



U Educational Opportunity  
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Education for All

# THE UNTAPPED POTENTIAL OF EXPANDED TAX CREDIT SCHOLARSHIPS



AMERICAN FEDERATION  
*for Children*

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From time-to-time Marc enjoys a nice single malt and long, meandering conversations about liberty with friends. While Marc is sympathetic to Austrian business cycle theory, he considers Thomas Sowell, Milton Friedman, and Adam Smith his favorite economists.

# Executive Summary

- This study reviews the most rigorous evidence on school choice and student outcomes in the United States and estimates the economic impacts of **expanding access to Pennsylvania’s K-12 tax credit scholarship programs by increasing the cap by \$95 million** in the 2021-22 school year.
- The study also forecasts **economic impacts of expanding the cap by 25 percent** each year, estimating significant increases in academic performance and economic output due to school choice expansion.
- If scholarship funding were to increase by \$95 million—equivalent to 0.3 percent of overall Pennsylvania public school spending—plus a 25% annual scholarship cap:

 **229,337 students**, or about 13 percent of the state’s current K-12 population of students, could use the programs by the 2025-26 school year.

- That increase could yield the following long-term economic benefits:

 <p><b>\$7.4 billion</b> from higher lifetime earnings associated with increases in academic achievement.</p>	 <p><b>\$2.3 billion</b> from increased economic output and reductions in social costs associated with additional high school graduates.</p>	 <p><b>\$260 million</b> in savings to state and municipal governments due to reduced crime.</p>
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## Introduction

Tax credit scholarships are a vehicle for individuals and businesses to fund the education of students. Tax credit scholarship donors receive an offsetting credit from the state for their donation. In Pennsylvania the credit amount is 90 percent of the donation. Donations are collected by non-profit scholarship organizations, which in turn issue scholarships for children to receive a private education of their parents' choice.

Pennsylvania has two private school choice programs that allow low- and middle-income students to access scholarships to attend private schools. The Pennsylvania Legislature enacted and launched the Educational Improvement Tax Credit Program (EITC) in 2001. The EITC awarded 45,882 scholarships, with an average value of \$1,990, in the 2018-19 school year. In 2012, the state legislature enacted and launched a second program, the Opportunity Scholarship Tax Credit Program (OSTC), which is open to students in the lowest-performing schools in the state. The OSTC awarded 14,505 scholarships, with an average value of \$2,499, in the 2018-19 school year. Students from households with incomes less than \$90,000 plus \$15,842 for each child in the family are eligible for scholarships from either program. Students with special needs are eligible if they come from households that earn up to 150 percent of the baseline income eligibility level. Students with severe special needs are eligible if they come from households that earn up to 299 percent of the baseline income eligibility level.<sup>1</sup>

Pennsylvania's two private school choice programs combined awarded 60,387 scholarships, or about 3.5 percent of the state's K-12 population, to students in the 2018-19 school year. However, 42,918 scholarships were denied to students during that year because of arbitrary caps on allowable donations for the programs. At the same time, millions of dollars in potential donations are turned away each year because of these caps. In 2018–19, \$100 million in K-12 scholarship donations were waitlisted because of the program caps.<sup>2</sup>

### BUSINESS DONATIONS WAITLISTED

Each year, millions of dollars in donations are turned away due to tax credit caps.

Year	EITC-K12	EITC-Pre-K	EITC-EIO	OSTC	Total	K12 Scholarships Total
2019-20	\$72.1 M	\$6.52 M	\$14.1 M	\$28.5 M	\$121.2 M	\$100.6 M

Source: Pa. Department of Community and Economic Development, Right to Know requests

In response to the high demand for scholarships and waitlists, the General Assembly has increased the budget for EITC and OSTC several times throughout the years. The last two budget cycles saw overall, cumulative increases of \$35 million, which resulted in 11,410 additional student scholarships. But these increases haven't been enough for every child to have access.

1 School Choice – Pennsylvania. EdChoice. Retrieved from <https://www.edchoice.org/school-choice/state/pennsylvania/>

2 Marc LeBlond, Opportunity Finds a Way, Commonwealth Foundation, Retrieved from <https://www.commonwealthfoundation.org/policyblog/detail/opportunity-finds-a-way>

To solve for the continued lack of educational access, lawmakers have proposed Senate Bill 1, which would provide for an “automatic escalator” to increase the scholarship caps by 25% when at least 90% of credits are issued the prior year.<sup>3</sup> Similar plans have been adopted in Florida and other states.

This report projects the impact of Senate Bill 1 on the Pennsylvania economy. The preponderance of the most rigorous evidence suggests that access to private school choice programs could lead to better academic and behavioral outcomes, which could translate to higher lifetime earnings, higher high school graduation rates, and reductions in crime (e.g. DeAngelis & Wolf, 2019c; EdChoice, 2020; Foreman, 2017). Recent research also suggests that these kinds of academic and non-academic benefits of school choice could have substantial positive effects on state economies over time (e.g., DeAngelis, 2020; DeAngelis & Flanders, 2018; Flanders & DeAngelis, 2018). Using the preponderance of evidence linking school choice to academic achievement, educational attainment, and crime reduction, this study forecasts the economic impacts of the two private school choice programs in Pennsylvania.

Applying cautious estimates from each outcome to the participating students, this study finds that a \$95 million increase in scholarship funding, coupled with a 25% escalator, could allow 229,337 students (including 168,950 new scholarship students) to use the programs in the 2025-26 school year, which could provide the following long-run economic benefits:

- \$7.4 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement.
- \$2.3 billion from increased economic output and reductions in social costs associated with additional high school graduates.
- \$260 million from reductions in the social costs associated with crimes.

These potential economic benefits should not be combined and should be assessed separately because of overlap. For example, higher academic achievement increases the likelihood of high school graduation and receiving a high school diploma reduces the likelihood of incarceration. It is also possible that Pennsylvania’s private school choice results will differ based on context, geographic location, time, and implementation. As such, readers should exercise considerable caution when assessing these types of forecasts of economic impacts because they are based on evaluations from other locations.

The next section will review the literature on school choice and academic achievement and forecast possible economic benefits associated with expanding K-12 educational options in Pennsylvania. The report will then forecast economic benefits associated with expected increases in educational attainment and reductions in crime. After that, the report will review the evidence on other benefits of increasing access to school choice such as taxpayer savings and improved civic outcomes, satisfaction, and safety. The report will then conclude with a discussion of the findings.

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3 Senator Scott Martin and Sen. John DiSanto, Sen. Jake Corman. Excellence in Education for All (EEA) Senate Co-Sponsorship Memoranda. Retrieved from <https://www.legis.state.pa.us/cfdocs/Legis/CSM/showMemoPublic.cfm?chamber=S&SPick=20210&cosponId=34538>

## Analysis: Academic Achievement

When more families wish to use a private school choice program than funding allows, state laws generally require that scholarships are allocated to families via random lottery (e.g. Greene et al., 1999; Webber et al., 2019; Wolf et al., 2013). Because of these lottery requirements, researchers are able to compare the outcomes of students who won access to private school choice programs to the outcomes of their peers who lost the lottery. Since the only difference between the two groups of students – given a sufficiently large sample – is that one group won access to the program by random chance, researchers can be fairly confident that the differences in the observed outcomes between the two groups are caused by access to the choice program and not caused by differences in other factors such as motivation or economic background (Rossi, Lipsey, & Henry, 2018). Sixteen of these random assignment evaluations have linked access to private school choice programs to student academic achievement in the United States.

The majority of the 16 random assignment studies linking private school choice programs in the U.S. to student achievement find positive effects in math or reading overall or for subgroups of students (DeAngelis & Wolf, 2019c; EdChoice, 2020; Egalite & Wolf, 2016; Wolf & Egalite, 2019). Specifically, 10 of the 16 experimental studies detect 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; Jin et al., 2010; Howell et al., 2002 (three locations); Rouse, 1998; Wolf et al., 2013). For example, Cowen (2008) found that winning a lottery to use a voucher to attend a private school in Charlotte, North Carolina increased math scores by 7 points and reading scores by 8 points. Greene et al. (1999) found that winning a lottery to use a voucher to attend a private school in Milwaukee, Wisconsin increased math scores by 11 points and reading scores by 6 points.

Four of the 16 studies do not detect any statistically significant effects on test scores (Bettinger & Slonim, 2006; Bitler et al., 2013; Krueger & Zhu, 2004; Webber et al., 2019). However, because private school vouchers are publicly funded at substantially lower amounts than per pupil spending in district-run public schools, statistically insignificant results imply a positive return-on-investment for taxpayers (DeAngelis, 2019a; Shakeel, Anderson, & Wolf, 2017). In the District of Columbia, for example, the average voucher amount is only about \$9,531 per year,<sup>4</sup> whereas per pupil spending in district-run public schools is over \$30,000 each year.<sup>5</sup> In other words, the latest evaluation of the D.C. voucher program found that the private schools achieved the same math and reading results as the public schools at around a third of the cost (Webber et al., 2019).<sup>6</sup> Only two of the studies, both of the highly regulated Louisiana Scholarship Program, find negative effects on math or reading test scores (Abdulkadiro?lu, Pathak, & Walters, 2018; Mills & Wolf, 2019).<sup>7</sup>

Shakeel, Anderson, and Wolf (2021) conducted the latest and most comprehensive peer-reviewed meta-analysis of the experimental evaluations on the topic and concluded that private

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

5 Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2014–15 (Fiscal Year 2015). National Center for Education Statistics. Retrieved from <https://nces.ed.gov/pubs2018/2018301.pdf>

6 DeAngelis, C. A. (2019). School choice works – for a third of the cost. Washington Examiner. Retrieved from <https://www.washingtonexaminer.com/opinion/school-choice-works-for-a-third-of-the-cost>

7 DeAngelis, C. A. (2019). Look deeper into school voucher outcomes. The Advocate. Retrieved from [https://www.theadvocate.com/baton\\_rouge/opinion/article\\_b717848e-6780-11e9-889f-dbedfb59cd48.html](https://www.theadvocate.com/baton_rouge/opinion/article_b717848e-6780-11e9-889f-dbedfb59cd48.html)



school choice programs generally improved academic achievement globally and in the United States. Shakeel, Anderson, and Wolf (2021) estimated that winning a lottery to access a private school in the United States increased math and reading achievement by 4.3 to 4.7 percent of a standard deviation, respectively.<sup>8</sup>

Betts and Tang (2019) similarly performed a systematic review and meta-analysis of 38 rigorous studies and found that public charter schools increased reading achievement by 2 percent of a standard deviation and increased math achievement by 3.3 percent of a standard deviation. According to Stanford University’s Center for Research on Education Outcomes (2015), these positive effects translate to about 14 additional days of learning in math and about 24 additional days of learning in reading. Zimmer et al. (2019) also recently summarized the random assignment evaluations of public charter schools and similarly concluded that “lottery-based analyses have generally shown strong positive effects on student achievement of charter school admission and enrollment.” For example, Tuttle et al. (2013) found that winning a lottery to attend a KIPP charter school increased math achievement by 36 percent of a standard deviation and reading achievement by 15 percent of a standard deviation after two years of attendance; however, the reading effects were not statistically significant.

In order to connect the potential achievement effects of private school choice in Pennsylvania to changes in lifetime earnings, I combine the academic achievement literature with findings from Stanford University economist Eric Hanushek. Hanushek (2011) observed that a one standard deviation increase in student achievement is associated with a 13 percent increase in lifetime earnings.<sup>9</sup> Following the methodology from previous evaluations (e.g., DeAngelis, 2018; DeAngelis et al., 2019; DeAngelis & DeGrow, 2018; DeAngelis & Flanders, 2018; Wolf et al., 2014), because 70 percent of learning is retained from one year to the next (Hanushek, 2011), it is possible to forecast the potential effects of private school choice programs on lifetime earnings. Using the more cautious estimate of the effects of school choice 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 can be used to forecast the possible effects of private school choice on lifetime earnings in Pennsylvania:

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

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

To calculate the net present value of lifetime earnings in 2020 dollars, I assume that each student will 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 Pennsylvania in 2020 (\$53,950)<sup>10</sup> from the U.S. Department

8 These results can be found in Table 4 of Shakeel, Anderson, & Wolf (2021). The results for reading are robust to both random effects and robust variance estimation. However, the results for math are marginally significant based on random effects estimation and statistically insignificant based on robust variance estimation.

9 Chetty, Friedman, and Rockoff (2014) found similar results to Hanushek (2011). The estimated relationship between academic achievement and lifetime earnings found by Chetty, Friedman, and Rockoff (2014) only differed from Hanushek (2011) by around two percentage points.

10 May 2020 State Occupational Employment and Wage Estimates – Pennsylvania. Bureau of Labor Statistics. United States Department of Labor. Retrieved from [https://www.bls.gov/oes/current/oes\\_pa.htm](https://www.bls.gov/oes/current/oes_pa.htm)

of Labor Bureau of Labor Statistics, the net present value of the average lifetime earnings in Pennsylvania is \$1,342,452. This number is the best approximation available for the expected lifetime earnings of individuals educated in district-run public schools in the state since the majority of students attend public schools in Pennsylvania.

Plugging this information into equation (1) produces an expected lifetime earnings of \$1,374,564 for students attending private schools for their entire K-12 education. Plugging this information into equation (2) produces an expected gain in lifetime earnings of \$32,112 for each child using a private school choice program in the state.

$$\textcircled{1} \quad \$1,342,452 * [1 + (0.02) * (0.13/SD) * (0.70)]^{13} = \mathbf{\$1,374,564}$$

$$\textcircled{2} \quad \$1,374,564 - \$1,342,452 = \mathbf{\$32,112}$$

According to the Pennsylvania Department of Community and Economic Development, 60,387 scholarships were awarded to students in the 2018-19 school year.<sup>11</sup> An additional \$32,112 in lifetime earnings for each of the students using these scholarships would amount to an economic benefit of about \$1.55 billion (60,387 x \$32,112).

The average scholarship amount was \$2,113 in the 2018-19 school year. Assuming the average scholarship amount keeps pace with the United States Federal Reserve's inflation target of 2 percent each year, the average scholarship amount would be expected to be around \$2,242.33 by the 2021-22 school year. Increasing the K-12 scholarship cap to \$285 million would provide 101,680 total scholarships in the 2021-22 school year (\$285 million times 80 percent divided by \$2,242.33).<sup>12</sup> By the 2025-26 school year the total number of scholarships could reach 229,337 with a 25 percent annual growth cap (Table 1). These projections assume that the average scholarship amount will grow by the U.S. inflation target of 2 percent and that there will be sufficient demand for the school choice programs in Pennsylvania to meet the cap each year.<sup>13</sup> The most recent data from the Pennsylvania Department of Community and Economic Development reveal that 42,918 scholarships were denied in the 2018-19 school year, indicating that demand for the program is substantially higher than the currently allowable supply of scholarships.<sup>14</sup>

Assuming that the scholarship funding cap increases to \$285 million for the 2021-22 school year, I find the 101,680 students who would be using the program would be expected to accrue an additional \$3.3 billion in lifetime earnings (Table 1). That economic benefit is equal to about 0.4 percent of Pennsylvania's current gross domestic product of \$817.2 billion.<sup>15</sup> Assuming a

11 It is theoretically possible for the number of scholarships awarded to exceed the number of students using the program. However, the data are only reported for the total number of scholarships, which is assumed to be equal to the number of students using the private school choice programs in the current analysis.

12 A maximum of 20 percent of the program funding can be used to cover administrative expenses. This analysis provides cautious estimates of any forecasted economic benefits by assuming that administrative expenses reach the 20 percent maximum each year.

13 Federal Reserve issues FOMC statement of longer-run goals and policy strategy. Press Release. Board of Governors of the Federal Reserve System. Retrieved from <https://www.federalreserve.gov/newsevents/pressreleases/monetary20120125c.htm>

14 LeBlond, M. (2019). Opportunity Denied Again: Despite Recent Increase, Thousands of Scholarships Still Denied. Commonwealth Foundation. Retrieved from <https://www.commonwealthfoundation.org/policyblog/detail/opportunity-denied-again-despite-recent-increase-thousands-of-scholarships-still-denied>

15 Total Gross Domestic Product by Industry for Pennsylvania. Federal Reserve Bank of St. Louis Economic Data. Retrieved from <https://fred.stlouisfed.org/series/PANQGSP>

25 percent increase in the scholarship funding amount each year, additional lifetime earnings would be around \$7.4 billion for students utilizing the program in the 2025-26 school year. Larger economic benefits are also estimated based on the meta-analysis conducted by Shakeel, Anderson, and Wolf (2021) and reported in Table 1 and Figure 1.

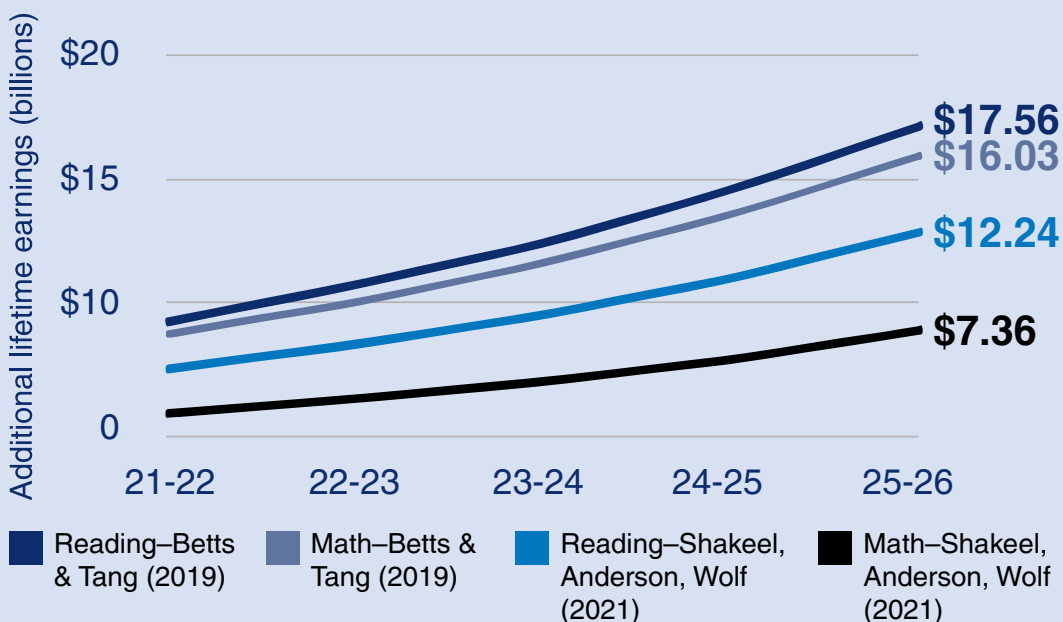
**TABLE 1: PROJECTED INCREASES IN SCHOLARSHIPS AND LIFETIME EARNINGS**

From improved academic performance with a 25% annual growth cap  
(\$ in billions)

Year	Scholarships	Reading– Betts & Tang (2019)	Math– Betts & Tang (2019)	Reading– Shakeel, Anderson, Wolf (2021)	Math– Shakeel, Anderson, Wolf (2021)
21-22	101,680	\$3.27	\$5.43	\$7.79	\$7.11
22-23	124,608	\$4.00	\$6.65	\$9.54	\$8.71
23-24	152,705	\$4.90	\$8.15	\$11.70	\$10.68
24-25	187,139	\$6.01	\$9.99	\$14.33	\$13.08
25-26	229,337	\$7.36	\$12.24	\$17.56	\$16.03

**FIGURE 1: PROJECTED INCREASE IN LIFETIME EARNINGS**

Additional lifetime earnings from improved academic performance with a 25% annual growth cap in scholarships (in billions of 2020 dollars)



Notably, the estimates of economic benefits reported in this section should be assessed with caution because effects on standardized test scores may not be strong 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 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 such as educational attainment (DeAngelis, 2019c; Wolf, Hitt, & McShane, 2018).

## **Analysis: Educational Attainment**

Educational attainment includes high school graduation, college enrollment, college persistence, and college completion. The evidence linking private school choice programs to these educational attainment outcomes leans positive. Foreman (2017) reviewed this evidence and found that all five studies on the subject indicated statistically significant positive effects of private school choice programs on at least one educational attainment outcome overall or for subgroups of students. EdChoice (2020) similarly found that four out of six rigorous studies on the subject indicated attainment benefits of private school choice programs in the U.S. overall or for student subgroups. None of the reviewed studies found negative effects of private school choice programs on attainment outcomes overall or for student subgroups.

Most recently, DeAngelis and Wolf (2019c) reviewed the literature on private school choice and educational attainment and found eight rigorous evaluations on the subject. Six of the eight evaluations found statistically significant positive effects of private school choice programs on at least one measure of 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). For example, Wolf et al. (2013) found that winning a lottery to use a voucher to attend a private school in D.C. increased the likelihood of graduating from high school by 21 percentage points. Cowen et al. (2013) found that students using the Milwaukee Parental Choice Program were about 4 percentage points more likely to graduate from high school than their carefully matched peers in public schools. The two remaining evaluations did not find any statistically significant effects of school choice on educational attainment overall in Louisiana (Holmes Erickson, Mills, & Wolf, 2019) or the District of Columbia (Chingos, 2018).

It is possible to forecast expected economic benefits associated with access to private school choice programs in Pennsylvania by linking these estimates to information about the economic value of additional high school graduates. High school graduates produce economic benefits to society through higher productivity, additional tax revenues from higher earnings, and reductions in social costs associated with tax-funded healthcare, crime, and welfare (Levin, 2009). Levin (2009) estimated the present value of economic benefits associated with an additional high school graduate was \$209,100 in 2009 dollars. Levin's (2009) estimates of these economic benefits were derived from expected increases in tax revenues and decreases in social costs associated with crime, healthcare, and welfare. 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 equal to about \$254,700 in 2020 dollars after adjusting for inflation.

The findings from Cowen et al. (2013) provide a cautious estimate that access to school choice might increase high school graduation rates by at least 4 percentage points in Pennsylvania. The estimates from Levin (2009) and Cowen et al. (2013) can be combined with the expected number of students using private school choice programs in Pennsylvania each year to forecast

economic benefits. Equations 3 and 4 show the forecasted economic benefits accrued by the 101,680 students expected to use private school choice programs in the state after increasing the cap to \$285 million for the 2021-22 school year.

**3** 101,680 students \* 0.04 = **4,067** additional graduates

**4** 4,067 additional graduates \* \$254,700 = **\$1.04 billion** in economic benefits

As shown in equation 3, a 4-percentage point increase in high school graduation rates would be expected to produce 4,067 additional high school graduates. Equation 4 estimates that a 4,067-student increase in high school graduates would be expected to translate to \$1.04 billion in additional economic benefits over their lifetimes.

Assuming a 25 percent increase in scholarship funding each year, additional economic benefits over time associated with 9,173 additional graduates would be around \$2.34 billion for students utilizing the program in the 2025-26 school year (Table 2).

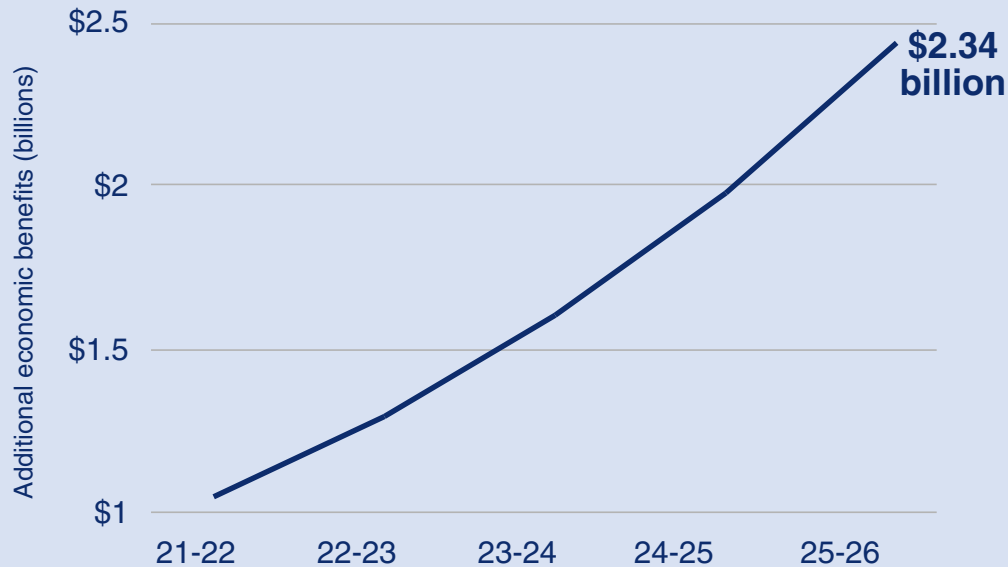
**TABLE 2: PROJECTED INCREASES IN HIGH SCHOOL GRADUATES AND ECONOMIC BENEFITS**

With a 25% annual growth cap (\$ in billions)

Year	Scholarships	Additional high school graduates	Additional economic benefits
21-22	101,680	4,067	\$1.04
22-23	124,608	4,984	\$1.27
23-24	152,705	6,108	\$1.56
24-25	187,139	7,486	\$1.91
25-26	229,337	9,173	\$2.34

## FIGURE 2: ECONOMIC BENEFITS OF INCREASED GRADUATION RATES

From additional high school graduates with a 25% annual growth cap in scholarships (in billions of 2020 dollars)



## Analysis: Crime Reduction

School choice programs could reduce crime through competitive pressures to improve behavioral outcomes, improvements in discipline policies, and by providing access to cultures and peer groups that discourage risky behaviors (DeAngelis & Wolf, 2019a). Six rigorous studies link access to school choice to crime outcomes. Each of the six studies finds statistically significant positive effects on crime reduction overall or for subgroups of students (DeAngelis & Wolf, 2019a; DeAngelis & Wolf, 2019b; Deming, 2011; Dills & Hernández-Julián, 2011; Dobbie & Fryer, 2015; McEachin et al., 2019). The two random assignment studies on the topic both find that winning a school choice lottery largely reduces incarceration rates for male students (Deming, 2011; Dobbie & Fryer, 2015). For example, Dobbie and Fryer (2015) find that winning a lottery to attend a public charter school in New York City reduced incarceration for male students by 4.4 percentage points. DeAngelis and Wolf (2019a) similarly found that students who used the Milwaukee Parental Choice Program for at least four years were 3 to 4 percentage points less likely to be found guilty of a felony than their carefully matched peers in nearby public schools.

Crime is costly to society. The costs of crimes can be divided into four fundamental categories: direct economic losses suffered by victims, indirect losses suffered by victims, criminal justice system costs, and negative effects on job prospects and productivity for criminals (McCollister, French, & Fang, 2010). Based on the average social costs of crimes estimated by McCollister, French, and Fang (2010) and the average social cost of a felony estimated by Flanders and DeAngelis (2018), it is possible to forecast the economic impact of private school choice in Pennsylvania. Using the sample of crimes reported in a longitudinal evaluation of the Milwaukee voucher program, Flanders and DeAngelis (2018) estimated the average cost of a felony to be \$35,950 in 2017 dollars, or about \$37,800 in 2020 dollars.

Using the more cautious estimate of a three-percentage point reduction in felonies found by DeAngelis and Wolf (2019a), and the number of scholarships expected to be awarded in the 2021-22 school year, equations 5 and 6 can be used to forecast economic benefits:

⑤  $101,680 \text{ students} * -0.03 = \mathbf{3,050}$  fewer felons

⑥  $3,050 \text{ fewer felons} * \$37,800 = \mathbf{\$115 \text{ million}}$  in economic benefits

If the crime-reducing benefits are similar in Pennsylvania, private school choice could reduce crime by 3,050 felons for the population of students currently enrolled in choice programs in the state. This reduction in felons would be expected to produce about \$115 million in economic benefits by reducing the social costs associated with crimes. This estimate is cautious since it assumes that each felon would have committed only one crime.

Assuming a 25 percent increase in scholarship funding each year, additional economic benefits associated with 6,880 fewer felons would be around \$260 million by the 2025-26 school year (Table 3).

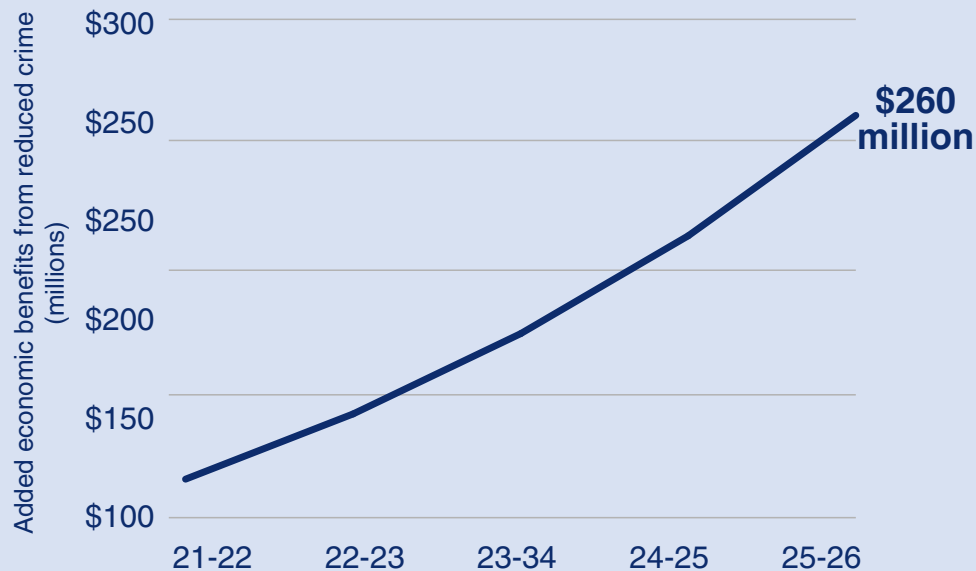
**TABLE 3: PROJECTED REDUCTIONS IN FELONS AND ECONOMIC BENEFITS**

With a 25% annual growth cap (\$ in millions)

Year	Scholarships	Reduction in felons	Additional economic benefits
21-22	101,680	3,050	\$115,304,933
22-23	124,608	3,738	\$141,305,065
23-24	152,705	4,581	\$173,167,972
24-25	187,139	5,614	\$212,215,652
25-26	229,337	6,880	\$260,068,201

### FIGURE 3: ECONOMIC BENEFITS OF CRIME REDUCTION

With a 25% annual growth cap in scholarships (in millions of 2020 dollars)



## Other Benefits

Other potential benefits of school choice are excluded from this analysis because of the complexity of estimating their economic impacts. For example, school choice could theoretically improve character skills such as tolerance and voluntarism through competitive pressures and exposure to peer groups and cultures that encourage such activity. In fact, four reviews of the evidence have found that access to private school choice programs generally improves, or has no effect on, civic outcomes such as tolerance of others, civic engagement, political participation, voluntarism, and charitable activity (DeAngelis, 2017; DeAngelis & Wolf, 2019c; EdChoice, 2020; Wolf, 2007). Specifically, the most recent review of the rigorous evidence on this topic found that 7 out of 12 studies detected statistically significant positive effects of private school choice on civic outcomes overall (DeAngelis & Wolf, 2019c). For example, Bettinger and Slonim (2006) found that winning a lottery to use a voucher to attend a private school in Ohio increased charitable giving in a lab setting by 23 percent. None of the 12 studies found statistically significant negative effects of school choice on civic outcomes overall.

The preponderance of the evidence also suggests that private school choice programs increase safety as reported by students, their parents, and school leaders (DeAngelis & Wolf, 2019c). Schwabach and DeAngelis (2020) found 11 rigorous studies linking access to private schooling to reports of school safety. Each of the 11 studies found private school safety advantages as reported by parents, students, or faculty (DeAngelis & Lueken, 2020; Fan, Williams, & Corkin, 2011; Farina, 2019; Howell & Peterson, 2006; Lleras, 2008; Shakeel & DeAngelis, 2018; Waasdorp et al., 2018; Webber et al., 2019; Witte et al., 2008; Wolf et al., 2010). For example, Webber et al., (2019) found that winning a lottery to use the D.C. Opportunity Scholarship Program to attend a private school increased the likelihood that students reported being in a very safe school by 34 percent. None of these studies found that private school choice decreased



reports of school safety overall. These generally positive results could be explained by research showing that families consistently rank safety as one of the most important factors influencing the private schools they choose for their children (Bedrick & Burke, 2018; Catt & Rhinesmith, 2017; Holmes Erickson, 2017; Kelly & Scafidi, 2013).

The evidence also suggests that private school choice programs increase parent and student satisfaction. Rhinesmith (2017) reviewed the evidence and found that each of the 19 evaluations on the topic revealed positive effects of private school choice on parent satisfaction. EdChoice (2020) similarly found that all but one of the 30 studies on the topic suggest that private school choice programs improve reports of parent satisfaction. Just two studies found that more parents were less satisfied with their chosen schools than charter school parents, district school parents, and non-program private school parents (Catt & Cheng, 2019). Eight random assignment studies find that winning a lottery to use a private school choice program increases satisfaction as reported by parents or students (Greene, 2001; Howell & Peterson, 2002 (four locations); Kisida & Wolf, 2015; Peterson & Campbell, 2001; Webber et al., 2019). For example, the latest evaluation of the D.C. Opportunity Scholarship Program found that winning the lottery to attend a private school increased students' reports of satisfaction by 18 percent (Webber et al., 2019). The current analysis provides cautious estimates of the true social benefits of private school choice because civic outcomes and satisfaction are excluded.

## Financial Effects on Taxpayers and District Schools

This study ignores any financial savings or costs to taxpayers and school districts associated with private school choice programs in the state. It is true that the private school choice programs in Pennsylvania reduce total taxpayer revenues because of the tax credit funding mechanism. However, the programs could save taxpayer money by reducing spending in public schools for each student switching from the public sector to the private sector. Taxpayer savings could occur whenever a student uses the school choice programs to switch out of public schools because the average scholarship amount is much lower than the average amount spent in public schools in the state. In fact, the most recent data reported by EdChoice show that the average scholarship amount was \$2,490 for the Opportunity Scholarship Tax Credit Program, which was only about 16 percent of the average public school spending amount per student.<sup>16</sup>

Lueken (2018) estimated that the Educational Improvement Tax Credit Program saved Pennsylvania about \$223 million, or about \$6,539 per student, in the 2013-14 school year. More recently, however, Lueken (2019) found that the expansion of the state's school choice programs proposed by Senate Bill 299, sponsored by Sen. Mike Regan, would have had a net negative impact on state taxpayers of around \$144 million to \$225 million each year under the state's current school funding structure. He attributes this estimated effect to Pennsylvania's strong hold-harmless funding provision whereby school districts are guaranteed the same level of funding that they received the previous year. On the other hand, Lueken (2019) found that the expansion of the school choice programs would generate about \$500 million to \$1.1 billion in financial benefits to local school districts in the state each year. Again, this large benefit is due to the state's hold harmless funding mechanism. On net, Lueken (2019) estimates that expansions of the choice programs under SB 299 would have been an overall financial benefit worth \$356 million to \$875 million each year.

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<sup>16</sup> School Choice in America Dashboard. EdChoice. Retrieved from <http://www.edchoice.org/school-choice/school-choice-in-america>.

Although Lueken estimated overall fiscal benefits from expansion of the state's two tax-credit scholarship programs under SB 299, how these benefits would be distributed among state taxpayers and local school districts is highly uneven and heavily favors school districts. The negative effect for state taxpayers is because school districts are currently "held harmless" in the event that they lose students for any reason. In fact, Georgetown University's Edunomics Lab reported that only 3 percent of school funding is determined by student enrollment in Pennsylvania in the 2019-20 school year.<sup>17</sup> In other words, Pennsylvania school districts are allowed to keep about 97 percent of the funding for students who leave the district for whatever reason. In this sense, the negative fiscal impact reflects a problem with the state's school funding mechanism. It is not a "choice problem."

Scafidi (2012) estimated that average short-run variable costs per student for school districts in Pennsylvania are 61.5 percent of the total per-student cost. This implies that districts financially benefit when students leave, even in the short-run, if the proportion of dollars based on student enrollment is less than 61.5 percent. Under the current funding formula, because far less than 61.5 percent of dollars are allocated on the basis of students in Pennsylvania (only 3 percent), public school districts in the state experience large financial benefits when they lose students for whatever reason in the short-run and in the long-run.

This current funding formula is a great deal for public school districts financially, but it penalizes taxpayers whenever students switch school districts for whatever reason. Just imagine if Whole Foods was able to keep 97 percent of a family's publicly funded food stamps after they left to Trader Joe's; that would be a great deal for Whole Foods, but a horrible deal for the taxpayer if that meant subsidizing two grocery stores when only one actually provided goods and services to the family. The current funding formula in Pennsylvania is unlike most other states. Twenty-four of the 30 states reported by Georgetown University's Edunomics Lab have over 20 percent of public education dollars disbursed based on student enrollment, and 19 of the 30 states have over 50 percent of public education dollars dispersed based on student enrollment.

Lueken (2019) estimated that the proposed expansion of the school choice programs under SB 299 would save Pennsylvania taxpayers between \$20 million and \$140 million each year if the state had an enrollment-based funding system. He found that the expansion would also generate between \$340 million and \$730 million in financial benefits to the school districts each year with an enrollment-based funding system in Pennsylvania. A move towards an enrollment-based school funding system would benefit the state as a whole by more evenly distributing the financial benefits of Pennsylvania's school choice programs (Lueken, 2019). Enrollment-based funding would also give district-run public schools stronger financial incentives to better serve and retain students.

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<sup>17</sup> Student-based allocation: Doling out dollars based on student needs. Edunomics Lab. Georgetown University. Retrieved from <https://edunomicslab.org/our-research/student-based-allocations/>

## Discussion

The state of Pennsylvania is at an education tipping point. Policymakers could lift the arbitrary cap on tax credit scholarships so that the tens of thousands of students waiting in line can have access to better educational options. The cap would need to be lifted by about \$100 million to allow private contributions to cover funding for the 42,918 denied scholarships from the 2018-19 school year.

Although the Pennsylvania state House and Senate passed House Bill 800, which could have funded each of the denied scholarships, Governor Tom Wolf vetoed the legislation on June 18, 2019.<sup>18</sup> In effect, by vetoing the bill to allow these additional students to access the choice programs, Governor Tom Wolf did not only prevent families from having additional educational options; he also arguably unintentionally prevented the rest of Pennsylvania's citizenry from benefiting from higher future tax revenues, a more educated populace, and lower crime rates. In July of 2019, the cap was raised by \$25 million for the Educational Improvement Tax Credit and \$5 million for the Opportunity Scholarship Tax Credit, resulting in an additional 15,000 scholarships. However, new legislation is advancing to significantly lift the arbitrary cap on allowable private donations. The Excellence in Education for All Act can unleash the untapped potential of tax credits including more options for parents, higher lifetime earnings, higher graduation rates, and reduced crime.

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<sup>18</sup> Finnerty, J. (2019). Wolf vetoes school choice bill. The Tribune-Democrat. Retrieved from [https://www.tribdem.com/news/wolf-vetoes-school-choice-bill/article\\_dfc05f76-91df-11e9-aaed-8f86b6cd3f72.html](https://www.tribdem.com/news/wolf-vetoes-school-choice-bill/article_dfc05f76-91df-11e9-aaed-8f86b6cd3f72.html)

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