

A wise investment: The productivity of public and private schools of choice in Wisconsin*

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Executive Summary

Inflation-adjusted education spending has nearly quadrupled in the last half century, unfortunately without strong evidence of meaningful improvements in student outcomes (Hanushek, 1997; Hanushek & Lindseth, 2009). Because education dollars are scarce resources, and because we want students to prosper academically, it's important to examine which types of schools offer society the most “bang for the buck.”

Wisconsin is an apt state to study. The Badger State is the home of the longest-standing modern voucher program in the United States – the Milwaukee Parental Choice Program – and three other private school choice programs. These programs serve over 40,000 students statewide, with about three-quarters of participating students residing in Milwaukee.¹ Another 43,700 students are enrolled in public charter schools in the state.²

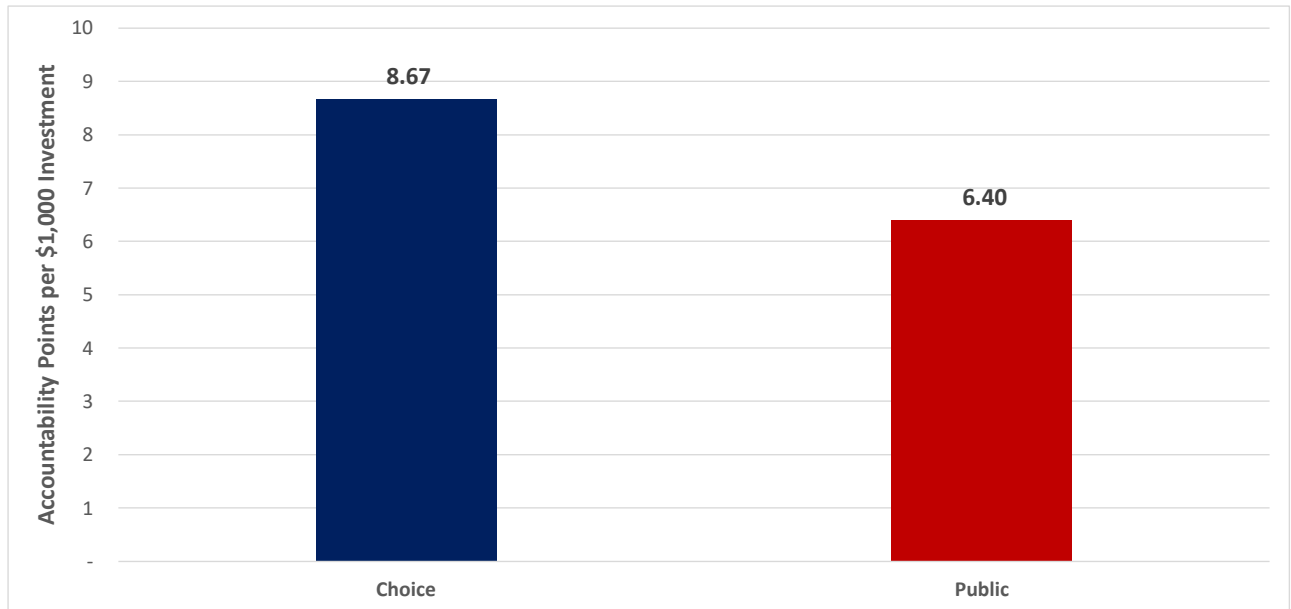
In this study, I calculate the cost-effectiveness of private schools participating in school voucher programs, and charter schools, compared to district-run public schools in Wisconsin. I calculate cost-effectiveness by dividing the Accountability Report Card score for each school by the public dollars invested in each school. Using a conservative analytic approach, I find that private and charter schools tend to be more cost-effective than district-run public schools in the state overall and for the vast majority of individual cities. In the productivity analysis for private schools participating in choice programs, I find:

¹ Wisconsin. EdChoice. Retrieved from <https://www.edchoice.org/school-choice/state/wisconsin/>

² Wisconsin. National Alliance for Public Charter Schools. Retrieved from <https://www.publiccharters.org/our-work/charter-law-database/states/wisconsin>

- Private schools receive 27 percent less than district-run public schools in per-pupil funding overall, and all 26 cities included in the analysis demonstrate funding advantages favoring traditional public schools.
- Private schools produce 2.27 more points on the Accountability Report Card for every \$1,000 invested than district-run public schools, demonstrating a 36 percent cost-effectiveness advantage for private schools (Figure ES 1), and all but 2 of the 26 cities demonstrate a cost-effectiveness advantage favoring private schools.
- Private schools are 75 percent more cost-effective in Racine and 50 percent more cost effective in Milwaukee, the cities with the highest proportions of students using private school choice programs in the state.

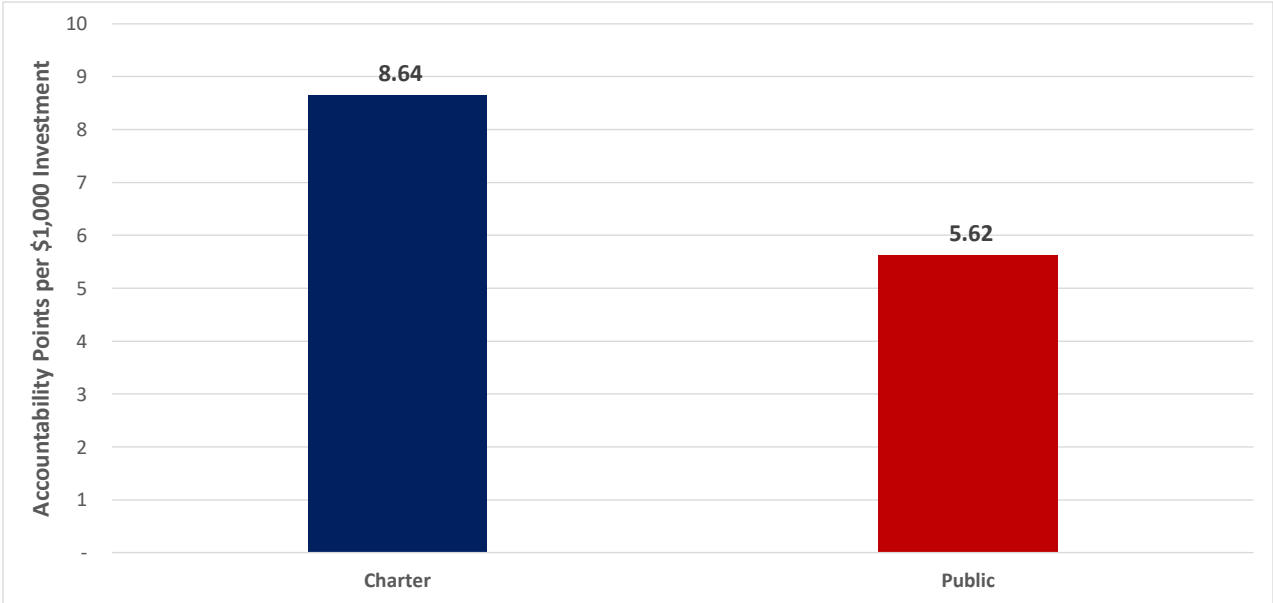
Figure ES 1: Accountability Points per \$1,000 of Funding in Choice Schools Versus TPS, 26-City Weighted Average



In the analyses of independent charter school productivity across two cities, I find:

- Independent charter schools receive 22 percent less than district-run public schools in per-pupil funding overall, and both cities included in the analysis demonstrate funding advantages for district-run public schools.
- Independent charter schools produce 3.02 more points on the Accountability Report Card for every \$1,000 invested than district-run public schools, demonstrating a 54 percent cost-effectiveness advantage for charter schools (Figure ES 2), and both cities demonstrated large cost-effectiveness advantages favoring charter schools.
- Independent charter schools are 63 percent more cost-effective in Racine and 50 percent more cost effective in Milwaukee.

Figure ES 2: Accountability Points per \$1,000 of Funding in Choice Schools Versus TPS, 2-City Weighted Average



Keywords: school choice; charter schools; school productivity; school vouchers

JEL Classifications: I28, I20

Introduction

The United States invests over \$660 billion on K-12 education, or over \$13,000 per student, each year.³ That is equal to over \$169,000 for each child's K-12 education. Interestingly, real education expenditures in the U.S. have nearly quadrupled in the last half century without consistent improvements in student outcomes (Hanushek, 1997; Hanushek, 2015a, Hanushek, 2015b; Hanushek & Lindseth, 2009; Hanushek & Lindseth, 2010). Because education dollars are scarce resources, and because students' academic success is important for society, it's vital to examine which education sector delivers the most "bang for the buck."

In theory, private and charter schools might be more productive than traditional public schools because of competitive pressures (DeAngelis, 2018). Economists argue that traditional public schools hold significant monopoly power because of residential assignment and funding through property taxes (Chubb & Moe, 1988; Chubb & Moe, 1990; Friedman, 1955; Hoxby, 2007). If a family is unhappy with the education services provided to their children in traditional public schools, they usually only have four options: (1) pay for a private school out of pocket while still paying for the public school through taxes, (2) move to a more expensive house that is assigned to a better public school, (3) incur the costs associated with homeschooling while still paying for the public school through taxes, or (4) complain to the residentially assigned public school and hope things get better. Private school vouchers reduce the costs associated with option one by allowing families to use a fraction of their public education dollars to pay for private school tuition and fees. Independent charter school laws give families the option to attend

³ National Center for Education Statistics, Table 236.10. Retrieved from https://nces.ed.gov/programs/digest/d17/tables/dt17_236.10.asp

privately run public schools regardless of the default public school assignment. Private and charter schools must cater to the needs of families if they wish to remain in business, so they have strong financial incentives to spend their scarce education dollars wisely. In other words, more power is in the hands of the consumers – families – in a system with school choice. We may also expect school choice to lead to quality enhancements without increasing costs by allowing for better matches between schools and students (DeAngelis & Holmes Erickson, 2018).

Wisconsin is the home of the longest-standing modern voucher programs in the country – the Milwaukee Parental Choice Program – and three other private school choice programs. Wisconsin’s first private school choice program launched in 1990⁴ and the state’s first charter school was authorized in 1994.⁵ Wisconsin’s four private school choice programs served over 40,000 students during the 2018-19 school year,⁶ and over 43,000 students were enrolled in public charter schools in the state in the same year.⁷ The most rigorous studies of the Milwaukee Parental Choice Program find null to positive effects on test scores (Greene, Peterson, & Du, 1999; Rouse, 1998) and civic engagement (DeAngelis, 2017; DeAngelis & Wolf, 2018; Fleming, 2014; Fleming, Mitchell, & McNally, 2014), and positive effects on crime reduction (DeAngelis & Wolf, 2016; DeAngelis & Wolf, 2019), college enrollment (Wolf, Witte, & Kisida, 2018), and

⁴ Wisconsin – Milwaukee Parental Choice Program. EdChoice. Retrieved from <https://www.edchoice.org/school-choice/programs/wisconsin-milwaukee-parental-choice-program/>

⁵ Statutory Report Series Legislative Report on Charter Schools 2013-2014. Wisconsin Department of Public Instruction. Retrieved from <https://dpi.wi.gov/sites/default/files/imce/sms/Charter-Schools/13-14%20Legislative%20Report%20Final.pdf>

⁶ Wisconsin. EdChoice. Retrieved from <https://www.edchoice.org/school-choice/state/wisconsin/>

⁷ Wisconsin. National Alliance for Public Charter Schools. Retrieved from <https://www.publiccharters.org/our-work/charter-law-database/states/wisconsin>

high school graduation (Cowen et al., 2013). The robust public and private school choice sectors in Wisconsin make the state a strong candidate for analyses comparing the productivity levels of different types of schools (Flanders, 2018; DeAngelis & Flanders, 2019).

Cost-effectiveness is “the efficacy of a program in achieving given intervention outcomes in relation to the program costs” (Rossi, Lipsey, & Freeman, 2003). This is the first study to calculate the cost-effectiveness of private schools participating in choice programs compared to district-run public schools in the Badger State.⁸ Using per pupil funding and Accountability Report Card⁹ data¹⁰ from the Wisconsin Department of Public Instruction, I calculate the cost-effectiveness of private schools participating in choice programs compared to district-run public schools in 26 cities for the 2017-18 school year. I also calculate the cost-effectiveness of independent charter schools compared to district-run public schools for the same year in two cities: Racine and Milwaukee. I find that private schools receive 27 percent less funding per pupil, and independent charter schools receive 22 percent less funding per pupil, than district-run public schools, on average. I find that private schools produce 2.27 more points on the Accountability Report Card for every \$1,000 invested than district-run public schools, demonstrating a 36 percent cost-effectiveness advantage for private schools. Independent charter schools produce 3.02 more points on the Accountability Report Card for every \$1,000 invested

⁸ Wolf and McShane (2013) performed a cost-benefit analysis of the D.C. Opportunity Scholarship Program using data from an experimental evaluation and found an overall benefit to cost ratio of 2.62.

⁹ About the Report Cards. Wisconsin Department of Public Instruction. Retrieved from <https://dpi.wi.gov/accountability/report-cards/about>

¹⁰ Accountability Report Cards. Wisconsin Department of Public Instruction. Retrieved from <https://apps2.dpi.wi.gov/reportcards/>

than district-run public schools, demonstrating a 54 percent cost-effectiveness advantage for independent charter schools.

Data and Methods

I use per pupil funding and Accountability Report Card data from the Wisconsin Department of Public Instruction for the most recent 2017-18 school year.¹¹ The funding amount for school vouchers is equal for every private school – \$7,853 – and is the average of the voucher amount allowed for students in K-8 (\$7,530) and high school (\$8,176) in the 2017-18 school year.¹² The \$7,853 figure leads to conservative estimates of private school advantages because more students are enrolled in grades K-8 than in grades 9-12. Furthermore, any cost-effectiveness advantages favoring private schools found in subsequent analyses should be considered conservative because the voucher amount used is a maximum. This conservative approach applies to the findings for charter schools as well, as the \$8,395 amount used in the analysis is the maximum public funding allowed for independent charter schools per pupil in 2017-18.¹³ The funding amount used for district-run public schools is the state equalized aid and the local levy, or about \$10,759 per child. State categorical aid and federal education dollars are excluded from the total amount used in the analyses, further making any findings of choice sector advantages conservative in nature. Nonpublic funding is also excluded from the subsequent analyses.

¹¹ Accountability Report Cards. Wisconsin Department of Public Instruction. Retrieved from <https://apps2.dpi.wi.gov/reportcards/>

¹² Racine Parental Choice Program. Wisconsin Department of Public Instruction. Retrieved from https://dpi.wi.gov/sites/default/files/imce/sms/Choice/Data_and_Reports/2017-18/2017-18_rpcp_facts_and_figures.pdf

¹³ Charter Schools Informational Paper 27. Wisconsin Department of Public Instruction. Retrieved from https://docs.legis.wisconsin.gov/misc/lfb/informational_papers/january_2019/0027_charter_schools_informational_paper_27.pdf?fbclid=IwAR2yUQs2usEq1w6RAtm4zCDVJFr4Jv2_ogybWj8dkNOFQdNJRZN3G88SFY

The Accountability Report Card scores range from 0 to 100 and include data on multiple indicators for multiple years. The four priority areas of the Accountability Report Card are student achievement, growth, closing gaps, and on-track and post-secondary success. The Accountability Report Card also accounts for differences in students across schools by assigning more weight to growth in test scores for schools with higher proportions of economically disadvantaged students.¹⁴

The analyses for private school productivity include school-level data from 118 private schools serving 29,696 students and 542 district-run public schools serving 284,238 students across 26 cities. The analyses for charter school productivity include school-level data from 18 independent charter schools serving 7,652 students and 169 district-run public schools serving 89,976 students across two cities: Racine and Milwaukee. Schools are dropped from the analysis if they are missing Accountability Report Card scores for the 2017-18 school year.¹⁵ There are two main reasons why scores are not reported for some schools: (1) the school did not have at least 20 students in testable grades, or (2) the school is a high school that did not have four years of data to generate a four-year graduation rate. Only independent charter schools are evaluated in this study because they have significantly more autonomy than instrumentality and non-instrumentality charter schools in Wisconsin.¹⁶

¹⁴ Report Card Guide 2017-18. Wisconsin Department of Public Instruction. Retrieved from https://dpi.wi.gov/sites/default/files/imce/accountability/pdf/Report_Card_Guidet_Annotated_rev.pdf

¹⁵ Five charter schools (22 percent) and 159 private schools (57 percent) are missing accountability scores for the 2017-18 school year.

¹⁶ Independent (2r or 2x) Charter Schools. Wisconsin Department of Public Instruction. Retrieved from <https://dpi.wi.gov/sms/charter-schools/independent>

Cost-effectiveness is “the efficacy of a program in achieving given intervention outcomes in relation to the program costs” (Rossi, Lipsey, & Freeman, 2003). Following the existing literature (DeAngelis & DeGrow, 2018; DeAngelis et al., 2018a; DeAngelis et al., 2019; Wolf et al., 2014), I calculate each sector’s cost-effectiveness using the following equation:

$$\text{Cost – Effectiveness} = \frac{\text{Accountability Report Card Score}}{\text{Per – Pupil Revenue (in Thousands)}}$$

The intervention outcome is the Accountability Report Card score while the intervention cost is the revenue allocated to each student (in thousands of U.S. dollars). Dividing the outcome of schooling by its cost generates the measure of cost-effectiveness. In Milwaukee, for example, the average student-weighted Accountability Report Card score was 61.07 for district-run public schools.¹⁷ The average student-weighted funding amount was \$10,588 for district-run public schools. In other words, district-run public schools in Milwaukee delivered 5.77 Accountability Report Card points per \$1,000 of public investment. On the other hand, private schools participating in a voucher program in Milwaukee received a student-weighted Accountability Report Card score of 67.91, on average. The average student-weighted funding amount was \$7,853 for private schools in Milwaukee. Therefore, private schools participating in a choice program in Milwaukee delivered 8.65 Accountability Report Card points per \$1,000 of public investment. Private schools delivered 2.88 more Accountability Report Card points than district-run public schools, a 50 percent cost-effectiveness advantage favoring private schools in Milwaukee. These computations for Milwaukee can be found below:

¹⁷ The city-level averages for funding and Accountability Report Card scores for each sector weight each school by total enrollment.

Cost-Effectiveness for Milwaukee District-run Public Schools:

$$\frac{61.07 \text{ points}}{\$10,588} = \frac{5.77 \text{ points}}{\$1,000}$$

Cost-Effectiveness for Milwaukee Choice Private Schools:

$$\frac{67.91 \text{ points}}{\$7,853} = \frac{8.65 \text{ points}}{\$1,000}$$

Milwaukee Choice **Advantage (or **Disadvantage**):**

$$\frac{8.65 \text{ points per } \$1,000 \text{ invested in private}}{5.77 \text{ points per } \$1,000 \text{ invested in traditional public}} - 1 = \mathbf{50 \text{ percent}}$$

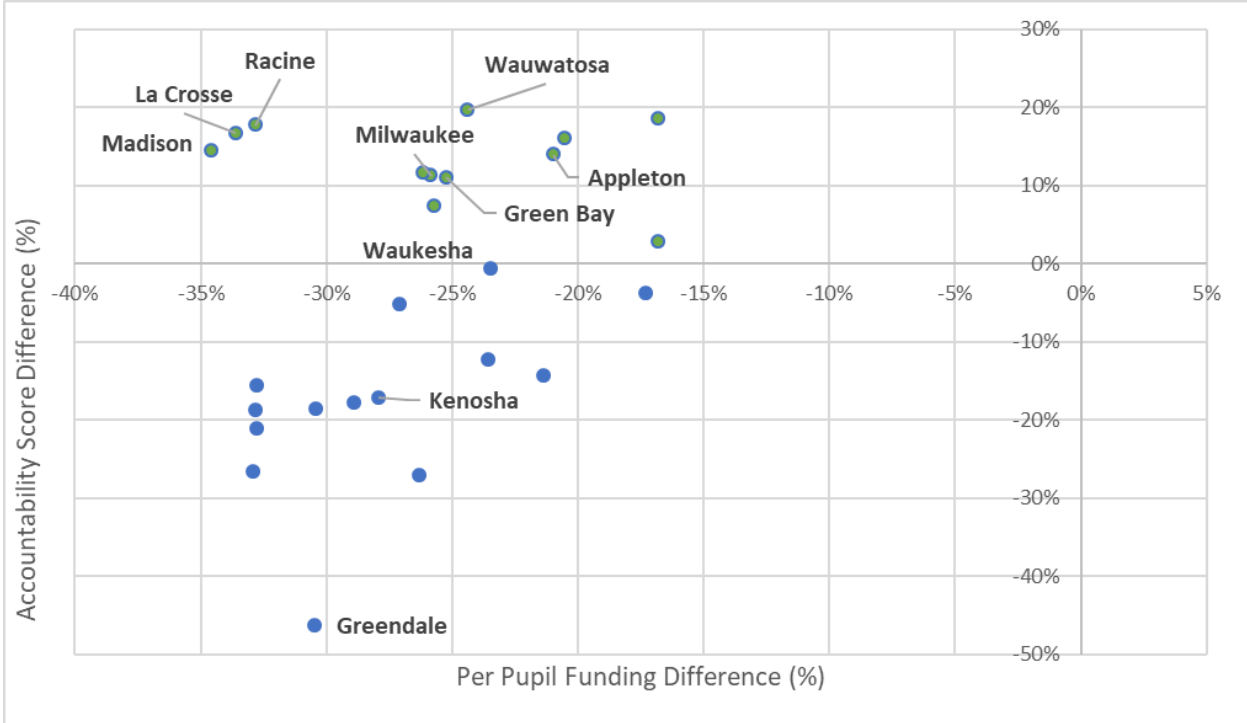
The next section provides the results for the cost-effectiveness analyses for all 26 cities in Wisconsin that have funding and outcome data for private and public school sectors.

Private School Productivity Results

The cost-effectiveness calculations for each city can be located in a graph with four quadrants, depending on whether student funding is higher for private or district-run public schools and whether report card scores are higher for private or district-run public schools (Figure 1). The top left quadrant indicates that private schools in the city receive less per pupil funding while attaining higher state accountability scores than district-run public schools, on average. Of course, all cities falling in this top left quadrant demonstrate cost-effectiveness advantages favoring private schools. Twelve cities are located in the top left quadrant, meaning private schools receive less funding per pupil while receiving higher accountability scores. These twelve cities include Milwaukee, Racine, Madison, La Crosse, Green Bay, Wauwatosa, Appleton, Fond du Lac, Janesville, Sheboygan, Waupun, and West Allis. These cities tend to have higher proportions of students using private school choice programs and tend to have larger student

populations than the rest of the cities. According to data from the Wisconsin Department of Public Instruction, 73 percent of the district-run public school students in the sample are located in these twelve cities. The fourteen other cities are located in the bottom left quadrant of the figure, meaning that private schools are funded at lower amounts than district-run public schools and receive lower accountability scores, on average. None of the 26 cities are located to the right of the Y-axis, meaning that private schools receive less per pupil funding than district-run public schools in every city, on average.

Figure 1: Private School Funding and Performance, Relative to District-run Public Schools



Overall, district-run public schools across the 26 cities receive \$10,759 per pupil and private schools receive \$7,853 per pupil (Table 1). In other words, private schools receive \$2,906 less funding per pupil than district-run public schools, representing a funding disparity of 27 percent favoring district-run public schools. This large funding gap might be a lower bound estimate of

the actual disparity because the voucher funding amount used in the analysis is the maximum public funding a private school can receive per student. This overall revenue disparity finding is about the same as the 27 to 29 percent gaps found for charter schools in eight U.S. cities outside of Wisconsin (DeAngelis et al., 2018b; Wolf et al., 2017).

District-run public schools in the 26 cities deliver 6.40 report card points for every \$1,000 invested by the public. Private schools deliver 8.67 report card points for every \$1,000 invested by the public. In other words, private schools produce 2.27 more report card points than district-run public schools for every \$1,000 investment, representing a 36 percent cost-effectiveness advantage favoring private schools in Wisconsin (Figure 2). A straight across-city average – which does not weight for the number of students in each city – finds a 2.12 point, or 31 percent, advantage favoring private schools across the 26 cities.

All but two of the 26 cities (92 percent of the cities) show productivity advantages favoring private schools over district-run public schools. The only two exceptions are Wausau and Greendale, where district-run public school productivity advantages are one percent and 23 percent, respectively. Six cities have productivity advantages favoring private schools by over 50 percent: La Cross (76 percent), Racine (75 percent), Madison (75 percent), Wauwatosa (58 percent), West Allis (51 percent), and Milwaukee (50 percent). Notably, Milwaukee and Racine, the two cities with the largest shares of students using private school choice programs, both have private school productivity advantages above 50 percent. Twenty-one of the 26 cities (81 percent of the cities) reveal private school productivity advantages in excess of 15 percent.