# Unleashing Educational Opportunity:

## *The untapped potential of expanded tax credit scholarships in Pennsylvania*

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## Preface

In the wake of COVID-19, kids everywhere face the danger of learning loss and exacerbated achievement gaps. Some of the impacts are likely to be long-lasting. Dr. Eric Hanushek of Stanford estimates students' lifetime earnings could be reduced by 3-6 percent from the disruption to their education. For disadvantaged students, the effects could be even worse.

Based on conservative estimates from the Reason Foundation, a $100 million increase in EITC—which was vetoed by Gov. Wolf in June of 2019—would have mitigated some of those impacts. Specifically, the projected long-run opportunity cost of Wolf's veto is estimated to be:

- ***$3 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement.***
- ***$1 billion from additional high school graduates.***
- ***$115 million from reductions in the social costs associated with crimes.***

It's not too late. Pennsylvania can still enact school choice expansions, such as increased tax credit scholarships and education scholarship accounts. But there's no time to lose. Pennsylvania kids need relief immediately.

The following study details how all Pennsylvanians can achieve prosperity through expanded school choice—specifically our tax credit scholarship programs. Special thanks to Dr. Corey DeAngelis for his tireless efforts for all kids to thrive in an educational environment that's best for their unique gifts and talents.

In Liberty!

Marc LeBlond

Senior Policy Analyst, Commonwealth Foundation

# Unleashing Educational Opportunity:

# The Untapped Potential of Expanded Tax Credit Scholarships in Pennsylvania

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## Executive Summary

Pennsylvania's two private school choice programs collectively awarded 52,144 scholarships, or about 3 percent of the state's K-12 population, to students in the 2017-18 school year. However, 49,356 scholarships were denied to students during that year because of arbitrary caps on allowable donations for the programs. Although the Pennsylvania state House and Senate passed House Bill 800, which would have funded all of those denied scholarships, Governor Tom Wolf vetoed the legislation on June 18, 2019.

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 these programs by increasing Pennsylvania's scholarship cap by $100 million in the 2020-21 school year. The study also forecasts economic impacts of expanding the cap by 10 percent each year.

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.

Applying cautious estimates from each outcome (academic achievement—or test scores, educational attainment, and crime reduction) to the 52,144 private school scholarships, this study finds that the two private school choice programs in Pennsylvania are expected to provide the following long-run economic benefits for the students[1] currently participating in the programs:

- $1.6 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement[2]\
- $531 million from additional high school graduates
- $59 million from reductions in the social costs associated with crimes

A $100 million increase—equivalent to 0.3 percent of overall Pennsylvania public school spending—in scholarship funding could allow 102,085 students, or about 5 percent of the state's current K-12 population of students, to use the programs in the 2020-21 school year, which could provide the following long-run economic benefits:

- $3 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement
- $1 billion from additional high school graduates
- $115 million from reductions in the social costs associated with crimes

A 10 percent annual increase in scholarship funding could allow 201,416 students to use the programs by the 2029-30 school year, which could provide the following long-run economic benefits:

- $6 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement
- $2.1 billion from additional high school graduates
- $228 million from reductions in the social costs associated with crimes

Keywords: private school; school choice; economics of education
JEL Codes: I28; I20

[1] The Pennsylvania Department of Community and Economic Development reported that 52,144 scholarships were awarded in the 2017-18 school year. Although it is possible for individual students to receive more than one scholarship, the subsequent analyses assume that these scholarships represent 52,144 students because of data limitations.

[2] Each of these economic benefits is expressed in present values.

## Introduction

If a family is dissatisfied with their child's residentially assigned public school, they usually only have five costly or limited options. They can move to a residence that is assigned to a better district-run public school, pay for a private school out of pocket while still paying for the district-run public school through property taxes, incur the costs of homeschooling while still paying for the district-run public school through property taxes, or negotiate with school leaders and teachers to try to improve the education their child receives (DeAngelis, 2019a). Families could also try to influence their schools' policies and practices through school board elections, which could require significant time and resources. However, it's essentially guaranteed that many families will not be represented by the will of the majority, and it's not certain that the desired policies will actually be implemented or that they will work as intended. It is also possible that the outcome of the election would mostly reflect the desires of concentrated interest groups rather than families with children in schools (Lovenheim & Willén, 2019; Moe, 2011; Olson, 1971).

Some economists and education researchers argue that the high costs associated with choosing an alternative to the residentially assigned district-run school leads to a high degree of monopoly power in the K-12 education system in the United States (Friedman, 1955; Hanushek et al., 2007; Hoxby, 2007). Because it is costly to exit the residentially assigned school, district-run schools arguably have weak financial incentives to cater to the needs of families (Chubb & Moe, 1988; Chubb & Moe, 1990; Friedman, 1997). Private school choice programs – and public charter schools – decrease the financial costs associated with exiting the residentially assigned school by allowing education dollars to follow children to the schools that their families select without requiring families to change residence. This reduction in switching costs, and dampening monopoly power, theoretically gives district-run schools stronger incentives to provide educational services that satisfy the needs of families (DeAngelis & Barnard, 2020; DeAngelis & Flanders, 2019; Egalite, 2013; Jabbar et al., 2019; Hoxby, 2000).

Some scholars argue that private schools have stronger financial incentives than district schools to provide meaningful educational services because dissatisfied families are free to send their children – and money – elsewhere. In other words, the competitive pressures introduced by private school choice programs could improve the educational outcomes valued by families (Egalite, 2013). Private schools might also have a competitive advantage since they generally face fewer government regulations than district schools (Shakeel & DeAngelis, 2017). Private school choice programs could also improve educational outcomes by facilitating a better match between students and their educational settings (DeAngelis & Holmes Erickson, 2018).

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. This program offers tax credits for contributions to non-profit organizations that provide private school scholarships to students in the state. The EITC awarded 37,725 scholarships, with an average value of $1,816, in the 2017-18 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 14,419 scholarships, with an average value of $2,490, in the 2017-18 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.[3]

[3] School Choice – Pennsylvania. EdChoice. Retrieved from https://www.edchoice.org/school-choice/state/pennsylvania/

Although Pennsylvania's two private school choice programs awarded a total of 52,144 scholarships for K-12 students in the 2017-18 school year, 49,356 scholarships were denied to applicants because of arbitrary funding caps.[4] House Bill 800, passed by the Pennsylvania House and Senate with bipartisan support, would have increased scholarship funding by $100 million in the 2019-20 school year. The bill also allowed the annual cap to increase by 10 percent if at least 90 percent of credits were utilized the previous year.[5] However, Governor Tom Wolf vetoed the bill on June 18, 2019.[6]

What effects do the EITC and OSTC have on the Pennsylvania economy? And what economic impacts would expansions of these programs have on the state? 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 52,144 participating students, this study finds that the two private school choice programs in Pennsylvania are expected to provide the following long-run economic benefits:

- $1.6 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement
- $531 million from additional high school graduates
- $59 million from reductions in the social costs associated with crimes

A $100 million increase in scholarship funding could allow 102,085 students (including 49,941 new scholarship students) to use the programs in the 2020-21 school year, which could provide the following long-run economic benefits:

- $3 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement
- $1 billion from additional high school graduates
- $115 million from reductions in the social costs associated with crimes

A 10 percent annual increase in scholarship funding could allow 201,416 students to use the programs by the 2029-30 school year, which could provide the following long-run economic benefits:

- $6 billion in economic benefits from higher lifetime earnings associated with increases in academic achievement
- $2.1 billion from additional high school graduates
- $228 million from reductions in the social costs associated with crimes

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[4] 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

[5] House Bill 800; Regular Session 2019-2020. Pennsylvania General Assembly. Retrieved from https://www.legis.state.pa.us/cfdocs/billinfo/bill_history.cfm?syear=2019&sind=0&body=H&type=B&bn=800

[6] 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

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 reviews the evidence linking school choice to academic achievement and estimates the possible effects of expanding Pennsylvania's choice programs on lifetime earnings. The sections after that estimate the possible effects of expanding Pennsylvania's choice programs on high school graduation rates and crime reduction by reviewing the relevant literature from the United States. Next, the evidence linking private school choice to civic outcomes, satisfaction, and fiscal effects are reviewed. Finally, implications for private school choice in Pennsylvania are discussed.

## 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,[7] whereas per pupil spending in district-run public schools is about $28,000 each year.[8] In other words, the latest evaluation of the D.C. voucher program found that the private

[7] School Choice – District of Columbia Opportunity Scholarship Program. EdChoice. Retrieved from https://www.edchoice.org/school-choice/programs/district-of-columbia-opportunity-scholarship-program/
[8] 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

schools achieved the same math and reading results as the public schools at around a third of the cost (Webber et al., 2019).[9] Only two of the studies, both of the highly regulated Louisiana Scholarship Program, find negative effects on math or reading test scores (Abdulkadiroğlu, Pathak, & Walters, 2018; Mills & Wolf, 2019).[10]

Shakeel, Anderson, and Wolf (2016) conducted a meta-analysis including 15 of these experimental evaluations and concluded that private school choice programs increased or had no effect on academic achievement in the United States. The overall average math and reading effect sizes across all studies, calculated by Shakeel, Anderson, and Wolf (2016), ranged from zero percent of a standard deviation to 7 percent of a standard deviation.

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.[11] 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:

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

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

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 2018 ($50,030)[12] from the U.S. Department of Labor Bureau of Labor Statistics, the net present value of the average lifetime earnings in Pennsylvania is $1,244,910. 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.

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[9] 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

[10] 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

[11] 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.

[12] May 2018 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

Plugging this information into equation (1) produces an expected lifetime earnings of $1,274,688 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 $29,778 for each child using a private school choice program in the state.

$$\$1{,}244{,}910 * [1 + (0.02) * (0.13/SD) * (0.70)]^{13} = \mathbf{\$1{,}274{,}688} \quad (1)$$

$$\$1{,}274{,}688 - \$1{,}244{,}910 = \mathbf{\$29{,}778} \quad (2)$$

According to the Pennsylvania Department of Community and Economic Development, 52,144 scholarships were awarded to students in the 2017-18 school year.[13] An additional $29,778 in lifetime earnings for each of the students using these scholarships would amount to an economic benefit of about $1.55 billion (52,144 x $29,778).

The average scholarship amount was $2,002 in the 2017-18 school year. Assuming the average scholarship amount remains constant in 2020-21 ($2,002), an additional $100 million in scholarship funding would provide 49,941 additional scholarships next school year ($100 million divided by $2,002), or 102,085 total scholarships (52,144 plus 49,941). By the 2029-30 school year the total number of scholarships could reach 201,416 with a 10 percent annual growth cap (Table 1). These projections assume that the average voucher amount will grow by the United States 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.[14] The most recent data from the Pennsylvania Department of Community and Economic Development reveal that 49,356 scholarships were denied in the 2017-18 school year, indicating that demand for the program is substantially higher than the currently allowable supply of scholarships.[15]

Assuming a $100 million increase in scholarship funding for the 2020-21 school year, I find the 102,085 students who would be using the program would be expected to accrue an additional $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.[16] Assuming a 10 percent increase in the scholarship funding amount each year, additional lifetime earnings would be around $6 billion for students utilizing the program in the 2029-30 school year.

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[13] 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.

[14] 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

[15] 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

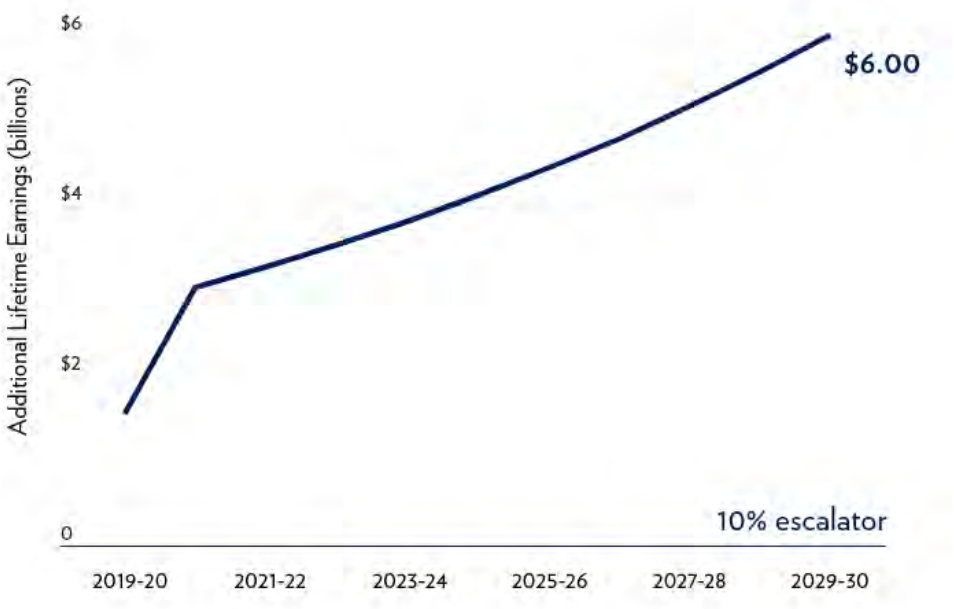
[16] Total Gross Domestic Product by Industry for Pennsylvania. Federal Reserve Bank of St. Louis Economic Data. Retrieved from https://fred.stlouisfed.org/series/PANQGSP

**Table 1: Projected Increases in Scholarships and Lifetime Earnings**

10% Annual Growth Cap

| Year | Scholarships | Additional Lifetime Earnings (Billions of 2020 Dollars) |
|---|---|---|
| 2019-20 | 52,144 | $1.55 |
| 2020-21 | 102,085 | $3.04 |
| 2021-22 | 110,092 | $3.28 |
| 2022-23 | 118,726 | $3.54 |
| 2023-24 | 128,038 | $3.81 |
| 2024-25 | 138,080 | $4.11 |
| 2025-26 | 148,910 | $4.43 |
| 2026-27 | 160,589 | $4.78 |
| 2027-28 | 173,185 | $5.16 |
| 2028-29 | 186,768 | $5.56 |
| 2029-30 | 201,416 | $6.00 |

**Figure 1: Increase in Lifetime Earnings (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).

**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. According to the Pennsylvania Department of Education, 52,144 scholarships were awarded to students in the 2017-18 school year. 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 52,144 students currently using private school choice programs in the state.

*52,144 students * 0.04 =* ***2,086*** *additional graduates* (3)

*2,086 additional graduates * $254,700 =* ***$531.30 million*** *in economic benefits* (4)

As shown in equation 3, a 4-percentage point increase in high school graduation rates would be expected to produce 2,086 additional high school graduates. Equation 4 estimates that a 2,086-student increase in high school graduates would be expected to translate to $531.30 million in economic benefits over their lifetimes.

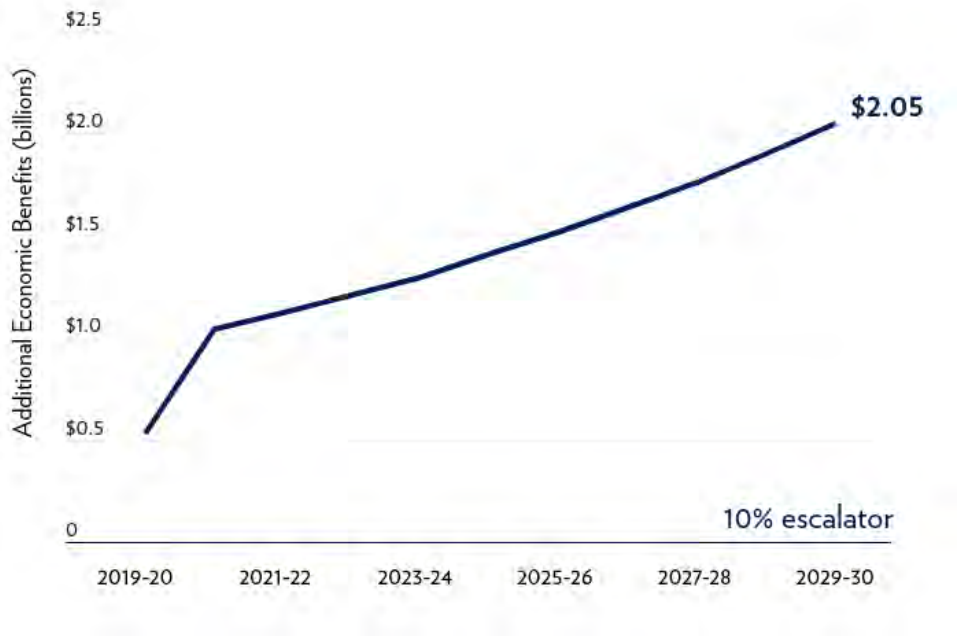
Assuming a $100 million increase in scholarship funding for the 2020-21 school year, I find the 102,085 students using the program would be expected to accrue an additional $1.04 billion in economic benefits from an additional 4,083 graduates (Table 2). Assuming a 10 percent increase in scholarship funding each year, additional economic benefits over time associated with 8,057 additional graduates would be around $2.1 billion for students utilizing the program in the 2029-30 school year.

**Table 2: Projected Increases in High School Graduates and Economic Benefits**

10% Annual Growth Cap

| Year | Scholarships | Additional High School Graduates | Additional Economic Benefits (Billions of 2020 Dollars |
|---|---|---|---|
| 2019-20 | 52,144 | 2,086 | $0.53 |
| 2020-21 | 102,085 | 4,083 | $1.04 |
| 2021-22 | 110,092 | 4,404 | $1.12 |
| 2022-23 | 118,726 | 4,749 | $1.21 |
| 2023-24 | 128,038 | 5,122 | $1.30 |
| 2024-25 | 138,080 | 5,523 | $1.41 |
| 2025-26 | 148,910 | 5,956 | $1.52 |
| 2026-27 | 160,589 | 6,424 | $1.64 |
| 2027-28 | 173,185 | 6,927 | $1.76 |
| 2028-29 | 186,768 | 7,471 | $1.90 |
| 2029-30 | 201,416 | 8,057 | $2.05 |

**Figure 2: Economic Benefits of Increased Graduation Rates**



## 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 awarded in the most recent school year, equations 5 and 6 can be used to forecast economic benefits:

*52,144 students * -0.03 =* ***1,564*** *fewer felons* (5)

*1,564 fewer felons * $37,800 =* ***$59.12 million*** *in economic benefits* (6)

If the crime-reducing benefits are similar in Pennsylvania, private school choice could reduce crime by 1,564 felons for the population of students currently enrolled in choice programs in the state. This reduction in felons would be expected to produce about $59.12 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.

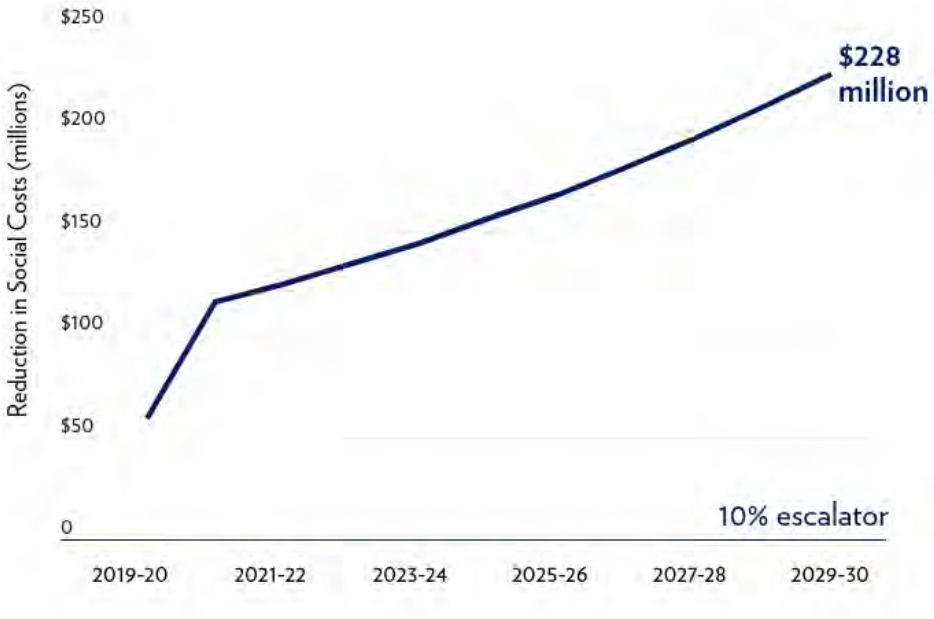
Given that the amount of scholarship funding increases by $100 million for the 2020-21 school year, the 102,085 students using the program would be expected to avoid $116 million in social costs associated with felonies (Table 3). Assuming a 10 percent increase in scholarship funding each year, additional economic benefits associated with 6,042 fewer felons would be around $228 million by the 2029-30 school year.

**Table 3: Projected Reductions in Felons and Economic Benefits**

10% Annual Growth Cap

| Year | Scholarships | Reduction in Felons | Additional Economic Benefits (Millions of 2020 Dollars) |
|---|---|---|---|
| 2019-20 | 52,144 | 1,564 | $59 |
| 2020-21 | 102,085 | 3,063 | $116 |
| 2021-22 | 110,092 | 3,303 | $125 |
| 2022-23 | 118,726 | 3,562 | $135 |
| 2023-24 | 128,038 | 3,841 | $145 |
| 2024-25 | 138,080 | 4,142 | $157 |
| 2025-26 | 148,910 | 4,467 | $169 |
| 2026-27 | 160,589 | 4,818 | $182 |
| 2027-28 | 173,185 | 5,196 | $196 |
| 2028-29 | 186,768 | 5,603 | $212 |
| 2029-30 | 201,416 | 6,042 | $228 |

**Figure 3: Economic Benefits of Crime Reduction (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). Schwalbach and DeAngelis (2020) found 10 rigorous studies linking access to private schooling to reports of school safety. Each of the 10 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.[17]

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.

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.[18] 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

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[17] School Choice in America Dashboard. EdChoice. Retrieved from http://www.edchoice.org/school-choice/school-choice-in-america.

[18] Student-based allocation: Doling out dollars based on student needs. Edunomics Lab. Georgetown University. Retrieved from https://edunomicslab.org/our-research/student-based-allocations/

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.

## Discussion

The state of Pennsylvania is at an education tipping point. Policymakers have the ability to 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 49,356 denied scholarships from the 2017-18 school year.

This study estimates that lifting the arbitrary cap by $100 million in the 2020-21 school year could have substantial positive economic effects related to higher student academic achievement, more high school graduates, and fewer crimes. Lifting the cap by $100,000 would allow 102,085 students to use the programs in the 2020-21 school year, which could lead to billions of dollars in economic benefits over their lifetimes. Specifically, the economic benefits associated with these 102,085 students could collectively amount to $3 billion from higher lifetime earnings, $1 billion from additional high school graduates, and $115 million from crime reduction. By the 2029-30 school year, up to 201,416 students could access these programs given that private donations are allowed to expand by 10 percent each year. This expansion could lead to economic benefits amounting to $6 billion from higher lifetime earnings, $2.1 billion from additional high school graduates, and $228 million from crime reduction.

These potential economic benefits should not be combined and should be assessed separately because of overlap. 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.

Although the Pennsylvania state House and Senate passed House Bill 800, which would have funded each of the 49,356 denied scholarships, Governor Tom Wolf vetoed the legislation on June 18, 2019.[19] 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. However, that mistake can still be remedied by lifting the arbitrary cap on allowable private donations to fund scholarships that give students additional educational options.

[19] 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

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