School Transit and Accessing Public School in Detroit

A Paper presented at the annual conference of the Association for Education Finance and Policy

March 20, 2020

Fort Worth, TX

Ben Pogodzinski
Sarah Winchell Lenhoff
Jeremy Singer
Walter Cook

Wayne State University
Abstract

Students in the Detroit Public Community School District (DPSCD) have the highest rate of chronic absence (missing 10% or more of school days) among large districts in the United States. Additionally, students in DPSCD are among the poorest students in the country, often lacking access to reliable personal transportation or public transit to facilitate getting to school. Although DPSCD offers school-sponsored transit, only 34% of K-8 students were eligible for such transit. The work presented here sought to identify the association between eligibility for school-sponsored transit and the likelihood of chronic absence. Our initial findings show that students who were eligible for transit were slightly more likely to be chronically absent. This counterintuitive finding may highlight the fact that transit eligibility is not sufficient to mediate the negative relationship between student poverty and attendance, and transit eligibility does not guarantee regular use of school-sponsored transit.
School Transit and Accessing Public School in Detroit

Public education in Detroit is marked by high levels of choice, with approximately 47% of resident Detroit students attending the Detroit Public Schools Community District, 31% attending school in one of the nearly 100 charter schools operating within the city, and 22% attending either a traditional public school or charter school in the suburbs across Metro Detroit. In this high choice system of education, in 2017-18, only 18% of resident Detroit students attended the school nearest their home residence, and even within the DPSCD system, only 45% of students attended their designated neighborhood school (Lenhoff & Pogodzinski, 2018). In 2017-18, the average elementary student in Detroit was traveling 2.47 miles to attend school, while the average high school student was traveling 3.97 miles (Lenhoff & Pogodzinski, 2018).

Having a patchwork system of education and long commutes to school may not be a problem for some families, but in a city with substandard public transportation (Sattin-Bajaj, 2018) and high levels of poverty impacting personal transportation options (Gerber, Morenoff, & Smith, 2017), consistently getting to school can be problematic. Additionally, the provision of school sponsored transportation (i.e., a school bus or subsidized public transportation) within DPSCD and across charter schools is limited for many students, with varying eligibility requirements and access. Access to transportation to and from school has important implications for student attendance (Gottfried, 2017), and Detroit has the highest rate of student chronic absence (i.e., missing 10% or more days) among large cities (over 500,000 residents). In 2017-18, 69% of students in DPSCD and 38% of students in city charter schools were chronically absent (Lenhoff & Pogodzinski, 2018).

Therefore, we sought to answer the following research questions: a) What percentage of DPSCD elementary students were eligible for school sponsored transportation? and b) What was
the association between eligibility for school sponsored transportation and chronic absence? To answer these questions, we drew from student-level administrative data from DPSCD for the 2018-19 school year; we restricted the analysis to only students within the DPSCD system because the district had a uniform transportation policy, and information on transportation across the charter schools was not readily available. All DPSCD high school students were eligible to ride public transportation for free (thus excluded from the analysis), while elementary students (K-8) were eligible to ride the school bus if they attended their zoned school and lived more than three-quarters of a mile away from that school.

**Multi-Faceted Context of Student Attendance**

Student attendance is influenced by a host of factors across home, community, and school environments (Balfanz & Byrnes, 2012; Gottfried & Gee, 2017; Lenhoff & Pogodzinski, 2018). In other words, student attendance is influenced by the intersection of multiple factors across multiple layers within which students are situated. We draw from an ecological systems framework to examine factors associated with student attendance. More specifically, grounded in the work of Bronfenbrenner (1979), we contend that student attendance is a proximal process related to characteristics of an individual person, their social and environmental context, and time (Brofenbrenner & Morris, 2006). For example, a student’s individual characteristics and home environment (microsystem) can influence attendance through personal motivation or through parental engagement and support (Gottfried & Gee, 2017; Gee, 2018; Balfanz & Byrnes, 2012; Brundage, Castillo, & Batsche, 2017; Jacob & Lovett, 2017). At the same time, characteristics of their school environment (mesosystem) may influence attendance, specifically contextual factors related to school climate (Lenhoff & Pogodzinski, 2018), teacher
characteristics and engagement (Gershenson, 2016; Whipple et al., 2010), and specific student supports (e.g., health care) (Allen, 2003; Tinkelman & Schwartz, 2004).

These systems do not operate in isolation, as there is an interaction between systems (e.g., school-family relations). Furthermore, student attendance can be influenced by other contexts, such as a parent’s employment situation (exosystem) (Gotfried & Gee, 2017) or broader structural contexts (macrosystem) which may help or hinder student attendance (e.g., community environmental conditions) (Balfanz & Chang, 2016; Gottfried, 2017; Jacob & Lovett, 2017; Moonie et al., 2006; Sutphen et al., 2010; Wallace, 2017; Whipple et al., 2010). For example, access to adequate health care may have implications for regular school attendance.

Finally, student attendance can vary by time, both within a given day (Whitney & Liu, 2016), the course of a year, or across years (Balfanz & Byrnes, 2012; Bealing, 1990). For example, absenteeism has been shown to have a compounding effect over time (London et al., 2016). At the same time, the contextual factors associated with student attendance can change over time as students change and contextual circumstances change. Therefore, applying an ecological perspective draws focus to students’ individual characteristics, the interconnected processes that students experience, the structural and environmental contexts, and how these elements interact, change, and evolve over time (Gotfried & Gee, 2017).

Transportation and Student Attendance

Sugrue and colleagues (2016) identify transportation as a critical variable within their ecological framework for understanding chronic absenteeism, specifically identifying access to reliable transportation as an important determinant for regular school attendance. However, there is relatively limited extant research on the more nuanced relationships between transportation and student attendance, particularly related to school-sponsored transportation. One such study,
Gottfried (2017), utilizes the ECLS-K:2011 dataset to find that kindergarteners who took the school bus to school were less likely to be chronically absent than students who used alternative modes of transit. Qualitative research of the topic includes Wallace (2017), who conducted interviews with 22 families with chronically absent students, and many identified not having reliable and safe transportation as one important barrier to attendance.

While access to transportation is a necessary condition for school attendance for many students, it does not appear to be sufficient: the level of safety on the students’ routes to school is a significant factor associated with absenteeism. For example, Burdick-Will and colleagues (2019) examined middle and high school students’ usage of public transit in Baltimore, MD and found that having to walk to and wait at bus stops for city buses with high levels of crime was associated with higher absenteeism, both before and after controlling for student characteristics including prior school attendance.

Understanding this relationship between attendance and transportation is particularly important in Detroit, since less than 25% of students attend the nearest school to their home (Cowen, et al., 2018). Sattin-Bajaj (2018) further describes the unique set of challenges Detroit faces with respect to provision of school transportation. Although there have been some recent modest improvements, public transit in the geographic sprawling city of Detroit has been routinely criticized as being inadequate. Additionally, there is virtually no coordination in the provision of transportation of students across the dozens of charter schools that operate in Detroit and DPSCD.

The one exception to coordination across school entities relates to the City of Detroit initiative known as the GOAL Line. The GOAL Line is a pilot busing program in Northwest Detroit which picks students up at bus depot stops and drops them off at their respective schools
along a loop route; in the afternoon it shuttles students from their schools to various after school programs at community centers along the route. According to Edwards et al. (2019), Detroit families who were provided with morning and afternoon transportation utilized the option in the afternoon to attend the after school programs, but the majority did not utilize it in the morning with regularity. This would suggest that on average, the provision of the GOAL Line likely had limited impact on student attendance, though the program and study of the program are still in the early stages.

Overall, following our ecological framing of student attendance, we propose that the provision of school-sponsored transportation has the potential to positively influence student attendance rates. It represents a potentially important contextual factor which intersects with home, community, and school conditions, and may be particularly important in a city like Detroit with extremely high rates of student poverty and inadequate public transit.

Data and Methods of Analysis

To answer the research questions, we draw from student-level administrative data for the 2018-19 school year granted through a data sharing agreement with DPSCD. The data set included data for all students in grades K-8, but because district transit policies differ between primary schools (largely K-8 schools in Detroit) and secondary schools (serving grades 9-12), we focused this analysis solely on students in grades K-8 for which we had attendance data. We further reduced the sample to only include students who did not transfer between schools during the school year, were not dual enrolled in multiple schools, and were enrolled in a school for at least 30 days. Additionally, we excluded students who attended center based programs for special education students, attended virtual schools, attended alternative schools, and magnet schools. With regard to magnet schools, this included schools where there was not a catchment
zone and/or no students eligible for transportation. Finally, we excluded outliers who attended their zoned neighborhood school, but lived more than five miles from the school (characterizing these individuals as outliers and/or administrative data entry errors). There were 30,718 students included in the sample used in the analysis.

For students in grades K-8 (the focus of this study), in addition to complying with special education student transit requirements in the individual development plans, the general DPSCD policy restricts school bus transit eligibility to students who were attending their neighborhood zoned school and live more than 0.75 miles from that school. At the same time, the district makes several exceptions to this policy for students who attend their neighborhood school as well as those who attend another school within the district. Although some of these exceptions are structural in nature (e.g., transportation provided to students who are not able to attend their zoned school due to over enrollment), many are individualized exceptions.

Therefore, to address the first research question, we examined descriptive statistics for transit eligibility across various specifications. Specifically, in addition to the overall level of transit eligibility, we looked at how eligibility varied based on attendance in a zoned neighborhood school, as well as student special education status (where transit eligibility may be dictated by a student’s Individualized Development Plan). We also examined average transit eligibility at the school-level, and identified the average distance-to-school for students who attended their zoned school and those that attended a non-zoned school.

To address the second research questions, we first began by estimating the following logistic regression model, including all subjects in the analytical sample:
\[
\ln\left(\frac{P[\text{Chronic Absence} = 1]}{1 - P[\text{Chronic Absence} = 1]}\right) = \theta_0 + \theta_1 \text{Attend Zoned School} + \\
\theta_2 \text{Transit Eligible} + \theta_3 \text{Black} + \theta_4 \text{Hispanic} + \theta_5 \text{FRPL} + \theta_6 \text{Special Ed} + \theta_7 \text{Upper El} + \\
\theta_8 \text{JrHigh} + \theta_9 \text{School} + e \quad (1).
\]

This model predicts the likelihood a student was chronically absent as a function of student attendance in their neighborhood zoned school and eligibility for school-sponsored transportation, controlling for student race/ethnicity, eligibility for free/reduced price lunch, grade-level band, and time invariant school characteristics (i.e., school fixed effects).

Because there were exceptions to the general DPSCD transit policy (i.e., eligibility only for students who attend their neighborhood school and live more than 0.75 miles from the school), we then estimated a pair of models specifically focusing on the relationship between transit eligibility and chronic absence, while controlling for student characteristics and school fixed effects. We first estimated a model that only included students who attended their neighborhood school, and then estimated a model that only included students who did not attend their neighborhood school.

We were also interested in the association between the distance between a student’s home and school and chronic absence, we therefore estimated three models to identify the association between distance to school and the likelihood of chronic absence based on the following restrictions: a) included students who attended their neighborhood school and lived 0.75 miles or closer to the school, b) included students who attended their neighborhood school and lived further than 0.75 miles away from the school, and c) included students who did not attend their neighborhood school. All three of these estimations excluded students who were eligible for transit since for students attending their zoned school was highly correlated with distance to school.
Finally, we estimated two models to identify the association between the type of transit pick up (e.g., home pick up versus neighborhood bus stop) and the likelihood of chronic absence. The first estimation only included students who attended their zoned school, and the second estimation only included students who did not attend their zoned school (both models only included students who were transit eligible). Table 1 provides descriptive information for all variables included in the analyses.

[insert Table 1 about here]

**Findings**

Table 2 shows information on transit eligibility across various circumstances. Overall, 34% of K-8 students in DPSCD were eligible for transit, with approximately 54% of special education students eligible while only 31% of general education students were eligible. Following the general DPSCD policy, it was not surprising that much larger proportion of students who attended their neighborhood school were eligible for transit compared to those who attended a school outside of their neighborhood zone. It should be noted that about 45% of students in this analytical sample did not attend their neighborhood school. Finally, the school-average for transit eligibility was nearly 34%, but that varied considerably across schools.

[insert Table 2 about here]

We then estimated the logistic regression models. As shown in model (1) in Table 3, students who attended their neighborhood zoned school were less likely to be chronically absent, while those who were eligible for transit were more likely to be chronically absent, *ceteris paribus*. With regard to an early elementary student who attended their zone school, the probability of chronic absence for a non-special education black student who was eligible for free/reduced price lunch was nearly 3 percentage points higher if they were transit eligible.
probability of 0.74 compared to 0.71). In addition to the focal variables, Black students were significantly more likely to be chronically absent compared to students in the “other race” category, while Hispanic/Latino(a) students were significantly less likely to be chronically absent. Not surprisingly, special education students were more likely to be chronically absent, as were students who qualified for free/reduced priced lunch (though this includes the vast majority of students in DPSCD). Finally, in line with previous work (Lenhoff et al., 2019), students in upper elementary and junior high were less likely to be chronically absent, in part because Kindergarten students have the highest rates of chronic absence.

[insert Table 3 about here]

Model (2) only included students who were attending their neighborhood school, while Model (3) only included students who were not attending their neighborhood school. For both sets of students, transit eligibility was associated with greater odds of being chronically absent. Interestingly, for students who attended their neighborhood school, eligibility for free/reduced lunch was not associated with higher odds of being chronically absent, while these measures were for students who did not attend their neighborhood school. Conversely, being Black was associated with higher odds of chronic absence for students in their neighborhood zoned schools, while they were not in non-neighborhood zoned schools.

We then focused on the role that distance to school may play in student attendance, particularly for students who were not eligible for transit. Model (4) shows the results when the sample was restricted to students who attended their neighborhood school and lived closer than 0.75 miles from the school, Model (5) shows the results when the sample was restricted to those that attended their neighborhood school and lived further than 0.75 miles from the school, and Model (6) shows the results when the sample was restricted to students who did not attend their
neighborhood school. As shown in Table 3, distance to school was associated with higher odds of being chronically absent for students who attended their neighborhood school. This finding held regardless if they were disqualified for transit because they lived too close to the school or if they fell into some exclusionary exception for transit eligibility even if they lived further than 0.75 miles from the school (approximately 7% of students who attended their neighborhood school and lived more than 0.75 miles from school were listed as not eligible for transit).

Interestingly, there was no identified statistically significant relationship between distance to school and chronic absence for students who did not attend their neighborhood school.

Finally, we estimated two models focused on identifying the relationship between type of bus stop and chronic absence. For students who did not attend their neighborhood school, having a home bus was associated with higher odds of being chronically absent, while there was no statistically significant association between this measure and chronic absence for those that attended their neighborhood school.

**Discussion**

Descriptively, the analysis highlights that the majority of DPSCD students were not eligible for transit. Although there existed several exceptions to the broad transit policy which restricted eligibility to those who attended a neighborhood school and lived further than 0.75 miles from the school (e.g., approximately 19% of students attending a non-zoned school were listed as transit eligible), a large number of students were excluded from transit eligibility because they either lived too close to their zoned school or they were attending a non-zoned school. Both of these exclusionary criteria likely have different impacts on student access to school, and would necessitate different approaches to thinking about creating greater access to school transit.
Transit Eligibility

Somewhat surprisingly, transit eligibility was associated with a higher likelihood of being chronically absent. Given the nature of the data and analysis, we cannot draw any solid conclusions from this finding, which although a relatively small effect held across multiple specifications. On one hand, particularly for those attending their zoned school, it could be that because transit eligibility was primarily determined by distance to the zoned school, transit eligibility was picking up the negative association between distance to school and attendance. Because we do not have data on who actually used the bus, we cannot further test this assumption. Based on other research looking at transportation access and attendance in Detroit, there is some evidence that students are less likely to use busing to get to school in the morning and more likely to use it in the afternoon (Edwards et al., 2019). Additionally, the work of Burdick-Will and colleagues (2019) highlight that environmental factors related to blight and crime may dissuade the use of school-sponsored transportation even when it is offered. In other words, it would be a mistake to conflate transit eligibility with transit use. If students are not utilizing the bus on a consistent basis, then it would make sense that transit eligibility may be a proxy for distance and have a negative relationship with attendance.

Distance to School

The interpretation between transit eligibility and chronic absence may be further grounded when looking at the association between the distance to school and chronic absence. For students who were not eligible for transit and attended their neighborhood school, distance to school was associated with a higher likelihood of being chronically absent. There are several reasons why distance to school may be a deterrent to regular school attendance. Even for those who live relatively close to school, walking to school may be challenging. For example,
compared to other large U.S. cities, Detroit has the highest violent crime rate and residency vacancy rate, which may make walking to school a potentially dangerous endeavor (Burdick-Will et al., 2019; Singer et al., 2019). Furthermore, Detroit has one of the lowest average temperatures among large cities (Singer et al., 2019), therefore walking to school in the cold months may be particularly challenging for low income families who may lack access to adequate clothing.

For all students who do not have access to school sponsored transit, access to reliable transportation is problematic for many Detroit families. Approximately 25% of Detroit families do not own a car (Gerber et al., 2017), and Detroit has a notoriously disjointed public transit system (Sattin-Bajaj, 2018). Without reliable personal or public transportation options, distance to school can create a barrier to regular attendance. Interestingly though, this relationship did not manifest in this analysis for students who did not attend their neighborhood school (the relationship was in the same direction, but failed to meet statistical significance at the $p < 0.05$ level). This may in part be due to selection effects, where families who have more reliable transportation were more likely to choose a school outside of their neighborhood.

**Bus Stop Type**

For students who were eligible for transit, students who were eligible for at-home pick up had greater odds of being chronically absent compared to those who had to walk to a neighborhood bus stop. On face value, this seems counterintuitive. At the same time, those with at-home pick up were more likely to be special education students, who on average were more likely to be chronically absent. As with limitations in interpreting some of the other findings, it’s also not clear what the actual take up of transit was for either group – i.e., those eligible for at-home pick up or those eligible for pick up at a bus stop.
Limitations and Conclusions

The most glaring limitation of this work is the fact that transit eligibility is not the same as transit use. We continue to work with DPSCD to better identify transit uptake across different criteria, particularly those who fall within the stated DPSCD eligibility policy as well as those who fall outside of this policy. This speaks to a further limitation of this study, as the exceptions that were made for transit eligibility were not particularly clear. Those who were eligible through exception may be “exceptional” in other ways which may be associated with their attendance rates.

Although the data did not allow us to identify actual uptake of transportation services, the initial findings suggest that the provision of transportation services may not be sufficient to negate the negative association between distance to school and student absence (Author, 2018). Furthermore, since many students were picked up at “bus stops”, student safety concerns and weather may have influenced accessing school transportation even when it was provided. As previously stated, we are currently working with the DPSCD administration to identify transportation usage rates at the school level and school bus stop locations to be used in additional analysis to investigate the relationship between distance to school/bus stop, eligibility for transportation, time from bus pick up to school start time, and chronic absence.

Although there are limitations to this analysis (e.g., the exclusion of students attending charter schools), it has important implications for how district leaders design their transportation policies, including the direct provision of school buses as well as coordination with public transportation providers. Our continuing work will help illuminate the broader context within which transportation policy is situated, including how access to transportation intersects with
individual, school, and neighborhood characteristics to more comprehensively identify barriers to consistent student attendance.
References


## Tables

Table 1

*Average Transit Eligibility by Category*

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students</td>
<td>29,022</td>
<td>0.344</td>
<td>0.475</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Special education students</td>
<td>4,441</td>
<td>0.537</td>
<td>0.499</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Non-special education students</td>
<td>24,581</td>
<td>0.310</td>
<td>0.462</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Students attending zoned school</td>
<td>15,950</td>
<td>0.469</td>
<td>0.499</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Students attending non-zoned school</td>
<td>13,072</td>
<td>0.192</td>
<td>0.394</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>School-average</td>
<td>63</td>
<td>0.335</td>
<td>0.158</td>
<td>0.085</td>
<td>0.619</td>
</tr>
</tbody>
</table>
Table 2

Variable Descriptive Information

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronically absent</td>
<td>30,718</td>
<td>0.561</td>
<td>0.496</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Attend zoned school</td>
<td>30,718</td>
<td>0.552</td>
<td>0.497</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Transit eligible</td>
<td>29,022</td>
<td>0.344</td>
<td>0.475</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Distance to school</td>
<td>29,041</td>
<td>1.732</td>
<td>2.098</td>
<td>0.000</td>
<td>23.350</td>
</tr>
<tr>
<td>Home bus pick up</td>
<td>10,082</td>
<td>0.191</td>
<td>0.393</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Black</td>
<td>30,718</td>
<td>0.838</td>
<td>0.368</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Hispanic/Latino(a)</td>
<td>30,718</td>
<td>0.115</td>
<td>0.319</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Other race</td>
<td>30,718</td>
<td>0.047</td>
<td>0.212</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Free/Reduced priced lunch</td>
<td>30,718</td>
<td>0.853</td>
<td>0.354</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Special education</td>
<td>30,718</td>
<td>0.152</td>
<td>0.359</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Lower elementary (K-2)</td>
<td>30,718</td>
<td>0.381</td>
<td>0.486</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Upper elementary (3-5)</td>
<td>30,718</td>
<td>0.340</td>
<td>0.474</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Junior high (6-8)</td>
<td>30,718</td>
<td>0.279</td>
<td>0.448</td>
<td>0.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>
### Table 3

*Estimated Odds Ratios*

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(3)</th>
<th>(4)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attend zoned school</td>
<td>0.899*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit eligible</td>
<td></td>
<td>1.097*</td>
<td>1.127*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance to school</td>
<td></td>
<td></td>
<td>1.437*</td>
<td>1.153*</td>
<td>1.009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home bus stop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.215</td>
<td>1.368*</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.420**</td>
<td>1.338**</td>
<td>1.253</td>
<td>1.502**</td>
<td>0.973</td>
<td>1.382*</td>
<td>1.114</td>
<td>1.046</td>
</tr>
<tr>
<td>Hispanic/Latino(a)</td>
<td>0.633**</td>
<td>0.640**</td>
<td>0.583**</td>
<td>0.630**</td>
<td>0.451**</td>
<td>0.503**</td>
<td>0.678*</td>
<td>1.404</td>
</tr>
<tr>
<td>Free/Reduced priced lunch</td>
<td>1.140**</td>
<td>1.026</td>
<td>1.264**</td>
<td>1.142</td>
<td>0.982</td>
<td>1.382**</td>
<td>0.969</td>
<td>0.837</td>
</tr>
<tr>
<td>Special education</td>
<td>1.137**</td>
<td>1.068</td>
<td>1.176**</td>
<td>0.954</td>
<td>1.162</td>
<td>1.131</td>
<td>1.071</td>
<td>1.046</td>
</tr>
<tr>
<td>Upper elementary (3-5)</td>
<td>0.638**</td>
<td>0.624**</td>
<td>0.654**</td>
<td>0.576**</td>
<td>0.683**</td>
<td>0.687**</td>
<td>0.666**</td>
<td>0.538**</td>
</tr>
<tr>
<td>Junior high (6-8)</td>
<td>0.441**</td>
<td>0.408**</td>
<td>0.488**</td>
<td>0.386**</td>
<td>0.427**</td>
<td>0.474**</td>
<td>0.425**</td>
<td>0.522**</td>
</tr>
<tr>
<td>N</td>
<td>29,022</td>
<td>15,950</td>
<td>13,072</td>
<td>7,847</td>
<td>5,702</td>
<td>10,392</td>
<td>7,331</td>
<td>2,356</td>
</tr>
<tr>
<td>AIC Intercept only</td>
<td>39,939</td>
<td>21,943</td>
<td>17,997</td>
<td>10,852</td>
<td>7,817</td>
<td>14,365</td>
<td>10,500</td>
<td>3,189</td>
</tr>
<tr>
<td>AIC w/Covariates</td>
<td>37,202</td>
<td>20,499</td>
<td>16,630</td>
<td>10,037</td>
<td>7,396</td>
<td>13,142</td>
<td>9,452</td>
<td>3,053</td>
</tr>
<tr>
<td>R-square</td>
<td>0.094</td>
<td>0.095</td>
<td>0.109</td>
<td>0.114</td>
<td>0.093</td>
<td>0.123</td>
<td>0.096</td>
<td>0.108</td>
</tr>
</tbody>
</table>

Statistical significance: *p < 0.05, **p < 0.01; all models included school-fixed effects.