

**KICKSTARTING**  
**K-12**  
**EDUCATION**  
**IN TENNESSEE:**  
**AVENUES FOR SYSTEMIC TRANSFORMATION**

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A POLICY STUDY OF



Political Economy  
Research Institute

MIDDLE TENNESSEE STATE UNIVERSITY

# **Kickstarting K-12 Education in Tennessee: Avenues for Systemic Transformation\***

*A Policy Study by the Political Economy Research Institute at MTSU*

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## **Executive Summary**

Tennessee's K-12 education system could use a kickstart. Although the state has recently taken some steps in the right direction when it comes to education policy, Tennessee's math and reading assessments indicated that only 36 percent of students performed at or above grade level in the 2018-19 school year. Pouring more money into an education system is unlikely to fix it without proper incentives to spend that money wisely. Data from the Tennessee Department of Education indicate that higher levels of expenditures per student are not positively associated with math or English Language Arts (ELA) performance on the state assessment.

The state could provide schools with stronger incentives to spend K-12 education dollars wisely by expanding access to public charter schools and private school choice programs. This report reviews the literature on the topic and finds that expanding access to these types of educational options could improve student outcomes while empowering families. The state could increase access to public charter schools by revising its school funding formula to allow education dollars to follow children to the schools that work best for them. Tennessee could expand access to private schools by relaxing the eligibility requirements for the state's two educational choice programs. Making school funding based on students, rather than systems, would lead to more equity and stronger incentives for schools to meet the needs of children by providing meaningful education services.

This report finds that Tennessee's K-12 education spending is not associated with higher student academic achievement even after controlling for several differences in demographic characteristics across districts in the 2017-18 school year. In addition, the scientific evidence suggests that increasing access to public charter schools and private school choice programs could provide substantial economic benefits associated with improvements in and educational achievement and attainment. For example, doubling the number of students in public charter schools in the state is expected to produce an additional \$1.2 billion in economic benefits associated with higher lifetime earnings. Furthermore, expanding access to the state's Education Savings Account Pilot Program is expected to produce an additional \$102 million in economic benefits associated with increasing high school graduation rates.

**Keywords:** education policy; school choice; charter schools; economics of education; school finance; education reform

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## Introduction

Tennessee's K-12 education system could use a kickstart. Although the state has recently taken some steps in the right direction when it comes to education policy, Tennessee's math and reading assessments indicated that only 36 percent of students performed at or above grade level in the 2018-19 school year. The Nation's Report Card similarly indicates that less than 32 percent of eighth-grade students in Tennessee were proficient in math and reading in 2018-19 school year. Although the state scored around the national average on the eighth-grade math and reading exams, Tennessee performed worse than states such as Louisiana and Mississippi after controlling for differences in student background characteristics such as age, race/ethnicity, special needs status, English language learner status, and free and reduced-price lunch eligibility.

The latest data from the National Center for Education Statistics indicate that public schools in Tennessee spent around \$10,548 per student in the 2016-17 school year. In general, Tennessee's K-12 education spending per student has increased faster than the national average over the last few decades. Although currently spends 23 percent less than the national average, the state increased inflation-adjusted spending per student by 178 percent since 1970, whereas the U.S. increased inflation-adjusted spending per student by 150 percent since 1970. Tennessee increased inflation-adjusted spending per student by 44 percent since 1990 and by 21 percent since 2000. The U.S. increased inflation-adjusted spending per student by 38 percent since 1990 and by 24 percent since 2000. Despite the Great Recession, Tennessee has increased inflation-adjusted spending per student by around 2.5 percent since 2010, which is roughly the same as the overall increase of 2.4 percent in the U.S. In the most recent school year, Tennessee schools spent over 4 percent more per student than schools in states like Florida, Arizona, North Carolina, and Mississippi, and about the same amount as schools in Alabama. However, after controlling for differences in student populations, North Carolina ranked third in eighth grade math scores, and Florida ranked third in eighth-grade reading scores in the most recent school year. Tennessee ranked 26th in eighth-grade math and 23rd in eighth grade reading in the same year.<sup>6</sup>

The next section will examine the latest data on K-12 education spending and student outcomes in Tennessee and review the evidence linking increases in schooling expenditures to student outcomes throughout the United States. The report will then review the educational options available to families in Tennessee such as open-enrollment, public charter schools, and private school choice programs. The report will review the evidence on these policies and make recommendations for transforming the K-12 education system in the state to improve students' outcomes while empowering their families. Next, the report will discuss how the state could improve its school funding formula to increase competitive pressures and equity at the same time. The report will then conclude with a discussion and policy recommendations.

<sup>1</sup> Academic Achievement. State of Tennessee Performance Indicators. Tennessee Department of Education. Retrieved from <https://reportcard.tn.k12.gov/districts/0/page/DistrictAchievement>

<sup>2</sup> Tennessee Overview. The Nation's Report Card. U.S. Department of Education. Retrieved from <https://www.nationsreportcard.gov/profiles/stateprofile/overview/TN>

<sup>3</sup> America's Gradebook: How Does Your State Stack Up? Urban Institute. Retrieved from <http://apps.urban.org/features/naep/>

<sup>4</sup> National Center for Education Statistics. U.S. Department of Education. Retrieved from [https://nces.ed.gov/programs/digest/d19/tables/dt19\\_236.70.asp?current=yes](https://nces.ed.gov/programs/digest/d19/tables/dt19_236.70.asp?current=yes)

<sup>5</sup> The latest data from the United States Census Bureau mirrors this amount. 2018 Public Elementary-Secondary Education Finance Data. United States Census Bureau. Retrieved from <https://www.census.gov/data/tables/2018/econ/school-finances/secondary-education-finance.html>

<sup>6</sup> America's Gradebook: How Does Your State Stack Up? Urban Institute. Retrieved from <http://apps.urban.org/features/naep/>

## K-12 Education Funding and Outcomes

Pouring more money into an education system is unlikely to fix it without proper incentives to spend that money wisely. Data from the Tennessee Department of Education indicate that higher levels of expenditures<sup>7</sup> per student are not positively associated with math (Figure 1) or English Language Arts (ELA) (Figure 2) performance on the TNReady assessment at the district-level.<sup>8</sup> However, these figures are limited in that they do not account for differences in the relative disadvantage of students across districts. For example, although Figure 1 indicates that Williamson County performs the highest on math and ELA while spending around \$1,000 less per child than the state average, the school district also serves more advantaged students than most other districts in the state. In Williamson County Schools, only 2.3 percent of the students are classified as economically disadvantaged, 9.4 percent are classified as having disabilities, and 1.4 percent are classified as having limited English proficiency. In comparison, 36.1 percent of students in the state are classified as economically disadvantaged, 13.6 percent are classified as having disabilities, and 4.6 percent are classified as having limited English proficiency.

A similar result occurs when performing ordinary least squares regression analyses that control for several differences in students across districts using data from the Tennessee Department of Education. Higher levels of funding are not associated with better math or ELA outcomes at the district-level. The main ordinary least squares regression model takes on the form:

$$Achievement_i = \beta_0 + \beta_1 Spending_i + X_i + \varepsilon_i$$

Where the dependent variable of interest, *Achievement*, is the percent of students in district, *i*, that scored at least “on-track” on the TNReady assessment for math or ELA in the 2017-18 school year.<sup>9</sup> The independent variable of interest, *Spending*, is the total spending per student for each district in thousands of U.S. dollars in the same school year. Vector *X* includes controls for average daily membership, number of schools in the district, percent of students identified as African American, percent of students identified as Asian, percent of female students, percent of students identified as Hawaiian or Pacific Islander, percent of students identified as Hispanic, percent of students identified as Native American, percent of students identified as having limited English proficiency, percent of students identified as economically disadvantaged, and percent of students with disabilities. The error term is denoted by  $\varepsilon$ . Each district-level observation is weighted by average daily membership. A statistically significant positive coefficient for  $\beta_1$  would signify a positive relationship between spending and academic achievement.

As shown in Table 1, the statistically insignificant<sup>10</sup> relationship between district-level education expenditures and academic achievement remains after controlling for observed differences in students between districts.

<sup>7</sup> Profile Data Files. District-Level 2018. Data Downloads & Requests. Tennessee Department of Education. Retrieved from [https://www.tn.gov/content/dam/tn/education/data/profile/district\\_profile\\_2017-18.xlsx](https://www.tn.gov/content/dam/tn/education/data/profile/district_profile_2017-18.xlsx)

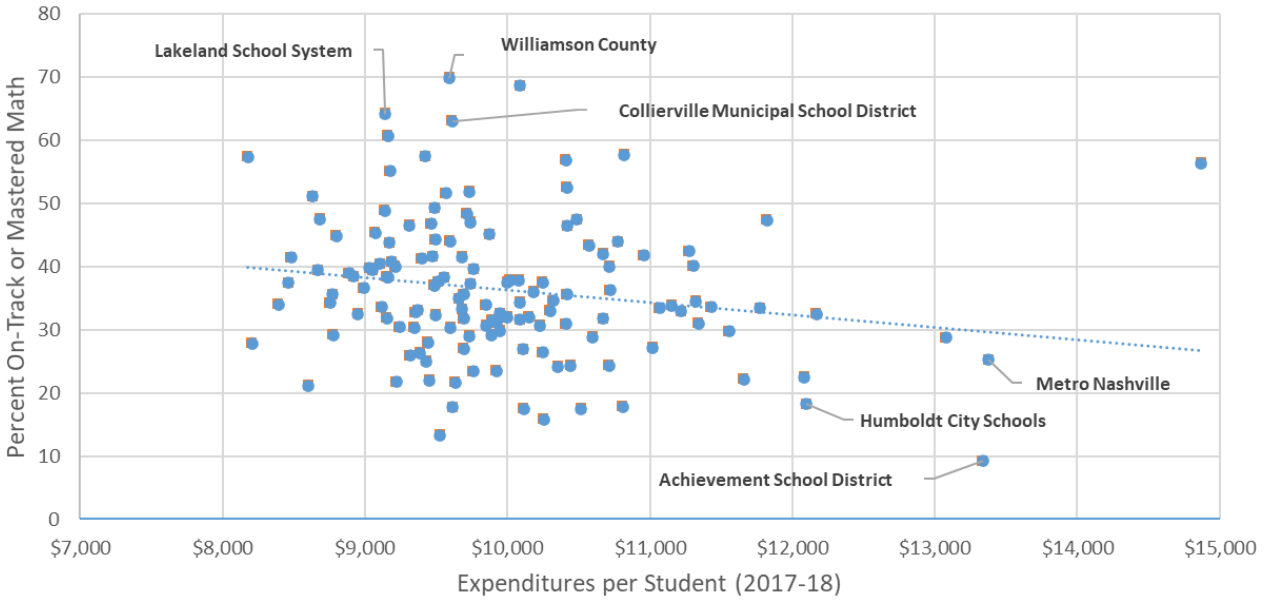
<sup>8</sup> State Assessments. District-Level 2018. Data Downloads & Requests. Tennessee Department of Education. Retrieved from [https://www.tn.gov/content/dam/tn/education/data/data\\_2018\\_district\\_base.csv](https://www.tn.gov/content/dam/tn/education/data/data_2018_district_base.csv)

<sup>9</sup> The results from these analyses should be considered with caution. Lawmakers have reported concerns about the TNReady state assessment including online connectivity problems on test day. These issues could introduce measurement error which could bias estimates towards zero. For an example of criticism of the TNReady test, see <https://wdef.com/2018/04/17/tennessee-lawmakers-fuming-new-assessment-test-problems/>

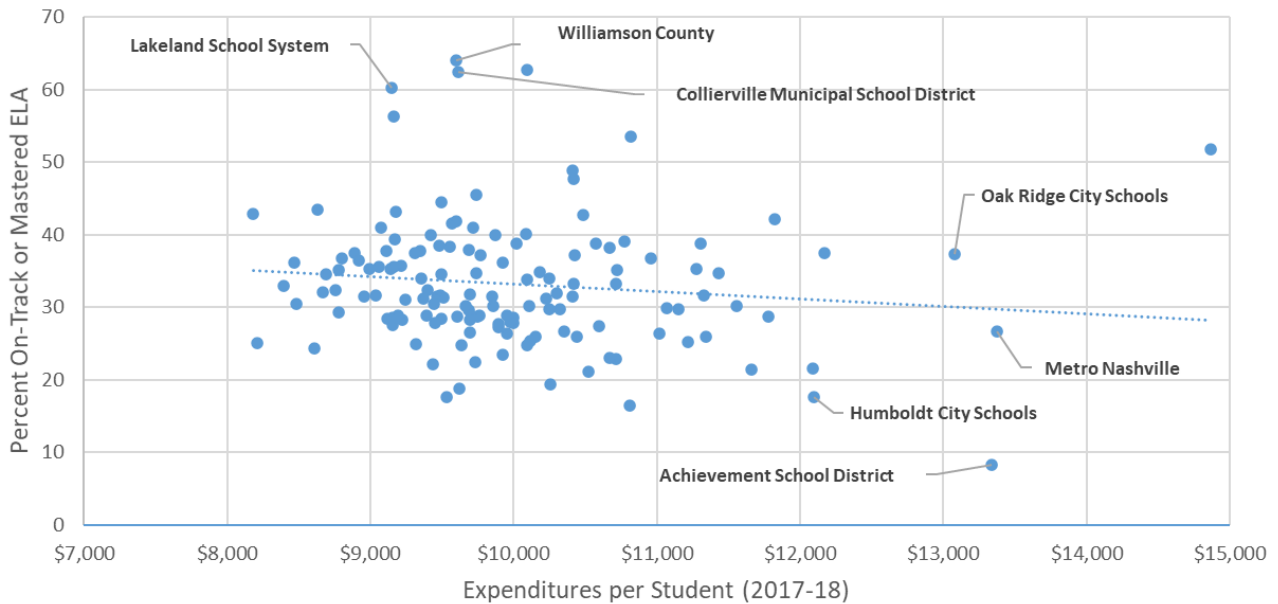
<sup>10</sup> This means that we cannot confidently conclude that the observed relationship is caused by something other than random chance. In other words, these data do not allow us to sufficiently conclude that there is a relationship between district-level education expenditures and academic achievement.

The relationship between spending and outcomes remains statistically insignificant when the dependent variable is replaced with its natural log; however, the fully specified model indicates that there is a marginally negative relationship between per student expenditures and the natural log of math test scores at the district-level.<sup>11</sup> Although these correlational regression analyses should be considered with caution, this descriptive evidence from Tennessee suggests that higher spending levels are not associated with improvements in academic outcomes as measured by the state’s math or ELA assessments.

**Figure 1: District-Level Spending and Math Proficiency in Tennessee (2017-18)**



**Figure 2: District-Level Spending and ELA Proficiency in Tennessee (2017-18)**



<sup>11</sup> This negative relationship passes a 10 percent test of marginal statistical significance; however, this 90 percent level of confidence is much lower than the conventional economics standard of a 95 percent level of confidence.

**Table 1: District-Level Spending and Academic Outcomes in Tennessee (2017-18)**

	Math On-Track (%)	Math On-Track (%)	Ln Math On-Track (%)	ELA On-Track (%)	ELA On-Track (%)	Ln ELA On-Track (%)
<b>Per Pupil Spending (\$1,000's)</b>	-0.809 (0.571)	-0.764 (0.427)	-0.044+ (0.083)	0.465 (0.701)	0.160 (0.786)	-0.022 (0.274)
<b>Average Daily Membership</b>	0.001* (0.023)	-0.000* (0.014)	-0.000* (0.021)	0.001* (0.010)	-0.000 (0.260)	-0.000 (0.192)
<b>Number of Schools</b>	-0.524* (0.014)	0.203** (0.009)	0.005** (0.004)	-0.537** (0.006)	0.111 (0.148)	0.003+ (0.051)
<b>Economic Dis. (%)</b>		-0.460*** (0.000)	-0.012*** (0.001)		-0.309*** (0.000)	-0.010*** (0.000)
<b>LEP (%)</b>		-1.140* (0.038)	-0.025 (0.118)		-0.897** (0.004)	-0.015 (0.122)
<b>SWD (%)</b>		-0.843+ (0.056)	-0.013 (0.318)		-0.655* (0.016)	-0.007 (0.424)
<b>Female (%)</b>		0.017 (0.983)	0.019 (0.433)		0.325 (0.521)	0.034+ (0.084)
<b>African American (%)</b>		-0.125* (0.035)	-0.006** (0.002)		-0.152*** (0.000)	-0.006*** (0.000)
<b>Hispanic (%)</b>		0.177 (0.564)	0.007 (0.469)		0.073 (0.656)	0.002 (0.687)
<b>Asian (%)</b>		1.904* (0.010)	0.037* (0.026)		2.139*** (0.000)	0.042*** (0.001)
<b>Hawaiian / Pacific (%)</b>		5.549+ (0.072)	0.149 (0.103)		6.612** (0.003)	0.192** (0.003)
<b>Native American (%)</b>		0.455 (0.848)	0.077 (0.192)		-0.082 (0.958)	0.040 (0.350)
<b>R-Squared</b>	0.4236	0.8063	0.7849	0.4500	0.8859	0.8602
<b>N</b>	141	141	141	141	141	141

Notes: P-values in parentheses. +  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Average marginal effects are reported. Each observation is weighted by average daily membership. "SWD" is "Students with Disabilities." "LEP" is "Limited English Proficiency." "ELA" is "English Language Arts." Each variable is at the district-level. The natural log of the dependent variable is used in columns 3 and 6. Four school districts representing 77 students were dropped because of missing data.



The general lack of an observed relationship between K-12 schooling expenditures and academic outcomes is not unique to Tennessee. Hanushek (1997) performed a review of nearly 400 studies on the subject and concluded that “there is not a strong or consistent relationship between student performance and school resources.” In particular, Hanushek (1997) found that about 66 percent of the reviewed studies failed to detect statistically significant relationships between education spending and outcomes, whereas 27 percent of the studies detected positive relationships and seven percent detected negative relationships.

Although a more recent review claims to find that education spending improves outcomes and that “the question of whether money matters is essentially settled,” the analysis is limited to 33 studies, a quarter of which find statistically insignificant results (Jackson, 2018). Additionally, although Jackson (2018) claims that these more recent studies use methods that “allow for much more credible causal claims” than the evidence cited by Hanushek (1997), the more recent analyses could actually introduce more bias than they eliminate (Eden & DeAngelis, 2020; Greene, 2020).

As Hanushek (2015) said, “it is always important to recognize that none of this discussion suggests that money never matters. Or that money cannot matter. It just says that the outcomes observed over the past half century—no matter how massaged—do not suggest that just throwing money at schools is likely to be a policy that solves the significant U.S. schooling problems seen in the levels and distribution of outcomes. We really cannot get around the necessity of focusing on how money is spent on schools.” Education researchers who contend that more spending improves student outcomes also concede that “we are very careful to highlight that how money is spent matters” (Jackson, Johnson, & Persico, 2015), and that “money must be spent wisely to yield benefits” (Baker, 2017). These claims are reasonable. Spending more money on K-12 schooling should lead to improvements as long as there are incentives to spend money efficiently. The problem is that district-run public schools in Tennessee currently have weak incentives to spend money wisely because of residential assignments alongside compulsory property taxes.

## Monopoly Power in Tennessee’s K-12 Education System

If families are dissatisfied with the education services provided by their children’s residentially assigned schools, they generally only have a few highly costly or ineffective options. They could move to a residence that is assigned to a higher-quality district-run public school, pay for a private school out of pocket while still paying for the residentially assigned school through property taxes, incur the costs of homeschooling while still paying for the residentially assigned school through property taxes, advocate on behalf of their child to their school’s teachers and principals, or vote for school board members that implement policies that work for their individual children. Because the transaction costs associated with opting out of ineffective residentially assigned schools are high, district-run schools hold substantial monopoly power and therefore do not have particularly strong incentives to cater to the needs of students and their families (Hanushek et al., 2007).

The lack of competitive pressures might partially explain why Tennessee’s inflation-adjusted average teacher salaries dropped by 2 percent between

***Without strong incentives to spend money on satisfying the needs of students in the classroom, increases in K-12 education spending might go towards administrative bloat, surges in non-teaching staff, and non-classroom expenses.***

1992 and 2014 at the same time inflation-adjusted education expenditures per student increased by 41 percent (Scafidi, 2017). Over the same period, the number of non-teaching staff increased by 49 percent, whereas the number of students increased by only 19 percent (Scafidi, 2017). Without strong incentives to spend money on satisfying the needs of students in the classroom, increases in K-12 education spending might go towards administrative bloat, surges in non-teaching staff, and non-classroom expenses. Competitive pressures in the education system could incentivize district-run public schools to allocate resources towards students in the classroom and raise teacher salaries (DeAngelis & Shuls, 2018; Hensvik, 2012; Hoxby, 1994; Jackson, 2012; Vedder & Hall, 2000).

Private school choice programs and public charter schools introduce competitive pressures into the K-12 education system by giving families alternatives to their residentially assigned public schools (Chubb & Moe, 1988; Chubb & Moe, 1990; DeAngelis, 2018; Friedman, 1955; Hoxby, 2007). Schools must cater to the needs of students if their families have the option to take their children—and their education funding—elsewhere. Access to public charter schools and private schools could also lead to better outcomes by improving the match between educators and students (DeAngelis & Holmes Erickson, 2018). Public charter schools and private schools might also have a competitive advantage over district-run public schools because of additional autonomy and fewer government regulations (Shakeel & DeAngelis, 2017). However, only around 3 percent of the school-aged population is enrolled in a public charter school in Tennessee, whereas around double that proportion of students are enrolled in public charter schools nationwide (Catt, 2019).<sup>12</sup> Less than one-tenth of 1 percent of the school-aged population is enrolled in a private school choice program in Tennessee (Catt, 2019). Expanding access to public charter schools and private school choice programs could introduce the competitive pressures necessary to kickstart Tennessee’s K-12 education system and provide substantial economic benefits in the short and long run.

## Public School Choice

According to the U.S. Department of Education and the Tennessee Department of Education, charter schools are public schools of choice, meaning that students are not residentially assigned to them. In Tennessee and most other states, charter schools are public schools that are operated by independent not-for-profit governing bodies.<sup>13</sup> Tennessee’s public charter schools are prohibited from charging tuition, having religious affiliations, and using selective admissions processes. Public charter schools additionally must comply with federal safety, special education, and civil rights laws.<sup>14</sup> However, Tennessee generally allows charter schools to have more flexibility in their operations than district-run schools. Tennessee enacted a charter school law in 2002, and there are currently 112 public charter schools in the state serving about 42,900 students, or around 3 percent of the school-aged population.<sup>15</sup>

The evidence generally suggests that expanding access to public charter schools would benefit students in Tennessee. The latest and most comprehensive systematic review and meta-analysis of 38 rigorous studies

<sup>12</sup> Public elementary and secondary charter schools and enrollment. Table 216.90. Digest of Education Statistics. National Center for Education Statistics. U.S. Department of Education. Retrieved from [https://nces.ed.gov/programs/digest/d18/tables/dt18\\_216.90.asp](https://nces.ed.gov/programs/digest/d18/tables/dt18_216.90.asp)

<sup>13</sup> Charter Schools. Tennessee Department of Education. Retrieved from <https://www.tn.gov/education/school-options/charter-schools.html>

<sup>14</sup> What is a Charter School? National Charter School Resource Center. U.S. Department of Education. Retrieved from <https://charterschoolcenter.ed.gov/what-charter-school>

<sup>15</sup> Tennessee. National Alliance for Public Charter Schools. Retrieved from <https://www.publiccharters.org/our-work/charter-law-database/states/tennessee>

on the subject finds that access to public charter schools in the United States increases math achievement by 3.3 percent of a standard deviation and increases reading achievement by 2 percent of a standard deviation (Betts & Tang, 2019). According to Stanford University's Center for Research on Education Outcomes (2015), these positive effects translate to about 24 additional days of learning in math and about 14 additional days of learning in reading. In their review, Betts and Tang (2019) found nine random assignment studies linking public charter schools to student achievement. Those nine studies generally suggest that access to public charter schools increases student academic achievement (Abdulkadiroğlu et al., 2011; Angrist et al., 2012; Angrist et al., 2016; Dobbie & Fryer, 2011; Gleason et al., 2010; Hoxby, Murarka, & Kang, 2009; Hoxby & Rockoff, 2004; McClure et al., 2005; Tuttle et al., 2013). For example, Tuttle et al. (2013) found that winning a lottery to attend a Knowledge is Power Program (KIPP) charter school increased math achievement by 36 percent of a standard deviation after two years of attendance. Two other recent random assignment studies that were not included in the Betts and Tang (2019) meta-analysis also found that winning a lottery to attend public charter schools increased academic achievement in Michigan (Dynarski et al., 2018) and Massachusetts (Cohodes, Setren, & Walters, 2019). Zimmer et al. (2019) also recently summarized the evidence on public charter schools in the United States and similarly concluded that "lottery-based analyses have generally shown strong positive effects on student achievement of charter school admission and enrollment."

**Access to public charter schools in the U.S. increases math achievement by 3.3%\* and increases reading achievement by 2%\***

*\*of a standard deviation*

Betts & Tang, 2019

These types of academic benefits could translate to economic benefits as well. For example, Hanushek (2011) observed that a one standard deviation increase in student achievement is associated with a 13 percent increase in lifetime earnings.<sup>16</sup> Following the methodology from previous evaluations (e.g. DeAngelis, 2018; DeAngelis et al., 2019; DeAngelis & DeGrow, 2018; DeAngelis & Flanders, 2018; Flanders & DeAngelis, 2018; Wolf et al., 2014), because 70 percent of learning is retained from one year to the next, it is possible to forecast the potential effects of expanding access to public charter schools in Tennessee on lifetime earnings. Using the more cautious estimate of public charter schools' effects on student achievement reported by Betts and Tang (2019) (a 2 percent of a standard deviation positive effect on reading scores), the following two equations could be used to forecast the possible effects of expanding access to public charter schools on lifetime earnings in Tennessee:

$$\text{Avg Lifetime Earnings} * [1 + (0.02) * (0.13/SD) * (0.70)]^{13} = \text{Expected Lifetime Earnings} \quad (1)$$

$$\text{Expected Lifetime Earnings} - \text{Avg Lifetime Earnings} = \text{Gain in Lifetime Earnings} \quad (2)$$

To calculate the net present value of lifetime earnings, each student is assumed to work for 46 years, or from the age of 25 to the age of 70. Using a discount rate of 3 percent, and the average wage in Tennessee in 2019 (\$45,650)<sup>17</sup> from the U.S. Department of Labor Bureau of Labor Statistics, the net present value of the average lifetime earnings in Tennessee is \$1,135,921. Because the vast majority of students in Tennessee attend district-run public schools today, this number is the best approximation available for the expected lifetime earnings

<sup>16</sup> Chetty, Friedman, and Rockoff (2014) found a similar positive relationship between effects on student achievement and effects on earnings.

<sup>17</sup> May 2019 State Occupational Employment and Wage Estimates – Tennessee. Bureau of Labor Statistics. United States Department of Labor. Retrieved from [https://www.bls.gov/oes/current/oes\\_tn.htm](https://www.bls.gov/oes/current/oes_tn.htm)

of individuals educated in district-run public schools in the state. Plugging this information into equation (1) produces expected lifetime earnings of \$1,163,093 for students attending public charter schools for their entire K-12 education. Plugging this information into equation (2) produces an expected gain in lifetime earnings of \$27,171 for each child attending public charter schools in the state.

$$\$1,135,921 * [1 + (0.02) * (0.13/SD) * (0.70)]^{13} = \mathbf{\$1,163,093} \quad (1)$$

$$\$1,163,093 - \$1,135,921 = \mathbf{\$27,171} \quad (2)$$

Based on these calculations, expanding access to public charter schools could provide substantial benefits to students and the economy. If Tennessee increased access to public charter schools so that participation rates mirrored the nation overall, the state would essentially double the number of students in public charter schools from 42,900 to 85,800. That expansion of access to public charter schools for 42,900 students would result in an expected benefit of an additional \$1.2 billion in lifetime earnings statewide (42,900 students times \$27,171 per student). Using the less cautious result from Betts and Tang (2019)—a 3.3 percent of a standard deviation increase in academic achievement—provides an estimated economic benefit associated with charter school expansion of around \$1.9 billion in increased lifetime earnings statewide (42,900 students times \$45,153 per student). This larger estimate is calculated by plugging 3.3 percent into equation (1) to find the expected lifetime earnings for each student attending a public charter school from kindergarten through 12th grade (\$1,181,074), which is about \$45,153 higher than the expected lifetime earnings for students educated in district-run public schools in the state.

These estimates should be weighed with considerable caution, however, because effects on standardized test scores might not be valid proxies for effects on lifetime earnings. Although studies such as Hanushek (2011) and Chetty, Friedman, Rockoff (2014) suggest that higher standardized test scores tend to be associated with higher earnings, two recent reviews of the school choice literature suggest that schools' effects on standardized test scores often do not successfully predict their effects on long-term outcomes (DeAngelis, 2019; Wolf, Hitt, & McShane, 2018).

Although effects on standardized test scores are not always strong predictors of effects on long-term outcomes, the preponderance of the evidence suggests that access to public charter schools also improves other outcomes such as educational attainment. Foreman (2017) reviewed the evidence and found six rigorous evaluations on the effects of public charter schools on educational attainment (Angrist et al., 2016; Davis & Heller, 2019; Dobbie & Fryer, 2015; Dobbie & Fryer, 2016; Furgeson et al., 2012; Sass et al., 2016). Each of the six studies found that access to public charter schools improved at least one educational attainment outcome, such as the likelihood of high school graduation, college enrollment, or college graduation. Three of the six studies used random assignment methodology, and each of these evaluations found statistically significant positive effects of public charter schools on educational attainment outcomes (Angrist et al., 2016; Davis & Heller, 2019; Dobbie & Fryer, 2015). For example, Davis and Heller (2019) found that winning a lottery to attend a public charter school in Chicago increased the likelihood of attending college by 10 percentage points.

Betts and Tang (2014) also reviewed the literature on public charter schools and outcomes such as educational attainment and similarly concluded that "overall the studies appear to find positive effects of charter schools on non-achievement outcomes." Only three other rigorous studies on this subject have been published since the Betts and Tang (2014) and Foreman (2017) reviews. Two of these three studies found statistically significant



positive effects on college enrollment (Coen, Nichols-Barrer, & Gleason, 2019; Gwynne & Moore, 2017), and one study found no effects overall (Place & Gleason, 2019). For example, Coen, Nichols-Barrer, and Gleason (2019) found that winning a KIPP charter school lottery increased enrollment in four-year colleges by 6.9 percentage points. Improvements in educational attainment could produce economic benefits in the form of increases in tax revenues and decreases in social costs associated with crime, healthcare, and welfare (Levin, 2009). According to the U.S. Department of Labor Bureau of Labor Statistics, Levin's (2009) estimate for the economic value of an additional high school graduate is about \$254,700 in 2019 dollars after adjusting for inflation.

The studies linking access to public charter schools to nonacademic outcomes such as reductions in discipline, crime, and school climate problems also tend to lean positive. Families value safety when choosing schools for their children, so public charter schools are incentivized to promote school safety and culture (Bedrick & Burke, 2018; Holmes Erickson, 2017; Kelly & Scafidi, 2013). Schwalbach and DeAngelis (2020) reviewed the evidence on the topic and found nine studies linking access to public charter schools to safety as reported by students, parents, and principals. Eight of the nine studies indicated school safety advantages overall for public charter schools relative to nearby district-run public schools (Barrett, 2003; DeAngelis, 2020a; DeAngelis, 2020c; DeAngelis & Lueken, 2020; Hamlin, 2017; Shakeel & DeAngelis, 2018; Tuttle et al., 2015). One study did not find evidence of differences in school safety between sectors (Gleason et al., 2010). None of the eight studies indicated school safety advantages for district-run public schools overall.

Public school choice has been shown to lead to reductions in crime (Deming, 2011; Dills & Hernández-Julián, 2011; Dobbie & Fryer, 2015; McEachin et al., 2020). Deming (2011) found that winning a lottery to attend a preferred public school reduced crime by about 50 percent for a high-risk group of male students in North Carolina. McEachin et al. (2020) found that access to public charter schools in North Carolina was associated with a 36 percent reduction in the likelihood of committing a felony and a 38 percent reduction in the likelihood of committing a misdemeanor. Dobbie and Fryer (2015) similarly found that winning a lottery to attend a public charter school in New York City completely eliminated the likelihood of incarceration for male students (a 100 percent reduction) and reduced the likelihood of teen pregnancy by 59 percent for female students.

Wong et al. (2014) found that winning a lottery to attend a public charter school in Los Angeles reduced risky behaviors such as binge drinking, substance use at school, and gang participation for low-income minority students. Similarly, Dudovitz et al. (2018) found that winning a lottery to attend a public charter school in Los Angeles reduced marijuana misuse, truancy, and disorder. Imberman (2011) also found that public charter schools improved student discipline and attendance.

## Expanding Access to Public School Choice in Tennessee

Only around three percent of the school-aged population is enrolled in a public charter school in Tennessee. However, there are specific reforms the state can implement to expand access to this type of educational option. Although state law requires a local board of education to allocate per student state and local funds to charter schools in Tennessee, recent analyses have revealed substantial funding inequities between sectors. A 2014 national study of funding inequities between school sectors found that public charter schools in Tennessee received around \$1,496 less, or about 16.5 percent less, than district-run schools in the state on a per student basis (Batdorff et al., 2014). More recently, the latest study of funding inequities between school sectors found that public charter schools in Shelby County, Tennessee received about \$2,273 less, or about 20 percent less, than

district-run schools in the same location (DeAngelis et al., 2018). Allowing 100 percent of the funding to follow the child to whatever school works best for them would equalize funding between sectors, promote equity, and give individual schools stronger financial incentives to cater to the needs of students. Equalizing funding between sectors by providing equitable access to capital funding and facilities would also provide educational entrepreneurs with stronger incentives to open and expand public charter schools in the state, increasing the supply of educational options available to families. Tennessee could provide additional incentives to increase educational options by allowing for-profit entities to operate public charter schools and by allowing non-profit charter governing bodies to contract with for-profit entities to operate or manage schools.<sup>18</sup>

Inequitable funding is not the only policy restricting the supply of public charter schools available to families in the state. Tennessee requires public charter schools to be authorized by local school boards, the Achievement School District, or the state board of education.<sup>19</sup> Requiring that public charter schools are authorized by their competition—public school districts—is a clear conflict of interest that could limit high-quality educational opportunities for students. In 2019, Tennessee amended<sup>20</sup> its charter school law to allow public charter schools to appeal to the Tennessee Public Charter Schools Commission—appointed by the governor and approved by lawmakers—when they are denied authorization by a local school board.<sup>21</sup> Although this amendment was a step towards giving public charter schools more avenues for authorization, it's still possible for members of the commission to protect local school districts from competition. The state could increase access to public charter schools by allowing additional authorizing entities such as colleges, universities, and mayors.

Tennessee also passed legislation in 2013 that allows students to request transfers to district-run public schools to which they are not residentially assigned.<sup>22</sup> The transfers between district-run public schools must be approved by the receiving board of education.<sup>23</sup> However, because only 5 percent of K-12 education funding is dispersed to schools on the basis of students in Tennessee, receiving districts currently have weak financial incentives to accept students transferring from other school districts.<sup>24</sup> Increasing the proportion of education funding dispersed on the basis of students would give receiving districts stronger incentives to approve transfer requests, which would also increase incentives for schools to retain students by providing meaningful educational services.

All brick-and-mortar public schools closed in Tennessee in an attempt to mitigate the spread of COVID-19.<sup>25</sup> In a matter of weeks, nearly all public school students in the state transitioned to some form of homeschooling

<sup>18</sup> The only random assignment study linking for-profit charter schools to student outcomes found positive effects on math achievement (Dynarski et al., 2018).

<sup>19</sup> Charter Schools FAQ. Tennessee Department of Education. Retrieved from <https://www.tn.gov/education/school-options/charter-schools/charter-school-faq.html#:~:text=Charter%20schools%20may%20be%20authorized,last%20preceding%20priority%20school%20list>

<sup>20</sup> Statewide Charter Commission Will Ensure High Bar for Charter Schools. Tennessee Department of Education. Retrieved from <https://www.tn.gov/sbe/news/2019/5/20/statewide-charter-commission-will-ensure-high-bar-for-charter-schools.html>

<sup>21</sup> Tennessee Public Charter Schools Commission. Tennessee Department of Education. Retrieved from <https://www.tn.gov/education/tennessee-charter-school-commission.html>

<sup>22</sup> HB 0941. Tennessee General Assembly. Retrieved from <http://wapp.capitol.tn.gov/apps/BillInfo/default.aspx?BillNumber=HB0941&GA=108>

<sup>23</sup> Open Enrollment Policies: State Profile – Tennessee. Education Commission of the States. Retrieved from <http://ecs.force.com/mbdata/mbstprofile?rep=OE17ST&st=Tennessee>

<sup>24</sup> Student based allocation. Edunomics Lab. Georgetown University. Retrieved from <https://edunomicslab.org/our-research/student-based-allocations>

<sup>25</sup> Russell, M. (2020). Coronavirus in Tennessee: Gov. Lee recommends school districts to remain closed for the rest of the school year. Retrieved from <https://www.wate.com/news/tennessee/coronavirus-in-tennessee-gov-lee-recommends-school-districts-to-remain-closed-for-the-rest-of-the-school-year/>

or virtual schooling. Families in the state would have been able to better adapt to these closures if Tennessee’s public charter school law allowed virtual charter schools to exist. Tennessee’s charter school law prohibits families from choosing virtual charter schools, whereas 21 other states—including Georgia, Florida, Louisiana, Kansas, and Arizona—explicitly allow families to have these educational options.<sup>26</sup>

## Private School Choice

Private school choice programs allow education dollars to follow eligible children to private schools of their families’ choosing. The preponderance of the rigorous evidence on the topic suggests these programs improve test scores, educational attainment, reports of safety, and other nonacademic outcomes. Ten of the 17 random assignment studies on the topic find that winning a lottery to use a private school choice program has statistically significant positive effects on math or reading test scores overall or for student subgroups (Barnard et al., 2003; Cowen, 2008; Greene, 2000; Greene et al., 1999; Howell et al., 2002 (three locations); Jin et al., 2010; Rouse, 1998; Wolf et al., 2013).<sup>27</sup> Only two of the evaluations—both of the highly regulated Louisiana Scholarship Program— find negative effects on test scores overall or for subgroups of students (Abdulkadiroğlu, Pathak, & Walters, 2018; Mills & Wolf, 2019). One evaluation finds mixed results depending on the subgroup of students (Lamarche, 2008), and four of the studies do not detect statistically significant effects on test scores (Bitler et al., 2013; Bettinger & Slonim, 2006; Krueger & Zhu, 2004; Webber et al., 2019). It’s worth noting, however, that studies finding no statistically significant differences in test scores suggest a positive return on taxpayer investment because vouchers are generally funded at substantially lower amounts per student than district-run schools. For example, the latest evaluation of the D.C. Opportunity Scholarship Program found that students using vouchers to attend private schools achieved the same math and reading test score results as their peers in public schools for less than a third of the cost (Webber et al., 2019). The latest data indicate that D.C. public schools spend \$31,280 per child,<sup>28</sup> on average, whereas the average private school voucher amount was only \$9,531 in the 2018-19 school year.<sup>29</sup>

The research on the competitive effects of private school choice programs on outcomes in public schools is generally positive. Egalite (2013) found that 20 of 21 studies on this topic showed that private school choice competition improved outcomes in nearby public schools. EdChoice (2020) more recently found that 25 of the 27 existing studies on the subject indicated that competition from private school choice improved outcomes for students who remained in nearby public schools (e.g. Chakrabarti, 2008; Chakrabarti, 2013; Egalite & Mills, 2019; Figlio & Hart, 2014; Figlio & Rouse, 2006; Rouse et al., 2013). Jabbar et al. (2019) performed a systematic review and meta-analysis on this body of research and similarly “found small positive effects of competition on student achievement.” Their results also indicated private schools had larger positive

<sup>26</sup> Charter Schools: Does state law explicitly allow virtual charter schools? 50-State Comparison. Education Commission of the States. Retrieved from <http://ecs.force.com/mbdata/MBQuestNB2C?rep=CS2023>

<sup>27</sup> These types of evaluations are the “gold standard” of research because, given a large enough sample size and effective random assignment, we can be fairly confident that the only difference between the group of students attending private schools and the group of students attending public schools is random chance. Put differently, we can be fairly confident that the difference in observed average outcomes between the two groups is caused by access to the private school choice program rather than student and family background characteristics such as household income and parental engagement.

<sup>28</sup> 2018 Public Elementary-Secondary Education Finance Data. United States Census Bureau. Retrieved from <https://www.census.gov/data/tables/2018/econ/school-finances/secondary-education-finance.html>

<sup>29</sup> District of Columbia – Opportunity Scholarship Program. EdChoice. Retrieved from <https://www.edchoice.org/school-choice/programs/district-of-columbia-opportunity-scholarship-program/>

competitive effects on district-run public schools than public charter schools had on district-run public schools. More recently, Figlio, Hart, and Karbownik (2020) found that expansion of private school choice in Florida was associated with improvements in academic and behavioral outcomes for children who remained in nearby public schools.

The evidence also leans positive for outcomes other than test scores such as educational attainment. Foreman (2017) reviewed the rigorous evidence on the subject and found five studies indicating that access to private school choice programs improves at least one educational attainment outcomes overall or for student subgroups. More recently, DeAngelis and Wolf (2019b) reviewed this literature and found eight rigorous studies on the topic. Six of the eight evaluations found that access to private school choice programs improved educational attainment overall or for student subgroups (Cheng, Chingos, & Peterson, 2019; Chingos, Monarrez, & Kuehn, 2019; Chingos & Peterson, 2015; Cowen et al., 2013; Wolf et al., 2013; Wolf, Witte, & Kisida, 2019). Two of the evaluations did not detect statistically significant effects of private school choice on educational attainment (Chingos, 2018; Holmes Erickson, Mills, & Wolf, 2019). None of the studies on the topic found negative effects. EdChoice (2020) reviewed the evidence on the subject and similarly found that four out of six studies that met their inclusion criteria indicated that access to private school choice programs improved educational attainment. None of the six studies found negative effects. For example, Wolf et al. (2013) found that winning a lottery to use a private school choice program in D.C. increased the likelihood of graduating from high school by 21 percentage points. Cowen et al. (2013) similarly found that students using the Milwaukee Parental Choice Program were about 4 percentage points more likely to graduate high school than their matched peers in nearby public schools.

Such improvements in educational attainment could produce substantial economic benefits for the state by through increases in productivity and taxpayer revenues and decreases in social costs associated with taxpayer-funded healthcare, welfare, and crime. Levin (2009) estimated that the present value of economic benefits associated with an additional high school graduate was around \$209,100 in 2009 dollars, which is about \$254,700 in inflation-adjusted 2020 dollars. The cautious estimates from Cowen et al. (2013) and Levin (2009) can be combined with the number of students accessing private school choice programs in the state to forecast economic benefits. Equations three and four show the forecasted economic benefits resulting from 5,000 students (the current cap set for the state's Education Savings Account Pilot Program) using an education savings account program in Tennessee.

$$5,000 \text{ students} * 0.04 = 200 \text{ additional graduates} \quad (3)$$

$$200 \text{ additional graduates} * \$254,700 = \$51 \text{ million in economic benefits} \quad (4)$$

Equation three shows that a four-percentage point increase in high school graduation rates would be expected to produce 200 additional high school graduates. Equation four shows that 200 additional high school graduates would be expected to produce about \$51 million in additional economic benefits over their lifetimes in terms of higher productivity and tax revenues and lower social costs associated with taxpayer-funded healthcare, welfare, and crime. Doubling the cap to 10,000 students would double the expected number of additional graduates to 400 and the expected increase in economic benefits to around \$102 million.



Access to private school choice programs is also generally associated with improved civic outcomes such as political participation, political knowledge, voluntarism, and tolerance of others (DeAngelis, 2017; DeAngelis & Wolf, 2019b; EdChoice, 2020; Wolf, 2007). Wolf (2007) reviewed 59 findings from 21 empirical studies linking public and private school choice to civic outcomes in the United States. Wolf (2007) found that 56 of 59 estimates showed that school choice either improved civic outcomes (33 results) or had no statistically significant effects (23 results). Only 3 of the 59 results suggested that access to school choice harmed reports of voluntarism, patriotism, and political tolerance. DeAngelis (2017) limited the review to more rigorous studies and found 11 evaluations linking private school choice programs to civic outcomes in the United States (DeAngelis, 2017). The majority of the studies found statistically significant positive effects of access to private school choice on civic outcomes. None of the 11 studies found statistically significant negative effects overall. More recently, DeAngelis and Wolf (2019b) found 12 studies on the topic similarly suggesting that private school choice generally had positive effects, or no effects, on civic outcomes.

Schwalbach and DeAngelis (2020) summarized the evidence linking access to private schools to safety as reported by students, parents, and principals from eleven studies. Six of the studies included results for private schools participating in school choice programs and five included results for private schooling in general. Each of the 11 studies indicated that access to private schools was associated with higher levels of safety as reported by students, parents, or principals. None of the 11 studies found school safety advantages for district-run public schools relative to private schools overall. For example, Webber et al. (2019) found that winning a lottery to use a voucher to attend a private school in D.C. increased the likelihood of students reporting being in a “very safe” school by 34 percent.

Access to private school choice programs generally leads to other social benefits as well. Because residentially assigned schools are already segregated by neighborhood, allowing low-income families to access private school choice programs generally leads to more integration (EdChoice, 2020; Swanson, 2017). Data from Memphis, Tennessee, for example, show that district-run public schools have been highly segregated by race over the last five decades.<sup>30</sup> Six of the seven studies on the topic indicate that private school choice programs in the U.S. lead to more racially integrated schools (e.g. Egalite, Mills & Wolf, 2017; Greene & Winters, 2006; Greene, Mills, & Buck, 2010). A limited body of evidence also suggests that access to private school choice could improve mental health (DeAngelis & Dills, 2018) and reduce adult criminal activity and paternity suits (DeAngelis & Wolf, 2019a; DeAngelis & Wolf, 2020). EdChoice (2020) also found that 49 of 55 studies on the topic indicate that private school choice programs save taxpayer money (e.g. Lueken, 2018; Spalding, 2014; Trivitt & DeAngelis, 2020; Wolf & McShane, 2013), whereas only two studies have found the opposite. This is because private school choice programs are generally funded at lower amounts per student than district-run public schools, and because the vast majority of students using private school choice programs would have likely attended public schools without access to the programs, as summarized by Lueken (2020).

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<sup>30</sup> Memphis school segregation worse than 50 years ago. Chalkbeat Tennessee. Retrieved from <https://tn.chalkbeat.org/2018/3/29/21108492/memphis-school-segregation-worse-than-50-years-ago>

## Expanding Access to Private School Choice in Tennessee

Tennessee currently has two private school choice programs available to families. The first school choice program in the state—the Individualized Education Account Program (IEA)—launched in 2016. The funding can be used for government-approved educational expenses such as private school tuition, private tutoring, textbooks, and learning therapies. The program limits eligibility to students with Individualized Education Plans (IEPs) and those that have been diagnosed with one of the following: autism, deaf-blindness, a hearing impairment, an intellectual disability, an orthopedic impairment, a traumatic brain injury, developmental delay, visual impairment, or multiple disabilities. Students must additionally have either (1) been enrolled in the public school in the state during the previous school year, (2) be attending a public school in the state for the first time, or (3) received an Individualized Education Account in the previous year. Because of these restrictions, only about 2 percent of students in Tennessee are eligible for the program, and only 137 students used the program in the 2018-19 school year.<sup>31</sup> The average saving account amount was \$5,830 in the 2018-19 school year, or about 55 percent of the spending in public schools.

Tennessee also enacted the Education Savings Account Pilot Program in 2019, which was expected to launch by the 2021-22 school year for students in Davidson and Shelby Counties.<sup>32</sup> However, a Davidson County judge recently ruled that the program was unconstitutional because it only applied to two counties in the state—Davidson and Shelby.<sup>33</sup> If the program overcomes the state’s constitutional challenge, it would be available to students from families earning less than 200 percent of the income eligibility level for free lunch in the National School Lunch Program, which is about \$66,950 for a family of four in 2019-20. Students would also be required to have been enrolled in a public school in the prior school year or be newly eligible to attend a public school in the state to be eligible for the program. About 60 percent of families in Davidson and Shelby Counties are eligible based on the income criterion. However, the pilot program is capped at 5,000 students in Shelby County or Metro Nashville, or about one-half of one percent of the number of public school students in the state.<sup>34</sup> The maximum voucher value was set at \$7,300, or about 69 percent of the amount spent per student in the state’s public schools.

The state could provide more educational opportunities to more students by lifting the pilot program’s cap of 5,000 students. The program currently allows the cap to grow by 2,500 students the following year—until it reaches 15,000 students—if applications exceed 75 percent of the current year’s cap. The maximum number of students allowed—15,000—is only about 1.5 percent of the number of students in public schools in the state. This maximum should be increased substantially or entirely eliminated so that every eligible child will have the opportunity to attend a private school that works for them. The state should consider further expanding the program past its current geographic limitations so that families outside of Memphis and Nashville can also have access to more educational options. Expanding the program statewide would also eliminate the constitutional

<sup>31</sup> Tennessee – Individualized Education Account Program. EdChoice. Retrieved from <https://www.edchoice.org/school-choice/programs/tennessee-individualized-education-account-program/>

<sup>32</sup> Tennessee – Education Savings Account Pilot Program. EdChoice. Retrieved from <https://www.edchoice.org/school-choice/programs/tennessee-education-savings-account-pilot-program/>

<sup>33</sup> Judge rules Gov. Bill Lee’s education savings account program unconstitutional. Tennessean. Retrieved from <https://www.tennessean.com/story/news/education/2020/05/04/judge-rules-gov-bill-lees-education-savings-account-program-unconstitutional/3068998001/>

<sup>34</sup> Tennessee Education Snapshot. TennesseeCAN. Retrieved from <http://tnedsnapshot.org/>

concern regarding the “home rule,” since the program would no longer be targeted to specific geographic locations within the state.

Instead of having an income cutoff at 200 percent of the income eligibility level for free lunch in the National School Lunch Program, Tennessee could make the program available to all families in the state and use a sliding scale funding mechanism where lower-income families receive more education dollars for their children. The state could also eliminate the requirement for students to switch from public to private schools. The requirement increases the likelihood of the program creating taxpayer savings; however, it is arguably unfair for a low-income family to be denied a voucher the next school year just because they figured out a way to afford private school tuition for their child out-of-pocket in the current school year. One way to alleviate the concern about taxpayer costs while simultaneously eliminating the switching requirement is to weight the voucher lottery to guarantee that a certain proportion of students who are awarded a voucher switch from the public school system.

Tennessee could also improve the pilot program by reducing regulatory burdens. The program currently requires private schools accepting students using the program to administer the state’s standardized test. The evidence on the topic suggests that the state standardized testing requirement reduces the quantity and quality of the private schools that choose to participate in choice programs (DeAngelis, 2020b; DeAngelis, Burke, & Wolf, 2019; DeAngelis, Burke, & Wolf, 2020; Sude, DeAngelis, & Wolf, 2018), which means fewer and less-meaningful educational options for families.<sup>35</sup>

Some evidence also suggests that onerous program regulations can homogenize the education sector by making private schools operate like the district-run schools that students are leaving (DeAngelis & Burke, 2017; DeAngelis & Burke, 2019). Tennessee should consider eliminating the top-down state testing requirement and instead allow families to hold schools accountable from the bottom-up. Tennessee could also allow private schools to administer a nationally norm-referenced standardized test of their choosing instead of requiring all schools to administer the state test.

Although it is called the “Education Savings Account Pilot Program,” the program currently only allows families to use the funding for supplemental services if they enroll their children in private schools. Tennessee could allow for more customization if the state amends the program to allow families to choose various educational services including private schooling. Because the COVID-19 pandemic allowed families to get a taste of homeschooling in 2020, some parents may wish to continue educating their children at home after brick-and-mortar schools reopen.<sup>36</sup> The state should consider making continued homeschooling economically feasible for low-income families by allowing them to use program funds to cover homeschooling expenses. Although the evidence on the subject is limited, homeschool students generally fare better academically and socially than their peers in district-run public schools (Burke, 2017; Hamlin, 2019; Medlin, 2013; Ray, 2017).

***Tennessee should consider eliminating the top-down state testing requirement and instead allow families to hold schools accountable from the bottom-up.***

<sup>35</sup> DeAngelis (2019). State tests deter private schools from participating in voucher programs. Tennessean. Retrieved from <https://www.tennessean.com/story/opinion/2019/10/08/state-tests-deter-private-schools-participating-voucher-programs/3903361002/>

<sup>36</sup> DeAngelis (2020). How the education system can adapt to COVID-19. The Benchmark. Center for Growth and Opportunity at Utah State University. Retrieved from <https://medium.com/cgo-benchmark/how-the-education-system-can-adapt-to-covid-19-7623d6842c81>

## School Funding Formula

Tennessee should overhaul its resource-based K-12 education funding formula. The state determines the cost of providing educational services in each district based on the costs of resources such as salaries, capital, and curriculums.<sup>37</sup> Tennessee is one of the few states that use this antiquated approach, and the funding formula is very complex and has little transparency. Additionally, although school districts have some flexibility, this approach tends to be more restrictive and implies that resources should be structured in a certain way. In fact, according to Georgetown University's Edunomics Lab, because Tennessee uses a top-down resource-based allocation system, only about 5 percent of state and local education funding is disbursed on the basis of individual students.<sup>38</sup> In contrast, over 50 percent of K-12 education funding is based on student enrollment in states like Florida, Texas, California, and Missouri.

Tennessee's 5 percent of education funding disbursement being based on individual students means that district-run public schools arguably benefit financially when they lose students to private or charter schools. District-run public schools are able to keep a large portion of a student's funding whenever the child goes to another school. In other words, district-run schools end up with more funding per student when they lose students to their competitors. Imagine if Whole Foods were able to keep a large portion of a family's food stamp funding after they decided to start shopping at Trader Joe's. That would be a fantastic deal for Whole Foods, but not so much for the taxpayer if that meant subsidizing two grocery stores when only one actually provided goods and services to the family. Similarly, it would be nonsensical to purport that private school choice competition is "draining funding" from district-run public schools in Tennessee; on the contrary, many of the public school districts are currently getting a fantastic deal financially whenever they lose students to competition. Of course, the public school districts that lose students would financially benefit to a lesser degree if Tennessee's school funding formula were to be based more on student enrollments.

Because losing students to competition is arguably financially beneficial on a per pupil basis for some public school districts, the current school funding formula greatly reduces the incentives to convince families to keep their children in district-run public schools. The state could increase these competitive pressures by increasing the proportion of dollars that are allocated on the basis of students. Increasing this proportion would increase competitive pressures for schools to improve and would increase the likelihood that the state's school choice programs would save taxpayer money. This would also give public school districts stronger incentives to accept students transferring from other public schools.

Tennessee should move away from its outdated resource-based funding formula by allocating dollars based on students using a Weighted Student Funding (WSF) formula (Barnard, 2019). District-run schools could receive

***Tennessee should move away from its outdated resource-based funding formula by allocating dollars based on students using a Weighted Student Funding formula.***

Barnard, 2019

<sup>37</sup> Tennessee. FundEd: State policy analysis. A detailed look at each state's funding policies. EdBuild. Retrieved from <http://funded.edbuild.org/state/TN>

<sup>38</sup> Student based allocation. Edunomics Lab. Georgetown University. Retrieved from <https://edunomicslab.org/our-research/student-based-allocations>



education funding the same way school districts receive funding – on a per-student basis. The per-student funding amount could be weighted by the individual characteristics of each student, such as economic disadvantage, special education status, and English language learner status. The state could also equalize per-student funding between sectors by reforming how the formula employs local dollars—which would increase funding equity and competitive pressures at the same time (Smith, 2019). The largest school district in the state—Metro Nashville Public School District—implemented a more student-centered funding approach in the 2015-16 school year.<sup>39</sup> The rest of the state should follow its lead for more equity, transparency, and stronger incentives to serve students well.

## Federal Education Funding

Similar to other states, Tennessee’s K-12 education funding comes from federal, state, and local sources.<sup>40</sup> The latest data from the 2017-18 school year indicate that 11.0 percent of Tennessee’s total K-12 education funding comes from federal sources, 46.4 percent comes from state sources, and 42.5 percent comes from local sources. Because Tennessee spends about \$10,548 per child per year, around \$1,160 per child per year comes from federal sources. Tennessee relies more on federal revenue sources than the nation as a whole, where 7.7 percent of total K-12 education revenues come from federal sources in the U.S. Eight states rely more on federal revenues than Tennessee, including Mississippi (13.8 percent), New Mexico (13.4 percent), and Louisiana (12.0 percent).

Rejecting this federal education funding would come with various costs and benefits for the Tennessee education system. The primary cost of rejecting federal education funding is the funding itself. As noted above, federal education funding is about \$1,160 per child per year, or around \$1.1 billion in the most recent school year in Tennessee. The main benefit of rejecting federal education funding would be a reduction in certain onerous regulations, which could give public schools more autonomy. The additional autonomy could put public schools in better positions to adapt to the needs of individual families if they have the incentives necessary to cater to their needs.

The best way to ensure that the right incentives are in place would be to reduce top-down government regulations in public schools alongside bottom-up regulation via school choice. For example, rejecting federal education funding would eliminate the annual standardized testing requirements for students in grades 3 through 8 as outlined in the Every Students Succeeds Act (ESSA), which would give public schools more flexibility and weaker incentives to teach to the test (given that the state government relaxes standardized testing requirements as well). Notably, none of the 50 states nor the District of Columbia have rejected the money by determining that the costs of federal regulations outweigh the benefits of federal education funding. The calculus behind this decision, however, would differ if rejecting federal education funding led to a reduction of federal tax burden for individual states.

*The best way to ensure that the right incentives are in place would be to reduce top-down government regulations in public schools alongside bottom-up regulation via school choice.*

<sup>39</sup> Budget Basics. Metro Nashville Public Schools. Retrieved from <https://www.mnps.org/budgets>

<sup>40</sup> Summary Tables. Table 5. 2018 Public Elementary-Secondary Education Finance Data. United States Census Bureau. Retrieved from <https://www.census.gov/data/tables/2018/econ/school-finances/secondary-education-finance.html>

## Discussion and Conclusion

The preponderance of the evidence suggests that increasing access to public charter schools and private school choice programs could improve student outcomes in Tennessee. The success of public charter schools and private school choice programs in Tennessee would depend on factors such as the quality of district-run schools in the area, the quality of public charter schools and private schools, geography, and implementation fidelity.

The state could increase access to public charter schools by equalizing funding between sectors and by revising its school funding formula so that education dollars follow children to the school of their families' choosing. Making education funding based more on student enrollment would be more equitable and would provide stronger incentives for schools to meet the needs of children. The state could further increase access to public charter schools by allowing for additional authorizing entities such as colleges, universities, and mayors. In light of the COVID-19 pandemic, the state should also consider following the 21 other states that allow children to attend virtual charter schools, especially if families are uncomfortable with sending their children back to brick-and-mortar schools after the lockdown.

The state could increase access to private education by expanding access to its two private school choice programs. The IEA program is currently only available to around 2 percent of the student population, and the ESA pilot program is capped at only 5,000 students in the first year. Policymakers should consider getting rid of the 5,000-student cap, which is only about one half of one percent of the public school population in Tennessee. The state should also consider removing the current geographic restrictions on the ESA pilot program, which only allow students in Shelby County and Metro Nashville to access to the program. Allowing students throughout the state to access the program would expand educational opportunities and would also eliminate the current constitutional concern regarding Tennessee's "home rule."

Each of these proposals would increase equity in the state's K-12 education system and provide students with more educational opportunities. Instead of funding schools directly, regardless of how well they are serving children's needs, Tennessee could fund students and allow their families to choose the schools that work best for them. The state has the opportunity to restructure education funding to prioritize the needs of students as opposed to institutions.



## References

- Abdulkadiroğlu, A., Angrist, J. D., Dynarski, S. M., Kane, T. J., & Pathak, P. A. (2011). Accountability and flexibility in public schools: Evidence from Boston's charters and pilots. *Quarterly Journal of Economics*, 126(2), 699-748.
- Abdulkadiroğlu, A., Pathak, P. A., & Walters, C. R. (2018). Free to choose: can school choice reduce student achievement? *American Economic Journal: Applied Economics*, 10(1), 175-206.
- Angrist, J. D., Dynarski, S. M., Kane, T. J., Pathak, P. A., & Walters, C. R. (2012). Who benefits from KIPP? *Journal of Policy Analysis and Management*, 31(4), 837-860.
- Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2016). Stand and deliver: Effects of Boston's charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2), 275-318.
- Baker, B. D. (2017). How money matters for schools. Learning Policy Institute. Retrieved from <https://learningpolicyinstitute.org/product/how-money-matters-report>
- Barnard, C. (2019). The weighted student formula yearbook, 2019. Reason Foundation. Retrieved from <https://reason.org/wp-content/uploads/weighted-student-formula-yearbook-2019.pdf>
- Barnard, J., Frangakis, C. E., Hill, J. L., & Rubin, D. B. (2003). Principal stratification approach to broken randomized experiments: A case study of school choice vouchers in New York City. *Journal of the American Statistical Association*, 98(462), 299-323.
- Barrett, E. J. (2003). Evaluating Education Reform: Students' Views of Their Charter School Experience. *Journal of Education Research*, 96(6), 351-358.
- Batdorff, M., Maloney, L. D., May, J. F., Speakman, S. T., Wolf, P. J., & Cheng, A. (2014). Charter school funding: Inequity expands. School Choice Demonstration Project, University of Arkansas. Retrieved from <https://scholarworks.uark.edu/scdp/7/>
- Bedrick, J., & Burke, L. M. (2018). Surveying Florida scholarship families: Experiences and satisfaction with Florida's tax-credit scholarship program. EdChoice.
- Bettinger, E., & Slonim, R. (2006). Using experimental economics to measure the effects of a natural educational experiment on altruism. *Journal of Public Economics*, 90(8-9), 1625-1648.
- Betts, J. R., & Tang, Y. E. (2019). The effect of charter schools on student achievement. *School choice at the crossroads: Research perspectives*, 67-89.
- Bitler, M., Domina, T., Penner, E., & Hoynes, H. (2015). Distributional analysis in educational evaluation: A case study from the New York City voucher program. *Journal of Research on Educational Effectiveness*, 8(3), 419-450.
- Burke, L. M. (2019). Bringing achievement home: A review of the academic outcomes of homeschooling students in the United States. HSLDA. Retrieved from <https://securservercdn.net/45.40.149.34/n5e.cd2.myftpupload.com/wp-content/uploads/2020/04/Bringing-Achievement-Home.pdf>
- Catt, D. (2019). U.S. states ranked by educational choice share, 2019. EdChoice. Retrieved from <https://www.edchoice.org/engage/u-s-states-ranked-by-educational-choice-share-2019/>
- Chakrabarti, R. (2008). Can increasing private school participation and monetary loss in a voucher program affect public school performance? Evidence from Milwaukee. *Journal of Public Economics*, 92(5-6), 1371-1393.
- Chakrabarti, R. (2013). Impact of voucher design on public school performance: Evidence from Florida and Milwaukee voucher programs. *The BE Journal of Economic Analysis & Policy*, 13(1), 349-394.
- Cheng, A., Chingos, M. M., & Peterson, P. E. (2018). Experimentally Estimated Impacts of School Voucher on Educational Attainments of Moderately and Severely Disadvantaged Students. EdWorkingPaper No. 19-76. Annenberg Institute at Brown University.

- Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014). Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood. *American Economic Review*, 104(9), 2633-79.
- Chingos, M. M. (2018). The effect of the DC school voucher program on college enrollment. Washington, D.C.: Urban Institute. Retrieved from <https://www.urban.org/research/publication/effect-dc-school-voucher-program-college-enrollment>
- Chingos, M. M., Monarrez, T., & Kuehn, D. (2019). The effects of the Florida Tax Credit Scholarship Program on college enrollment and graduation: An update. Washington, D.C.: Urban Institute. Retrieved from <https://www.urban.org/research/publication/effects-florida-tax-credit-scholarship-program-college-enrollment-and-graduation>
- Chingos, M. M., & Peterson, P. E. (2015). Experimentally estimated impacts of school vouchers on college enrollment and degree attainment. *Journal of Public Economics*, 122, 1-12.
- Chubb, J. E., & Moe, T. M. (1988). Politics, markets, and the organization of schools. *American Political Science Review*, 82(4), 1065-1087.
- Chubb, J. E., & Moe, T. M. (1990). America's public schools: Choice is a panacea. *The Brookings Review*, 8(3), 4-12.
- Coen, T., Nichols-Barrer, I., & Gleason, P. (2019). Long-Term Impacts of KIPP Middle Schools on College Enrollment and Early College Persistence. Mathematica Policy Research.
- Cohodes, S., Setren, E., & Walters, C. R. (2019). Can successful schools replicate? Scaling up Boston's charter school sector (No. w25796). National Bureau of Economic Research.
- Cowen, J. M. (2008). School choice as a latent variable: Estimating the "complier average causal effect" of vouchers in Charlotte. *Policy Studies Journal*, 36(2), 301-315.
- Cowen, J. M., Fleming, D. J., Witte, J. F., Wolf, P. J., & Kisida, B. (2013). School vouchers and student attainment: Evidence from a state-mandated study of Milwaukee's parental choice program. *Policy Studies Journal*, 41(1), 147-168.
- Davis, M., & Heller, B. (2019). No Excuses charter schools and college enrollment: New evidence from a high school network in Chicago. *Education Finance and Policy*, 14(3), 414-440.
- DeAngelis, C. A. (2017). Do self-interested schooling selections improve society? A review of the evidence. *Journal of School Choice*, 11(4), 546-558.
- DeAngelis, C. A. (2018). Is Public Schooling a Public Good? An Analysis of Schooling Externalities. Policy Analysis No. 842. Cato Institute.
- DeAngelis, C. A. (2019). Divergences between effects on test scores and effects on non-cognitive skills. *Educational Review*, DOI: 10.1080/00131911.2019.1646707
- DeAngelis, C. A. (2020a). Are Charter Schools Safer than District-Run Schools? Evidence from Pennsylvania. *Journal of School Choice*. Retrieved from <https://doi.org/10.1080/15582159.2020.1805289>
- DeAngelis, C. A. (2020b). Regulatory compliance costs and private school participation in voucher programs. *Journal of School Choice*, 14(1), 95-121.
- DeAngelis, C. A. (2020c). School sector and climate: Evidence from New York. EdWorkingPaper No. 20-206. Annenberg Institute at Brown University. Retrieved from <https://doi.org/10.26300/c6tq-dm21>
- DeAngelis, C. A., & Burke, L. (2017). Does regulation induce homogenisation? An analysis of three voucher programmes in the United States. *Educational Research and Evaluation*, 23(7-8), 311-327.
- DeAngelis, C. A., & Burke, L. M. (2019). Does Regulation Reduce Specialization? Examining the Impact of Regulations on Private Schools of Choice in Five Locations. EdChoice Working Paper 2019-1.
- DeAngelis, C. A., Burke, L. M., & Wolf, P. J. (2019). The effects of regulations on private school choice program participation: Experimental evidence from Florida. *Social Science Quarterly*, 100(6), 2316-2336.



- DeAngelis, C. A., Burke, L. M., & Wolf, P. J. (2020). When being regulated is a choice: The impact of government policies on private school participation in voucher programs. *Journal of School Choice*.
- DeAngelis, C. A., & DeGrow, B. (2018). Doing more with less: The charter school advantage in Michigan. A Mackinac Center Report. Mackinac Center for Public Policy.
- DeAngelis, C., & Dills, A. K. (2018). The effects of school choice on mental health. Available at SSRN 3272550.
- DeAngelis, C. A., & Flanders, W. (2018). Counting dollars and cents: The economic impact of a statewide education savings account program in Tennessee. Beacon Center of Tennessee.
- DeAngelis, C. A., & Holmes Erickson, H. (2018). What leads to successful school choice programs: A review of the theories and evidence. *Cato Journal*, 38(1), 247-263.
- DeAngelis, C. A., & Lueken, M. F. (2020). School Sector and Climate: An Analysis of K–12 Safety Policies and School Climates in Indiana. *Social Science Quarterly*, 101(1), 376-405.
- DeAngelis, C. A., & Shuls, J. (2018). School choice benefits teachers too? The effect of school choice programs on teacher salaries and employment. In APPAM International Conference. Retrieved from <https://appam.confex.com/appam/int18/webprogram/Paper24231.html>
- DeAngelis, C. A., & Wolf, P. J. (2019a). Private school choice and crime: Evidence from Milwaukee. *Social Science Quarterly*, 100(6), 2302-2315.
- DeAngelis, C. A., & Wolf, P. J. (2019b). What does the evidence say about education choice? A comprehensive review of the literature. In L. M. Burke & J. Butcher (Eds.), *The Not-So-Great-Society*. Washington, DC: The Heritage Foundation.
- DeAngelis, C. A., & Wolf, P. J. (2020). Private school choice and character: More evidence from Milwaukee. *Journal of Private Enterprise*, 34(3), 1-21.
- DeAngelis, C., Wolf, P., Maloney, L., & May, J. (2019). A good investment: The updated productivity of public charter schools in eight US cities. EDRE Working Paper No. 2019-09.
- DeAngelis, C. A., Wolf, P. J., Maloney, L. D., & May, J. F. (2018). Charter School Funding: (More) Inequity in the City. School Choice Demonstration Project. University of Arkansas.
- Deming, D. J. (2011). Better schools, less crime? *Quarterly Journal of Economics*, 126(4), 2063-2115.
- Dills, A. K., & Hernández-Julián, R. (2011). More choice, less crime. *Education Finance and Policy*, 6(2), 246-266.
- Dobbie, W., & Fryer Jr, R. G. (2011). Are high-quality schools enough to increase achievement among the poor? Evidence from the Harlem Children's Zone. *American Economic Journal: Applied Economics*, 3(3), 158-87.
- Dobbie, W., & Fryer Jr, R. G. (2015). The medium-term impacts of high-achieving charter schools. *Journal of Political Economy*, 123(5), 985-1037.
- Dobbie, W. S., & Fryer Jr, R. G. (2016). Charter schools and labor market outcomes (No. w22502). National Bureau of Economic Research.
- Dudovitz, R. N., Chung, P. J., Reber, S., Kennedy, D., Tucker, J. S., Shoptaw, S., ... & Wong, M. D. (2018). Assessment of exposure to high-performing schools and risk of adolescent substance use: a natural experiment. *JAMA Pediatrics*, 172(12), 1135-1144.
- Dynarski, S., Hubbard, D., Jacob, B., & Robles, S. (2018). Estimating the Effects of a Large For-Profit Charter School Operator (No. w24428). National Bureau of Economic Research.
- EdChoice (2020). The 123s of School Choice. Retrieved from <https://www.edchoice.org/research/the-123s-of-school-choice/>
- Eden, M., & DeAngelis, C. A. (2020). Do school spending cuts really hurt students? Washington Examiner. Retrieved from <https://www.washingtonexaminer.com/opinion/do-school-spending-cuts-really-hurt-students>

- Egalite, A. J. (2013). Measuring competitive effects from school voucher programs: A systematic review. *Journal of School Choice*, 7(4), 443-464.
- Egalite, A. J., & Mills, J. N. (2019). Competitive impacts of means-tested vouchers on public school performance: Evidence from Louisiana. *Education Finance and Policy*.
- Egalite, A. J., Mills, J. N., & Wolf, P. J. (2017). The impact of targeted school vouchers on racial stratification in Louisiana schools. *Education and Urban Society*, 49(3), 271-296.
- Figlio, D., & Hart, C. (2014). Competitive effects of means-tested school vouchers. *American Economic Journal: Applied Economics*, 6(1), 133-56.
- Figlio, D. N., Hart, C., & Karbownik, K. (2020). Effects of Scaling Up Private School Choice Programs on Public School Students (No. w26758). National Bureau of Economic Research.
- Figlio, D. N., & Rouse, C. E. (2006). Do accountability and voucher threats improve low-performing schools? *Journal of Public Economics*, 90(1-2), 239-255.
- Flanders, W., & DeAngelis, C. A. (2018). Mississippi's game changer: The economic impacts of universal school choice in Mississippi. Mississippi State University Institute for Market Studies Working Paper.
- Foreman, L. M. (2017). Educational attainment effects of public and private school choice. *Journal of School Choice*, 11(4), 642-654.
- Friedman, M. (1955). The role of government in education. In R. A. Solo (Ed.), *Economics and the public interest* (pp. 123-144). New Brunswick, NJ: Rutgers University Press.
- Furgeson, J., Gill, B., Haimson, J., Killewald, A., McCullough, M., Nichols-Barrer, I., ... & Hill, P. (2012). Charter-school management organizations: Diverse strategies and diverse student impacts. Mathematica Policy Research, Inc.
- Gleason, P., Clark, M., Tuttle, C. C., & Dwoyer, E. (2010). The Evaluation of Charter School Impacts: Final Report. NCEE 2010-4029. National Center for Education Evaluation and Regional Assistance.
- Greene, J. P. (2000). The effect of school choice: An evaluation of the charlotte children's scholarship fund program. *Civic Report*, 12, 1-15.
- Greene, J. P., Mills, J. N., & Buck, S. (2010). The Milwaukee Parental Choice Program's effect on school integration. School Choice Demonstration Project. University of Arkansas.
- Greene, J. P., Peterson, P. E., & Du, J. (1999). Effectiveness of school choice: The Milwaukee experiment. *Education and Urban Society*, 31(2), 190-213.
- Greene, J. P. (2020). The new "causal" research on school spending is not causal. Jay P. Greene's Blog. Retrieved from <https://jaypgreene.com/2020/02/25/the-new-causal-research-on-school-spending-is-not-causal/>
- Greene, J. P., & Winters, M. A. (2006). An evaluation of the effects of DC's voucher program on public school achievement and racial integration after one year. School Choice Demonstration Project. University of Arkansas.
- Gwynne, J. A., & Moore, P. T. (2017). Chicago's Charter High Schools: Organizational Features, Enrollment, School Transfers, and Student Performance. Research Report. University of Chicago Consortium on School Research.
- Hamlin, D. (2017). Are charter schools safer in deindustrialized cities with high rates of crime? Testing hypotheses in Detroit. *American Educational Research Journal*, 54(4), 725-756.
- Hamlin, D. (2019). Do Homeschooled Students Lack Opportunities to Acquire Cultural Capital? Evidence from a Nationally Representative Survey of American Households. *Peabody Journal of Education*, 94(3), 312-327.
- Hanushek, E. A. (1997). Assessing the effects of school resources on student performance: An update. *Educational Evaluation and Policy Analysis*, 19(2), 141-164.
- Hanushek, E. A. (2015). Money matters after all? Education Next. Retrieved from <https://www.educationnext.org/money-matters-after-all/>

- Hanushek, E. A. (2011). The economic value of higher teacher quality. *Economics of Education Review*, 30(3), 466-479.
- Hanushek, E. A., Kain, J. F., Rivkin, S. G., & Branch, G. F. (2007). Charter school quality and parental decision making with school choice. *Journal of Public Economics*, 91(5-6), 823-848.
- Hensvik, L. (2012). Competition, wages and teacher sorting: Lessons learned from a voucher reform. *Economic Journal*, 122(561), 799-824.
- Holmes Erickson, H. (2017). How do parents choose schools, and what schools do they choose? A literature review of private school choice programs in the United States. *Journal of School Choice*, 11(4), 491-506.
- Holmes Erickson, H., Mills, J. N., & Wolf, P. J. (2019). The effect of the Louisiana Scholarship Program on college entrance. EDRE Working Paper No. 2019-12.
- Howell, W. G., Wolf, P. J., Campbell, D. E., & Peterson, P. E. (2002). School vouchers and academic performance: Results from three randomized field trials. *Journal of Policy Analysis and Management*, 21(2), 191-217.
- Hoxby, C. M. (1994). Do private schools provide competition for public schools? National Bureau of Economic Research No. w4978.
- Hoxby, C. M. (Ed.). (2007). *The economics of school choice*. University of Chicago Press.
- Hoxby, C., Murarka, S., & Kang, J. (2009). How New York City's charter schools affect achievement. Cambridge, MA: New York City Charter Schools Evaluation Project.
- Imberman, S. A. (2011). Achievement and behavior in charter schools: Drawing a more complete picture. *The Review of Economics and Statistics*, 93(2), 416-435.
- Jabbar, H., Fong, C. J., Germain, E., Li, D., Sanchez, J., Sun, W. L., & Devall, M. (2019). The Competitive Effects of School Choice on Student Achievement: A Systematic Review. *Educational Policy*.
- Jackson, C. K. (2012). School competition and teacher labor markets: Evidence from charter school entry in North Carolina. *Journal of Public Economics*, 96(5-6), 431-448.
- Jackson, C. K. (2018). Does School Spending Matter? The New Literature on an Old Question. NBER Working Paper No. w25368.
- Jackson, C. K., Johnson, R. C., & Persico, C. (2015). Money does matter after all. Education Next. Retrieved from <https://www.educationnext.org/money-matter/#>
- Jin, H., Barnard, J., & Rubin, D. B. (2010). A modified general location model for noncompliance with missing data: Revisiting the New York City School Choice Scholarship Program using principal stratification. *Journal of Educational and Behavioral Statistics*, 35(2), 154-173.
- Kelly, J. P., & Scafidi, B. (2013). More than scores: An analysis of why and how parents choose private schools. Indianapolis, IN: The Friedman Foundation for Educational Choice.
- Krueger, A. B., & Zhu, P. (2004). Another look at the New York City school voucher experiment. *American Behavioral Scientist*, 47(5), 658-698.
- Lamarche, C. (2008). Private school vouchers and student achievement: A fixed effects quantile regression evaluation. *Labour Economics*, 15(4), 575-590.
- Levin, H. M. (2009). The economic payoff to investing in educational justice. *Educational Researcher*, 38(1), 5-20.
- Lueken, M. F. (2018). The fiscal effects of tax-credit scholarship programs in the United States. *Journal of School Choice*, 12(2), 181-215.
- Lueken, M. F. (2020). The Fiscal Impact of K-12 Educational Choice: Using Random Assignment Studies of Private School Choice Programs to Infer Student Switcher Rates. *Journal of School Choice*.

- McClure, L., Strick, B., Jacob-Almeida, R., & Reicher, C. (2005). The Preuss School at UCSD: School characteristics and students' achievement. The Center for Research on Educational Equity, Assessment and Teaching Effectiveness, UCSD.
- McEachin, A., Lauen, D. L., Fuller, S. C., & Perera, R. M. (2020). Social returns to private choice? Effects of charter schools on behavioral outcomes, arrests, and civic participation. *Economics of Education Review*, 76(June).
- Medlin, R. G. (2013). Homeschooling and the question of socialization revisited. *Peabody Journal of Education*, 88(3), 284-297.
- Mills, J. N., & Wolf, P. J. (2019). The Effects of the Louisiana Scholarship Program on Student Achievement after Four Years. EDRE Working Paper No. 2019-10.
- Place, K. & Gleason, P. (2019). Do charter middle schools improve students' college outcomes? Institute of Education Sciences. NCEE 2019-4005.
- Ray, B. D. (2017). A systematic review of the empirical research on selected aspects of homeschooling as a school choice. *Journal of School choice*, 11(4), 604-621.
- Rouse, C. E. (1998). Private school vouchers and student achievement: An evaluation of the Milwaukee Parental Choice Program. *Quarterly Journal of Economics*, 113(2), 553-602.
- Rouse, C. E., Hannaway, J., Goldhaber, D., & Figlio, D. (2013). Feeling the Florida heat? How low-performing schools respond to voucher and accountability pressure. *American Economic Journal: Economic Policy*, 5(2), 251-81.
- Sass, T. R., Zimmer, R. W., Gill, B. P., & Booker, T. K. (2016). Charter high schools' effects on long-term attainment and earnings. *Journal of Policy Analysis and Management*, 35(3), 683-706.
- Scafidi, B. (2017). Back to the Staffing Surge. EdChoice. Retrieved from <https://www.edchoice.org/wp-content/uploads/2017/06/Back-to-the-Staffing-Surge-by-Ben-Scafidi.pdf>
- Schwalbach, J., & DeAngelis, C. A. (2020). School sector and school safety: A review of the evidence. *Educational Review*.
- Shakeel, M. D., & DeAngelis, C. A. (2017). Who is more free? A comparison of the decision-making of private and public school principals. *Journal of School Choice*, 11(3), 442-457.
- Shakeel, M. D., & DeAngelis, C. A. (2018). Can private schools improve school climate? Evidence from a nationally representative sample. *Journal of School Choice*, 12(3), 426-445.
- Smith, A. G. (2019). School funding disparities should alarm all, not just those who lean left. The Hill. Retrieved from <https://thehill.com/opinion/education/437669-school-funding-disparities-should-alarm-all-not-just-those-who-lean-left>
- Spalding, J. (2014). The school voucher audit. Do publicly funded private school choice programs save money? The Friedman Foundation for Educational Choice. Retrieved from <https://www.edchoice.org/wp-content/uploads/2015/07/The-School-Voucher-Audit-Do-Publicly-Funded-Private-School-Choice-Programs-Save-Money.pdf>
- Sude, Y., DeAngelis, C. A., & Wolf, P. J. (2018). Supplying choice: An analysis of school participation decisions in voucher programs in Washington, DC, Indiana, and Louisiana. *Journal of School Choice*, 12(1), 8-33.
- Swanson, E. (2017). Can we have it all? A review of the impacts of school choice on racial integration. *Journal of School Choice*, 11(4), 507-526.
- Trivitt, J. R., & DeAngelis, C. A. (2020). Dollars and Sense: Calculating the Fiscal Effects of the Louisiana Scholarship Program. *Journal of School Choice*.
- Tuttle, C. C., Gill, B., Gleason, P., Knechtel, V., Nichols-Barrer, I., & Resch, A. (2013). KIPP Middle Schools: Impacts on Achievement and Other Outcomes. Final Report. Mathematica Policy Research, Inc.
- Tuttle, C. C., Gleason, P., Knechtel, V., Nichols-Barrer, I., Booker, K., Chojnacki, G., ... & Goble, L. (2015). Understanding the Effect of KIPP as It Scales: Volume I, Impacts on Achievement and Other Outcomes. Final Report of KIPP's "Investing in Innovation Grant Evaluation". Mathematica Policy Research, Inc.



- Vedder, R., & Hall, J. (2000). Private school competition and public school teacher salaries. *Journal of Labor Research*, 21(1), 161-168.
- Webber, A., Rui, N., Garrison-Mogren, R., Olsen, R., & Gutmann, B. (2019). Evaluation of the DC Opportunity Scholarship Program: Impacts After Three Years. NCEE 2019-4006. National Center for Education Evaluation and Regional Assistance.
- Wolf, P. J. (2007). Civics exam: Schools of choice boost civic values. *Education Next*, 7(3), 66-72.
- Wolf, P. J., Cheng, A., Batdorf, M., Maloney, L. D., May, J. F., & Speakman, S. T. (2014). The productivity of public charter schools. School Choice Demonstration Project. University of Arkansas.
- Wolf, P. J., Hitt, C., & McShane, M. Q. (2018). *Exploring the achievement-attainment disconnect in the effects of school choice programs*. Paper presented at the conference “Learning From the Long-Term Effects of School Choice in America” Program on Education Policy and Governance, Kennedy School of Government, Harvard University, Cambridge, MA. Retrieved from <https://sites.hks.harvard.edu/pepg/conferences/learning-from-longterm-effects-2018/papers/panel-ii-wolf-et-al.pdf>
- Wolf, P. J., Kisida, B., Gutmann, B., Puma, M., Eissa, N., & Rizzo, L. (2013). School Vouchers and Student Outcomes: Experimental Evidence from Washington, DC. *Journal of Policy Analysis and Management*, 32(2), 246-270.
- Wolf, P. J., & McShane, M. (2013). Is the juice worth the squeeze? A benefit/cost analysis of the District of Columbia opportunity scholarship program. *Education Finance and Policy*, 8(1), 74-99.
- Wolf, P. J., Witte, J. F., & Kisida, B. (2019). Do voucher students attain higher levels of education? Extended evidence from the Milwaukee Parental Choice Program. EdWorkingPaper No. 19-115. Annenberg Institute at Brown University.
- Wong, M. D., Collier, K. M., Dudovitz, R. N., Kennedy, D. P., Buddin, R., Shapiro, M. F., ... & Chung, P. J. (2014). Successful schools and risky behaviors among low-income adolescents. *Pediatrics*, 134(2), e389-e396.
- Zimmer, R., Buddin, R., Smith, S. A., & Duffy, D. (2019). Nearly three decades into the charter school movement, what has research told us about charter schools? EdWorkingPaper No. 19-156. Annenberg Institute at Brown University.

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# Kickstarting K-12 Education in Tennessee: Avenues for Systemic Transformation

*A policy study of the Political Economy Research Institute at Middle Tennessee State University*

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