.010 (0.001)***	-0.013 (0.004)***	-0.002 (0.003)
LEA Percent College	0.438 (0.022)***	1.338 (0.032)***	1.106 (0.023)***	0.090 (0.009)***	-0.080 (0.024)***	0.025 (0.019)

Table 4 Continued

	Offer			Proportion		
Revenue Variables	**GT[1]**	**7th Grade Alg[1]**	**8th Grade Geo[1]**	**GT[1]**	**7th Grade Alg[1]**	**8th Grade Geo[1]**
Log Total Revenue	0.072 (0.002)***	0.097 (0.003)***	0.077 (0.002)***	0.001 (0.001)	-0.040 (0.003)***	-0.011 (0.002)***
Log Federal Revenue	0.053 (0.002)***	0.055 (0.003)***	0.047 (0.002)***	-0.002 (0.001)**	-0.031 (0.003)***	-0.009 (0.002)***
Log State Revenue	0.063 (0.002)***	0.072 (0.003)***	0.060 (0.002)***	-0.000 (0.001)	-0.038 (0.003)***	-0.011 (0.002)***
Log State Revenue - Gifted	0.033 (0.005)***	0.097 (0.008)***	0.085 (0.006)***	0.007 (0.001)***	-0.012 (0.005)***	-0.001 (0.004)
Log Local Revenue	0.067 (0.002)***	0.101 (0.003)***	0.078 (0.002)***	0.002 (0.001)***	-0.038 (0.003)***	-0.010 (0.002)***
Log Total Expenditures	0.072 (0.002)***	0.097 (0.003)***	0.076 (0.002)***	0.001 (0.001)	-0.041 (0.003)***	-0.010 (0.002)***
Log Total Expenditures - Instructional	0.073 (0.002)***	0.097 (0.003)***	0.077 (0.002)***	0.001 (0.001)	-0.042 (0.003)***	-0.011 (0.002)***
State Mandate	0.547 (0.075)***	0.075 (0.053)	0.080 (0.041)**	-0.028 (0.017)*	-0.040 (0.031)	-0.043 (0.028)

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[1](b/se)

Table 5.

Conditional Predictors of Access to School-Level Gifted and Talented Services

Variables	Model 1	Model 2	Model 3	Model 4
White-Black Segregation - Std	0.050 (0.006)***	0.063 (0.006)***	0.054 (0.006)***	0.061 (0.006)***
White-Hispanic Segregation - Std	0.059 (0.005)***	0.073 (0.005)***	0.065 (0.006)***	0.071 (0.006)***
FRL Segregation - Std	0.084 (0.005)***	0.082 (0.005)***	0.086 (0.006)***	0.085 (0.006)***
Achievement				
LEA White-Asian Gap	-0.052 (0.018)***	-0.032 (0.018)*	-0.022 (0.020)	-0.016 (0.020)
LEA White-Black Gap	0.150 (0.017)***	0.099 (0.018)***	0.120 (0.019)***	0.105 (0.020)***
LEA White-Hispanic Gap	0.146 (0.016)***	0.098 (0.017)***	0.129 (0.018)***	0.108 (0.018)***
LEA Economic Gap	0.308 (0.017)***	0.241 (0.018)***	0.304 (0.018)***	0.288 (0.019)***
Demographic				
School Proportion White	0.079 (0.007)***	0.053 (0.007)***	-0.047 (0.008)***	-0.049 (0.008)***
School Proportion Asian	0.253 (0.021)***	0.214 (0.021)***	0.066 (0.020)***	0.066 (0.020)***
School Proportion Hispanic	-0.013 (0.008)	0.007 (0.008)	0.088 (0.008)***	0.088 (0.008)***
School Proportion Black	-0.120 (0.008)***	-0.100 (0.008)***	-0.038 (0.008)***	-0.040 (0.008)***
School Proportion FRL	-0.126 (0.006)***	-0.102 (0.007)***	-0.038 (0.010)***	-0.033 (0.010)***
LEA SES	0.051 (0.003)***	0.015 (0.005)***	0.030 (0.004)***	0.013 (0.006)**
LEA Percent College	0.438 (0.022)***	0.330 (0.030)***	0.365 (0.025)***	0.400 (0.033)***
Revenue				
Log Total Revenue	0.072 (0.002)***	0.068 (0.002)***	0.078 (0.002)***	0.077 (0.002)***
Log Federal Revenue	0.053 (0.002)***	0.060 (0.002)***	0.063 (0.002)***	0.068 (0.002)***
Log State Revenue	0.063 (0.002)***	0.061 (0.002)***	0.069 (0.002)***	0.069 (0.002)***
Log State Revenue - Gifted	0.031 (0.004)***	0.026 (0.004)***	0.024 (0.005)***	0.023 (0.005)***
Log Local Revenue	0.067 (0.002)***	0.061 (0.002)***	0.070 (0.002)***	0.070 (0.002)***
Log Total Expenditures	0.071 (0.002)***	0.067 (0.002)***	0.077 (0.002)***	0.076 (0.002)***

Table 5 Continued

Log Total Expenditures - Instructional	0.073 (0.002)***	0.068 (0.002)***	0.078 (0.002)***	0.077 (0.002)***
Covariates in Model				
State Mandate	X	X	X	X
School Ach			X	X
LEA Ach		X		X

Table 6.

Conditional Predictors of School-Level Proportion Served in Gifted and Talented Services

Variable	Model 1	Model 2	Model 3	Model 4
Segregation				
White-Black Segregation - Std	0.001 (0.002)	0.005 (0.002)**	0.006 (0.002)***	0.001 (0.002)
White-Hispanic Segregation - Std	0.001 (0.002)	0.005 (0.002)**	0.007 (0.002)***	0.002 (0.002)
FRL Segregation - Std	0.005 (0.002)***	0.005 (0.002)***	0.004 (0.002)*	0.003 (0.002)*
Achievement				
LEA White-Asian Gap	-0.003 (0.005)	0.005 (0.005)	0.016 (0.005)***	0.005 (0.005)
LEA White-Black Gap	0.058 (0.005)***	0.045 (0.005)***	0.018 (0.006)***	0.041 (0.005)***
LEA White-Hispanic Gap	0.034 (0.006)***	0.023 (0.006)***	0.004 (0.006)	0.021 (0.006)***
LEA Economic Gap	0.056 (0.007)***	0.038 (0.007)***	0.004 (0.007)	0.038 (0.007)***
Demographic				
School Proportion White	0.120 (0.002)***	0.121 (0.002)***	0.005 (0.003)*	0.007 (0.003)**
School Proportion Asian	0.234 (0.008)***	0.225 (0.008)***	0.043 (0.008)***	0.044 (0.008)***
School Proportion Hispanic	-0.112 (0.003)***	-0.110 (0.003)***	-0.017 (0.003)***	-0.017 (0.003)***
School Proportion Black	-0.099 (0.003)***	-0.095 (0.003)***	0.001 (0.003)	0.000 (0.003)
School Proportion FRL	-0.176 (0.002)***	-0.185 (0.002)***	-0.074 (0.004)***	-0.077 (0.004)***
LEA SES	0.010 (0.001)***	-0.002 (0.002)	-0.017 (0.001)***	-0.002 (0.002)
LEA Percent College	0.090 (0.009)***	0.053 (0.012)***	-0.071 (0.010)***	0.043 (0.013)***
Revenue				
Log Total Revenue	0.001 (0.001)	0.000 (0.001)	-0.002 (0.001)**	-0.001 (0.001)
Log Federal Revenue	-0.002 (0.001)**	-0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)
Log State Revenue	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Log State Revenue - Gifted	0.007 (0.001)***	0.004 (0.001)***	0.001 (0.001)	0.003 (0.001)***
Log Local Revenue	0.002 (0.001)***	0.000 (0.001)	-0.003 (0.001)***	-0.000 (0.001)

Table 6 Continued

Log Total Expenditures	0.001 (0.001)	-0.000 (0.001)	-0.002 (0.001)***	-0.001 (0.001)
Log Total Expenditures - Instructional	0.001 (0.001)	0.000 (0.001)	-0.002 (0.001)***	-0.001 (0.001)
Covariates in Model				
State Mandate	X	X	X	X
School Ach			X	X
LEA Ach		X		X

Table 7.

Conditional Predictors of Access to Seventh-Grade Algebra

Variable	Model 1	Model 2	Model 3	Model 4
Segregation				
White-Black Segregation - Std	0.054 (0.009)***	0.098 (0.008)***	0.082 (0.008)***	0.098 (0.009)***
White-Hispanic Segregation - Std	0.062 (0.008)***	0.104 (0.008)***	0.090 (0.008)***	0.105 (0.008)***
FRL Segregation - Std	0.123 (0.008)***	0.128 (0.007)***	0.121 (0.007)***	0.123 (0.007)***
Achievement				
LEA White-Asian Gap	-0.172 (0.028)***	-0.076 (0.027)***	-0.110 (0.027)***	-0.078 (0.027)***
LEA White-Black Gap	0.474 (0.028)***	0.315 (0.027)***	0.342 (0.028)***	0.294 (0.028)***
LEA White-Hispanic Gap	0.441 (0.026)***	0.328 (0.026)***	0.348 (0.026)***	0.320 (0.026)***
LEA Economic Gap	0.779 (0.026)***	0.605 (0.027)***	0.605 (0.027)***	0.579 (0.028)***
Demographic				
School Proportion White	0.092 (0.016)***	-0.102 (0.017)***	-0.278 (0.019)***	-0.293 (0.019)***
School Proportion Asian	0.988 (0.056)***	0.714 (0.056)***	0.444 (0.059)***	0.436 (0.058)***
School Proportion Hispanic	-0.162 (0.022)***	-0.006 (0.022)	0.122 (0.023)***	0.131 (0.023)***
School Proportion Black	-0.100 (0.021)***	0.054 (0.021)**	0.212 (0.023)***	0.214 (0.023)***
School Proportion FRL	-0.513 (0.017)***	-0.382 (0.020)***	-0.196 (0.030)***	-0.159 (0.030)***
LEA SES	0.146 (0.005)***	0.075 (0.009)***	0.073 (0.006)***	0.071 (0.009)***
LEA Percent College	1.342 (0.032)***	1.345 (0.045)***	1.044 (0.037)***	1.317 (0.047)***
Revenue				
Log Total Revenue	0.097 (0.003)***	0.092 (0.003)***	0.092 (0.003)***	0.091 (0.003)***
Log Federal Revenue	0.055 (0.003)***	0.077 (0.003)***	0.069 (0.003)***	0.076 (0.003)***
Log State Revenue	0.072 (0.003)***	0.079 (0.003)***	0.076 (0.003)***	0.078 (0.003)***
Log State Revenue - Gifted	0.097 (0.008)***	0.085 (0.008)***	0.086 (0.008)***	0.086 (0.008)***
Log Local Revenue	0.101 (0.003)***	0.088 (0.003)***	0.089 (0.003)***	0.086 (0.003)***

Table 7 Continued

Log Total Expenditures	0.097 (0.003)***	0.091 (0.003)***	0.091 (0.003)***	0.090 (0.003)***
Log Total Expenditures - Instructional	0.097 (0.003)***	0.091 (0.003)***	0.091 (0.003)***	0.090 (0.003)***
Covariates in Model				
State Mandate	X	X	X	X
School Ach			X	X
LEA Ach		X		X

Table 8.

Conditional Predictors of School-Level Proportion Served in Seventh-Grade Algebra

Variable	Model 1	Model 2	Model 3	Model 4
Segregation				
White-Black Segregation - Std	-0.001 (0.006)	-0.004 (0.006)	0.005 (0.006)	-0.015 (0.006)**
White-Hispanic Segregation - Std	-0.014 (0.006)**	-0.019 (0.006)***	-0.008 (0.006)	-0.029 (0.006)***
FRL Segregation - Std	-0.023 (0.005)***	-0.024 (0.005)***	-0.026 (0.006)***	-0.035 (0.005)***
Achievement				
LEA White-Asian Gap	-0.007 (0.013)	-0.001 (0.013)	0.018 (0.014)	-0.004 (0.014)
LEA White-Black Gap	0.045 (0.015)***	0.043 (0.015)***	-0.004 (0.016)	0.021 (0.016)
LEA White-Hispanic Gap	0.004 (0.016)	0.004 (0.016)	-0.030 (0.017)*	-0.014 (0.017)
LEA Economic Gap	-0.094 (0.020)***	-0.092 (0.021)***	-0.183 (0.021)***	-0.128 (0.022)***
Demographic				
School Proportion White	0.079 (0.010)***	0.090 (0.011)***	-0.071 (0.012)***	-0.067 (0.012)***
School Proportion Asian	0.227 (0.029)***	0.248 (0.029)***	0.032 (0.028)	0.038 (0.028)
School Proportion Hispanic	-0.108 (0.014)***	-0.116 (0.014)***	0.009 (0.014)	0.002 (0.014)
School Proportion Black	-0.076 (0.013)***	-0.083 (0.013)***	0.058 (0.013)***	0.062 (0.013)***
School Proportion FRL	-0.122 (0.010)***	-0.157 (0.011)***	0.174 (0.017)***	0.153 (0.017)***
LEA SES	-0.013 (0.004)***	-0.013 (0.008)	-0.049 (0.005)***	-0.013 (0.009)
LEA Percent College	-0.083 (0.024)***	-0.087 (0.037)**	-0.274 (0.026)***	-0.118 (0.039)***
Revenue				
Log Total Revenue	-0.040 (0.003)***	-0.037 (0.003)***	-0.043 (0.003)***	-0.042 (0.003)***
Log Federal Revenue	-0.031 (0.003)***	-0.034 (0.003)***	-0.026 (0.003)***	-0.037 (0.003)***
Log State Revenue	-0.038 (0.003)***	-0.036 (0.003)***	-0.036 (0.003)***	-0.040 (0.003)***
Log State Revenue - Gifted	-0.012 (0.004)***	-0.012 (0.004)***	-0.015 (0.005)***	-0.014 (0.004)***
Log Local Revenue	-0.038 (0.003)***	-0.035 (0.003)***	-0.044 (0.003)***	-0.040 (0.003)***

Table 8 Continued

Log Total Expenditures	-0.041 (0.003)***	-0.038 (0.003)***	-0.043 (0.003)***	-0.042 (0.003)***
Log Total Expenditures - Instructional	-0.042 (0.003)***	-0.039 (0.003)***	-0.045 (0.003)***	-0.043 (0.003)***
Covariates in Model				
State Mandate	X	X	X	X
School Ach			X	X
LEA Ach		X		X

Table 9.

Conditional Predictors of Access to Eighth-Grade Geometry

Variable	Model 1	Model 2	Model 3	Model 4
Segregation				
White-Black Segregation - Std	0.038 (0.006)***	0.066 (0.006)***	0.064 (0.006)***	0.073 (0.006)***
White-Hispanic Segregation - Std	0.049 (0.006)***	0.075 (0.005)***	0.074 (0.006)***	0.082 (0.006)***
FRL Segregation - Std	0.107 (0.005)***	0.106 (0.005)***	0.112 (0.005)***	0.112 (0.005)***
Achievement				
LEA White-Asian Gap	-0.127 (0.023)***	-0.049 (0.022)**	-0.075 (0.024)***	-0.045 (0.024)*
LEA White-Black Gap	0.409 (0.022)***	0.268 (0.022)***	0.328 (0.022)***	0.282 (0.023)***
LEA White-Hispanic Gap	0.365 (0.019)***	0.262 (0.019)***	0.310 (0.020)***	0.280 (0.020)***
LEA Economic Gap	0.606 (0.018)***	0.469 (0.019)***	0.505 (0.019)***	0.486 (0.020)***
Demographic				
School Proportion White	0.061 (0.011)***	-0.088 (0.011)***	-0.218 (0.013)***	-0.232 (0.013)***
School Proportion Asian	0.875 (0.039)***	0.680 (0.040)***	0.501 (0.042)***	0.497 (0.042)***
School Proportion Hispanic	-0.088 (0.014)***	0.011 (0.014)	0.055 (0.014)***	0.065 (0.014)***
School Proportion Black	-0.073 (0.013)***	0.025 (0.013)*	0.157 (0.014)***	0.152 (0.014)***
School Proportion FRL	-0.395 (0.011)***	-0.296 (0.014)***	-0.203 (0.019)***	-0.175 (0.020)***
LEA SES	0.110 (0.004)***	0.057 (0.006)***	0.057 (0.004)***	0.055 (0.006)***
LEA Percent College	1.108 (0.023)***	1.097 (0.032)***	0.916 (0.027)***	1.137 (0.033)***
Revenue				
Log Total Revenue	0.077 (0.002)***	0.072 (0.002)***	0.075 (0.002)***	0.074 (0.002)***
Log Federal Revenue	0.047 (0.002)***	0.060 (0.002)***	0.058 (0.002)***	0.062 (0.002)***
Log State Revenue	0.060 (0.002)***	0.061 (0.002)***	0.063 (0.002)***	0.063 (0.002)***
Log State Revenue - Gifted	0.085 (0.006)***	0.073 (0.006)***	0.072 (0.007)***	0.071 (0.007)***
Log Local Revenue	0.078 (0.002)***	0.068 (0.002)***	0.071 (0.002)***	0.070 (0.002)***

Table 9 Continued

Log Total Expenditures	0.076 (0.002)***	0.071 (0.002)***	0.075 (0.002)***	0.073 (0.002)***
Log Total Expenditures - Instructional	0.077 (0.002)***	0.071 (0.002)***	0.074 (0.002)***	0.073 (0.002)***
Covariates in Model				
State Mandate	X	X	X	X
School Ach			X	X
LEA Ach		X		X

Table 10.

Conditional Predictors of School-Level Proportion Served in Eighth-Grade Geometry

Variable	Model 1	Model 2	Model 3	Model 4
Segregation				
White-Black Segregation - Std	0.012 (0.005)***	0.016 (0.005)***	0.020 (0.005)***	0.006 (0.005)
White-Hispanic Segregation - Std	0.004 (0.004)	0.006 (0.004)	0.010 (0.005)**	-0.005 (0.005)
FRL Segregation - Std	-0.001 (0.004)	0.000 (0.004)	-0.003 (0.004)	-0.010 (0.004)**
Achievement				
LEA White-Asian Gap	0.003 (0.011)	0.011 (0.012)	0.033 (0.012)***	0.012 (0.012)
LEA White-Black Gap	0.043 (0.013)***	0.039 (0.013)***	-0.001 (0.013)	0.018 (0.013)
LEA White-Hispanic Gap	0.038 (0.013)***	0.036 (0.013)***	0.007 (0.014)	0.015 (0.013)
LEA Economic Gap	0.003 (0.015)	-0.003 (0.016)	-0.073 (0.016)***	-0.036 (0.017)**
Demographic				
School Proportion White	0.070 (0.010)***	0.068 (0.010)***	-0.079 (0.011)***	-0.076 (0.010)***
School Proportion Asian	0.232 (0.030)***	0.239 (0.030)***	0.060 (0.027)**	0.069 (0.026)***
School Proportion Hispanic	-0.080 (0.014)***	-0.076 (0.014)***	0.042 (0.012)***	0.034 (0.012)***
School Proportion Black	-0.091 (0.013)***	-0.090 (0.013)***	0.042 (0.012)***	0.044 (0.012)***
School Proportion FRL	-0.114 (0.010)***	-0.142 (0.011)***	0.186 (0.015)***	0.170 (0.015)***
LEA SES	-0.003 (0.003)	-0.020 (0.006)***	-0.038 (0.004)***	-0.022 (0.007)***
LEA Percent College	0.023 (0.019)	0.015 (0.029)	-0.163 (0.021)***	-0.030 (0.031)
Revenue				
Log Total Revenue	-0.011 (0.002)***	-0.007 (0.002)***	-0.012 (0.003)***	-0.013 (0.003)***
Log Federal Revenue	-0.009 (0.002)***	-0.007 (0.002)***	-0.003 (0.002)	-0.012 (0.002)***
Log State Revenue	-0.011 (0.002)***	-0.008 (0.002)***	-0.008 (0.002)***	-0.012 (0.002)***
Log State Revenue - Gifted	-0.001 (0.004)	-0.001 (0.004)	-0.004 (0.004)	-0.005 (0.004)
Log Local Revenue	-0.010 (0.002)***	-0.008 (0.002)***	-0.016 (0.002)***	-0.014 (0.002)***

Table 10 Continued

Log Total Expenditures	-0.010 (0.002)***	-0.007 (0.002)***	-0.012 (0.003)***	-0.013 (0.002)***
Log Total Expenditures - Instructional	-0.011 (0.002)***	-0.008 (0.002)***	-0.013 (0.003)***	-0.013 (0.002)***
Covariates in Model				
State GT Law	X	X	X	X
School Ach			X	X
LEA Ach		X		X