SCHOOL CHOICE

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A WIN-WIN SOLUTION:

The Empirical Evidence on How Vouchers Affect Public Schools

By Greg Forster, Ph.D.

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THE EMPIRICAL EVIDENCE ON HOW VOUCHERS AFFECT PUBLIC SCHOOLS

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THE FRIEDMAN FOUNDATION FOR Educational Choice

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His research has appeared in the peer-reviewed publications *Teachers College Record* and *Education Working Paper Archive*, and his articles on education policy have appeared in the *Washington Post,* the *Los Angeles Times,* the *Philadelphia Inquirer, Education Next,* the *Chronicle of Higher Education* and numerous other publications. He is co-author of the book *Education Myths: What Special-Interest Groups Want You to Believe about Our Schools – and Why It Isn't So*, from Rowman & Littlefield.

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ABOUT THE FRIEDMAN FOUNDATION FOR EDUCATIONAL CHOICE

The Friedman Foundation for Educational Choice, dubbed "the nation's leading voucher advocates" by the *Wall Street Journal*, is a nonprofit organization established in 1996. The origins of the foundation lie in the Friedmans' long-standing concern about the serious deficiencies in America's elementary and secondary public schools. The best way to improve the quality of education, they believe, is to give all parents the freedom to choose the schools their children attend. The Friedman Foundation builds upon this vision, clarifies its meaning to the public and amplifies the national call for true education reform through school choice.

EXECUTIVE SUMMARY

This report collects the results of all available empirical studies on how vouchers affect academic achievement in public schools. Contrary to the widespread claim that vouchers hurt public schools, it finds that the empirical evidence consistently supports the conclusion that vouchers improve public schools. No empirical study has ever found that vouchers had a negative impact on public schools.

There are a variety of explanations for why vouchers might improve public schools, the most important being that competition from vouchers introduces healthy incentives for public schools to improve.

The report also considers several alternative explanations, besides the vouchers themselves, that might explain why public schools improve where vouchers are offered to their students. It concludes that none of these alternatives is consistent with the available evidence. Where these claims have been directly tested, the evidence has not supported them. The only consistent explanation that accounts for all the data is that vouchers improve public schools.

Key findings include:

- A total of 17 empirical studies have examined how vouchers affect academic achievement in public schools. Of these studies, 16 find that vouchers improved public schools and one finds no visible impact. No empirical studies find that vouchers harm public schools.

- Vouchers can have a significant positive impact on public schools without necessarily producing visible changes in the overall performance of a large city's schools. The overall performance of a large school system is subject to countless different influences, and only careful study using sound scientific methods can isolate the impact of vouchers from all other factors so it can be accurately measured. Thus, the absence of dramatic "miracle" results in cities with voucher programs has no bearing on the question of whether vouchers have improved public schools; only scientific analysis can answer that question.

- Every empirical study ever conducted in Milwaukee, Florida, Ohio, Texas, Maine and Vermont finds that voucher programs in those places improved public schools.

- The single study conducted in Washington D.C. is the only study that found no visible impact from vouchers. This is not surprising, since the D.C. voucher program is the only one designed to shield public schools from the impact of competition. Thus, the D.C. study does not detract from the research consensus in favor of a positive effect from voucher competition.

- Alternative explanations such as "stigma effect" and "regression to the mean" do not account for the positive effects identified in these studies. When these alternative explanations have been evaluated empirically, the evidence has not supported them.

EMPIRICAL STUDIES FINDING THAT VOUCHERS...

	...improved public school outcomes	...didn't visibly change public school outcomes	...hurt public school outcomes
MILWAUKEE	5	0	0
FLORIDA	10	0	0
OTHER PROGRAMS	3	0	0
WASHINGTON D.C.	0	1	0

Note: A total of 17 studies are represented here; figures do not sum to 17 because some studies include findings on more than one program.

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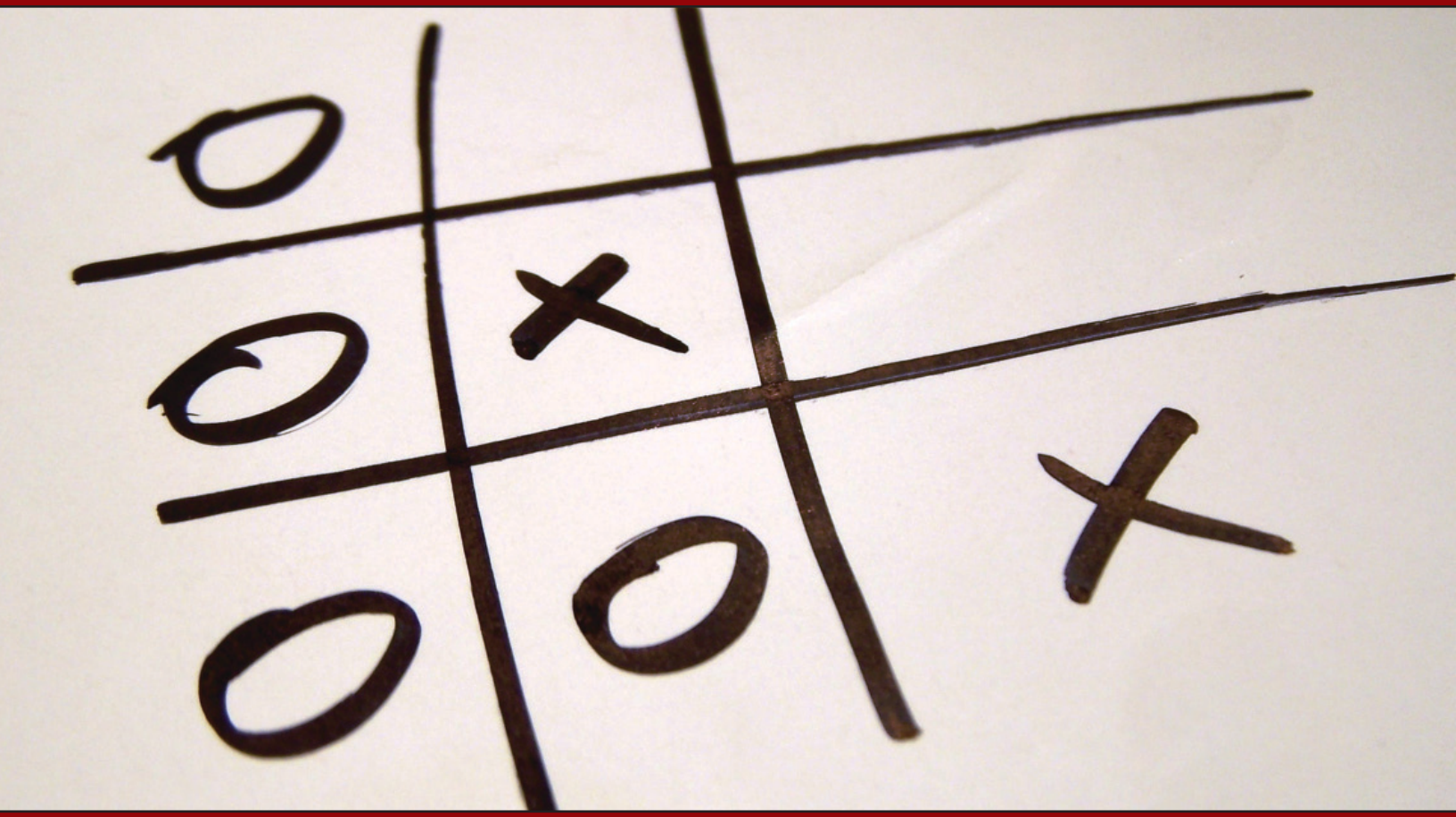

INTRODUCTION

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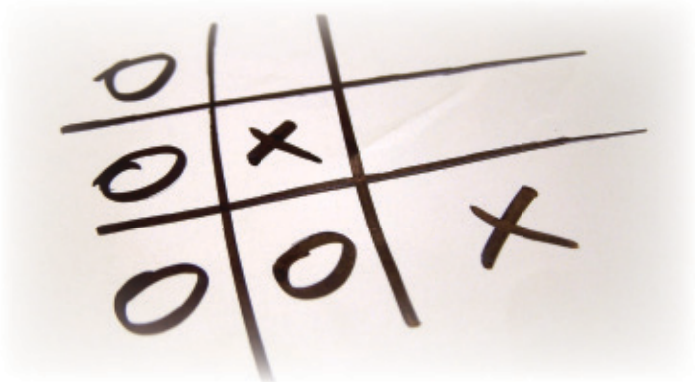


This report reviews all the available empirical studies of how voucher programs affect academic achievement in public schools.

School vouchers, which allow parents to use public funds to send their children to the school of their choice, public or private, are among the most prominent and successful reforms in the education field. Perhaps the single most important question about vouchers is how they impact public schools. There are many people who agree that vouchers are good for the students who have the opportunity to use them, but are concerned about how vouchers impact the quality of education for other students who remain in public schools.

Defenders of the government monopoly on schools frequently claim that vouchers harm public schools. They claim that vouchers drain money and "cream" the best students. Voucher proponents, on the other hand, argue that vouchers improve public schools. They point to evidence that vouchers save money for public school budgets rather than "draining" money, and that vouchers do not only send the best students to private schools. The proponents argue that vouchers allow students to find the right schools to serve their individual needs, and introduce competition for students that creates healthy incentives that are lacking in the existing government school monopoly.

A large body of empirical evidence speaks to this question. There are now 24 school choice programs in 14 states and Washington D.C. Over 160,000 students use these programs to attend private schools using public funds. The effects of these programs have been studied using scientific methods and are no longer the subject of mere speculation and anecdotal observation.

This report reviews all the available empirical studies of how voucher programs affect academic achievement in public schools. It also discusses the most important methodological issues confronted by research on this subject, including an explanation of why scientific studies are necessary for an accurate picture of whether vouchers are improving public

schools, and consideration of the alternative explanations for why public school improvements might be associated with voucher programs.

Choice and Competition in Education

Unfortunately, Americans are not accustomed to thinking of K-12 education in terms of choice. They expect and demand the right to select their own goods and services in everything from food, housing, clothing, transportation and medical care to magazines, haircuts, dry cleaning and video games. If government attempted to assign people to live in certain neighborhoods or shop at certain grocery stores, they would howl in protest. Americans even expect and demand choice when it comes to education outside of K-12 schools—everywhere from colleges to trade schools to night classes. But when it comes to K-12 education, the idea that they would choose for themselves rather than having government dictate what they receive is new and sometimes uncomfortable.

This helps to explain why many Americans readily accept claims about school vouchers that are empirically false or poorly reasoned. For example, when teachers' unions claim that vouchers "drain money" from public schools, many Americans nod in agreement. But how would those same people respond if they were told that from now on they would have to receive all their medical care from a doctor assigned to them by the government, rather than from their current family doctor, on grounds that their choice to seek care from their current doctor "drains money" from the budget of the doctor chosen by the government?

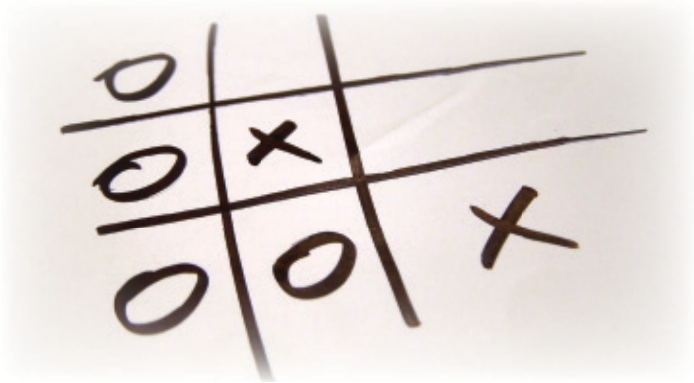
In fact, vouchers make public schools better off financially, rather than worse off. When students leave public schools using vouchers, not all the funding associated with those students goes with them. This means public schools are left with more money to serve the students who remain. State budgets also benefit because educating students in private schools rather than public schools not only accomplishes better results, it also costs less. From 1990 to 2006, the nation's school choice programs saved a total of $422 million for local school districts and $22 million for state budgets.[1]

Similarly, the claim that vouchers "cream" the best students from public schools has no empirical evidence to support it. The best available analyses of this question have found voucher applicants to be very similar to the population of students eligible for vouchers in terms of demographics and educational background.[2] In the Washington, D.C. voucher program, applicants were very similar to a representative sample of the eligible population citywide not only in terms of demographics, but also in their baseline test scores.[3]

Meanwhile, for similar reasons, the idea that vouchers might improve public schools seems counter-intuitive to many Americans. In fact, it is not hard to explain why vouchers would be expected to improve public schools. One reason is because vouchers allow parents to find the right particular school for each individual child. Every child is unique and has unique educational needs.

But probably the most important reason vouchers would improve public schools is because they give parents a meaningful way to hold schools accountable for their performance. Under the current system, if a school isn't doing a good job, the only ways to get a better school—purchase private schooling or move to a new neighborhood—are prohibitively expensive or cumbersome for many families. These options are especially difficult for low-income and disadvantaged students.

Thus, in the absence of parental choice, schools lack the positive incentive for better performance that most other types of service institutions take for granted. Hospitals know



This lack of connection between what Americans think about choice and competition in K-12 education and what it thinks about choice and competition in virtually every other aspect of life is a great hindrance to accurate public discussion of school vouchers.

they must do a good job or else lose patients. Colleges must provide a good education (and other services and opportunities that parents expect from colleges) or else lose students. Professionals like doctors and lawyers must provide good services or else lose clients. Stores must provide good value or else lose customers.

With vouchers, those positive incentives we take for granted everywhere else are provided for schools. If a public school is providing adequate services, parents can leave their children where they are and be no worse off. But if not, parents can choose a private school that will serve their children better. Either way, schools know that parents have the power to hold them accountable.

The same Americans who have difficulty with the idea that competition improves schools have no difficulty applying the same concept everywhere else. They know that monopolies provide poor quality because they have little incentive to serve their clients well. And when they get bad service, they say, "I'll take my business elsewhere" because they know that this provides an incentive for better service.

They do this even in fields like medical care where the service providers have other motives besides profit-seeking for being in the fields they're in. If a hospital is losing patients because it provides poor care, that loss of patients will provide a motive to improve care regardless of whether the hospital is for-profit or non-profit—and the patients know it. So it isn't as though people are only accustomed to thinking this way about profit-seeking businesses.

This lack of connection between what Americans think about choice and competition in K-12 education and what it thinks about choice and competition in virtually every other aspect of life is a great hindrance to accurate public discussion of school vouchers. One good hope for rectifying that problem is to make the public aware of the large body of empirical research that examines how vouchers impact public schools.

Why Scientific Methods Matter

When evaluating the effectiveness of an education policy, it is especially important to rely on empirical research of high scientific quality. Otherwise, it is very difficult to determine

the effects of an education policy. Student outcomes are affected by so many different influences—including demographic factors (income, race, family structure, etc.), school factors (type of school, teacher quality, etc.) and intangibles such as the level of enthusiasm parents and teachers invest in a child's education. The job of empirical science is to disentangle the influence exercised by each of these factors as well as can be done with the available evidence.

A study that uses good methods can overcome these problems and provide reliable information about what is influencing student outcomes. But if scientific procedures are not rigorously followed, or if we don't bother looking at the science and try to make judgments without it, we can come to the wrong conclusions about what factors cause what outcomes.

The gold standard for empirical science is the method known as "random assignment," in which subjects are randomly divided into a treatment group that will receive the treatment being studied (such as vouchers) and a control group that will not receive it. Because the two groups are separated only by a random lottery, they are likely to be very similar in every respect other than the treatment.

It is usually not possible to conduct random-assignment research on education policy. School vouchers have been one of the rare exceptions, because when there are more applicants for a voucher program than there are slots available, a random lottery is often used to determine who may participate, creating a naturally occurring random-assignment research design. There is a substantial body of random-assignment research on the academic achievement of students who are offered vouchers, and it consistently finds that vouchers improve student achievement.[4]

But while it may be the best kind of research, random-assignment research is not the only kind of research worth considering. Where it is not possible to conduct a random-assignment study, other kinds of research methods can produce useful information that sheds light on important policy questions.

The next best research method is to track year-to-year changes in outcomes for individual students. Tracking individual students over time removes from the analysis most, though not all, of the influence of unmeasured factors. If a student is advantaged in a way that is not measurable, that advantage will typically be present in the student's outcomes for both year one and year two of the study; thus the change in outcomes between year one and year two will mostly be due to other factors—though unmeasured factors will still exert some influence on the level of year-to-year change. Removing the influence of unmeasured factors allows the analysis to isolate the impact of the factors that are being measured, such as exposure to vouchers.

If it is not possible to track individual students, good research still can be done by tracking year-to-year changes in individual schools. It is reasonable to expect that the unmeasured advantages of the students in a given school will be similar from year to year. If a school has highly advantaged students in 2006, it probably will still have highly advantaged students in 2007. Mobility among the student population will create some change in student characteristics from year to year, but not so much that we cannot learn from school-level studies.

THE EVIDENCE ON VOUCHER PROGRAMS

THE EVIDENCE ON VOUCHER PROGRAMS

Choice and competition provided by vouchers improve public schools.

A total of 17 empirical studies have been conducted on how voucher programs impact academic achievement in public schools. Of these studies, 16 find that vouchers improve public schools. The one remaining study found that vouchers had no visible impact on public schools. Significantly, that one study was also the only study conducted on a voucher program that intentionally protects public schools from the impact of competition. Thus, it does not detract from the very strong research consensus that choice and competition provided by vouchers improve public schools.

Milwaukee Vouchers

A total of five empirical studies have been conducted on how the Milwaukee voucher program affects academic outcomes at public schools. All five unanimously find that vouchers improve Milwaukee public schools.

Vouchers are available to all Milwaukee students who meet certain criteria, most notably an income restriction. Thus, in Milwaukee there is not a simple division between public schools that are and are not exposed to vouchers, as in some other programs. However, some Milwaukee public schools are much more exposed to vouchers than others, based on the demographic makeup of their student populations. Thus, researchers have focused on isolating the academic impact of a school's being more exposed to vouchers versus being less exposed.

The first empirical study on the Milwaukee program was conducted by Caroline Hoxby, then of Harvard University, and released in 2001. She compared schools where at least 66 percent of the student population was eligible for vouchers to schools where fewer students were eligible for vouchers. She found that in a single year, schools in the "more exposed to vouchers" group made gains that were greater than those of other Milwaukee public schools by 3 percentile points in math, 3 points in language, 5 points in science and 3 points in social studies.[5]

The next study, released in 2002, was conducted by Jay Greene and Greg Forster, then of the Manhattan Institute. Rather than dividing Milwaukee public schools into two groups, they used regression analysis to determine how changes in the percentage of students in a Milwaukee public school who were eligible for vouchers would impact a school's academic results. They found that greater exposure to vouchers had a positive effect on year-to-year changes in public school outcomes; the size of the effect was such that a school with all its students eligible for vouchers could be expected to outperform a school with only half its students eligible by 15 percentile points over four years.[6]

In two analyses that were released in 2006, Rajashri Chakrabarti of the Federal Reserve Bank found that the Milwaukee voucher program improved public schools. Chakrabarti conducted multiple analyses using different methods for measuring public schools' exposure to vouchers. Some are similar to Hoxby's method (though Chakrabarti divided schools into three groups rather than two) and others to Greene and Forster's method. In both studies, Chakrabarti found that increased exposure to vouchers improves academic gains in Milwaukee public schools. A revised version of one of these studies was released in 2008.[7]

Finally, a 2007 study was conducted by a team of researchers led by Martin Carnoy of Stanford University. This study used a modified form of the Hoxby/Chakrabarti method. The authors reported that their analysis "confirms the earlier results showing a large improvement in Milwaukee in the two years following the 1998 expansion of the voucher plan to religious schools." Before 1998, religious schools were excluded from the Milwaukee program, so many fewer students participated. When religious schools were admitted to the program in 1998, participation increased dramatically.[8]

Curiously, the authors of this study seemed anxious to deny the positive results of their own study. Although their data clearly showed that the Milwaukee voucher program improved public schools, the authors argued that we should not conclude that the voucher program improved public schools. They based this argument on two additional results. First, they found that in later years, after the period immediately following the program's expansion, the positive effects of the program did not get bigger (although the original positive effect observed in the 1998-2000 period was sustained in those subsequent years). Second, they found that academic results in Milwaukee public schools were not visibly related to the concentration of private schools nearby.

Neither of these is a legitimate reason to deny the study's analysis showing that the Milwaukee voucher program improved public schools. If the improvements did not get bigger after 1998-2000, that does not mean the program failed to improve public schools. It just means that the improvements were not cumulative.[9] Given that the Milwaukee program remains cramped by numerous restrictions on its operation even after the 1998 expansion, there is plenty of room for further expansion of the program. If the 1998 expansion produced a positive response, the findings of the Carnoy et. al. study (and those of all the other research in Milwaukee) suggest that a further expansion of the program would be a promising way to produce even bigger improvements in Milwaukee public schools.

And if the presence of private schools nearby was not a factor in improving public schools in Milwaukee, this only means that the positive effects of the voucher program are not dependent upon geography—neighborhoods that did not have high concentrations of private schools still benefited from the voucher program.

Florida Vouchers

A total of ten empirical studies have been conducted on how Florida's two voucher programs have affected academic outcomes at public schools. All ten unanimously find that vouchers have improved Florida public schools.

Nine of these Florida studies examine the effects of the state's A+ program, which gave vouchers to students at chronically failing public schools, before the program was ended by court order in 2006. In addition, one empirical study—the most recent one—examines how Florida's McKay voucher program, which provides vouchers to disabled students in public schools, affects academic outcomes for disabled students who do not use the program and remain in Florida public schools.

Under the A+ program, each public school received an annual grade from the state based primarily on how many of its students either achieved an adequate score on the state test or made substantial progress toward an adequate score. If a school received two (or more) F grades from the state in any four-year period, students who had attended that school in the year of its second (or subsequent) F grade could apply for vouchers. Students were required to apply for vouchers during the two-week period immediately following the public announcement of the second (or subsequent) F grade; after this brief window closed, vouchers were no longer available. However, those students who did manage to apply during the brief eligibility window could continue using vouchers in subsequent years.

The first study of the A+ program was published in 2001 by Greene. At that point, only two schools had ever been eligible for vouchers under the program—too few to provide a basis for meaningful analysis. Instead, Greene studied the impact of the mere threat of vouchers on schools that were in danger of becoming eligible for vouchers if they did not improve.

Using a simple descriptive analysis, Greene found that schools that had received an F grade, which would be eligible for vouchers if they received another F grade, made much larger year-to-year gains than schools that received a D (18 points in reading and 26 points in math for F schools versus 10 points in reading and 16 points in math for D schools). Greene then drew two further comparisons intended to isolate the impact of the voucher threat: high-scoring F schools compared with low-scoring D schools, and high-scoring F schools compared with low-scoring F schools. There was a substantial difference between high-scoring F schools and low-scoring D schools (16 points in reading and 24 in math versus 13 points in reading and 18 in math). However, a regression analysis showed that among F schools there was no statistical relationship between their test scores in the prior year and their test scores in the subsequent year—high-scoring F schools and low-scoring F schools had about the same results in the following year. Greene concluded that the difference in outcomes was attributable to receiving an F grade from the state, which included the voucher threat.[10]

This analysis was methodologically simple, as is often the case the first time an empirical question is being studied. Greene's analysis in this first study did not examine some alternative possibilities that might account for a relationship between receiving an F grade and making bigger improvements the next year. His next study, and later studies conducted by others, included additional analyses designed to test whether the improvements associated with the F grade were due to these alternative explanations or to vouchers, or both. (See the "Alternative Theories" section below for discussion of these alternatives and the results of the analyses examining them.)

In a subsequent study, along with Marcus Winters of the Manhattan Institute, Greene used a more advanced statistical method. Greene and Winters divided schools into four categories. *Sometimes D* schools were those that had received a D grade, but no F grades and at least one grade above a D, in any of the previous four years; *Always D* schools were those that had received D grades in each of the previous four years; *Voucher Threatened* schools were those that had received exactly one F grade in the previous four years; and *Voucher Eligible* schools were those that had received two or more F grades in the previous four years. They then used regression analysis to compare the year-to-year gains made in schools in each of these four categories with those of other Florida schools.

For both math and reading scores, on both the state test and the national norm-referenced Stanford-9 test, Greene and

Winters found that the positive impact of the A+ program closely tracked the schools' distance from vouchers. *Voucher Eligible* schools made the biggest academic gains, followed by smaller gains in *Voucher Threatened* schools, followed by the two categories of schools that had received Ds but no Fs. For example, in math scores on the state test, *Voucher Eligible* schools made improvements 15 points higher than other Florida public schools, while *Voucher Threatened* schools made improvements 9 points higher, *Always D* schools 4 points higher, and *Sometimes D* schools 2 points higher.[11]

When Greene and Winters' analysis was published in the journal *Education Next* in the summer of 2004, it was accompanied by an analysis conducted by Rajashri Chakrabarti, then of Cornell University. Chakrabarti used a simple descriptive analysis to provide further assurance that the relationship between the F grade and school improvements was due to vouchers. She compared the improvements made by F schools under the A+ program with improvements made by schools in the lowest performance category (out of four) under the state's previous school evaluation system. The previous system had no voucher component. Chakrabarti found that under the previous system, putting a school in the lowest-performing category did not improve its performance relative to schools in the next lowest performance category, while F schools did make bigger gains than those of D schools under the A+ program. Over three years, the gap between F schools and D schools closed from almost 15 points to about 5 points.[12]

In 2006, Chakrabarti released a more sophisticated analysis that compared the impact of the A+ program on public schools to that of the Milwaukee voucher program (this is one of the two Milwaukee studies by Chakrabarti cited in the section on the Milwaukee program, above). A revised version of the study was released in 2008.

In this study, she used regression analysis to compare the trends over time in the academic achievement of schools that received F, D, and C grades in 1999, the first year of the A+ program. She compared trends in outcomes at these schools before and after the implementation of the program in 1999. Chakrabarti found that when F and D schools are compared to each other, the F schools made gains 8 points larger in reading and 5 points larger in math over three years. When F and D schools are separately compared to C schools, the F schools made gains 17 points larger in reading and 11 points larger in math than the C schools over three years, while D schools made gains 9 points larger in reading and 4 points larger in math than the C schools.

Chakrabarti then confirmed the impact of the F grade using a method known as "regression discontinuity," which isolates the impact of the F grade from other factors by comparing high-scoring F schools with low-scoring D schools. Regression discontinuity is a very high-quality method that is widely considered the next-best thing to a random-assignment study. However, it does limit the scope of the analysis, since it excludes many of the F schools from the data set. She found that the high-scoring F schools outscored the low-scoring D schools by 7 points in reading and 6 points in math over three years.[13]

Chakrabarti further confirmed this analysis with a follow-up study in 2007. This study took advantage of the fact that school grades are based primarily on how many students are either above or approaching a given cutoff score on the state test. Chakrabarti found that in schools that had received an F grade, students near the cutoff made larger gains relative to the gains of students at other schools, while other students at F schools were not negatively affected. The study used a regression discontinuity design to compare high-scoring F schools and low-scoring D schools.[14]

David Figlio of the University of Florida and Cecelia Rouse of Princeton University have also studied the A+ program to examine its impact on public schools. Their initial analysis, released in 2004, was the first to use student-level data rather than school-level data, providing improved scientific quality. In this analysis they examined data up through 2000-01 (that is, before vouchers became widely available in 2002-03, as was the case in Greene's initial 2001 study). They found that if a school received an F grade, its students made gains on the state test that were 2 points larger in reading and 5 points larger in math than those of other Florida schools over one year. Scores on the national Stanford-9 test also improved. They confirmed the existence of a positive effect from the F grade using a regression discontinuity model, examining scores on the Stanford-9.[15]

In a subsequent study released in 2007, in which they were joined by Jane Hannaway of the Urban Institute and Dan Goldhaber of the University of Washington, they collected data up through 2004-05, using these data to track the continuing effects on schools that had received Fs in 2002-03. The study used a regression discontinuity model to compare high-scoring F schools and low-scoring D schools. It found that receiving an F grade in 2002-03 produced academic improvements in students' test scores in the next year relative to those in non-F schools, and that these improvements were sustained in future years. They presented their results in terms of standard deviations rather than test score points; they found that the gains were equal to about a tenth of a standard deviation.[16]

Martin West and Paul Peterson of Harvard University released an analysis that also used individual student data in 2005. It found that among schools that had not received the lowest possible rating under the state's previous school evaluation system (and thus were "shocked" by the imposition of the F grade), receiving an F under the new accountability system produced an improvement in student's test scores equal to about four percent of a standard deviation.[17]

In 2008, Forster, now of the Friedman Foundation, conducted a study examining the impact of the A+ program in every year from 2001 through 2006. Previous studies had only examined the impact of getting a particular grade, such as F or D, in a single year (usually either 1999, the first year grades were given out under the A+ program, or 2002, the first year when a substantial number of schools were eligible for vouchers). Because vouchers were not widely available until 2002, and the voucher element of the A+ program was struck down by court order in early 2006, this study was able to track the changing impact of the A+ program as the status of the vouchers in the A+ program changed.

Forster used Greene and Winters' four categories to examine the impact of the voucher threat. He found that in 2001, before vouchers were widely available, *Voucher Threatened* schools made gains relative to all Florida schools equal to 13 points on Florida's new "developmental scale," which uses a single scale to track student scores from 3rd grade through high school. The next year, when vouchers were widely available, *Voucher Threatened* schools gained 15 developmental points, but *Voucher Eligible* schools gained 67 developmental points relative to other Florida schools. Over the next three years, as the percentage of eligible families using vouchers decreased due to the artificial obstacles created by the state department of education, the positive voucher effect was not as large but remained substantial (*Voucher Eligible* schools gained from 20 to 27 developmental points each year). Then, in 2006, the first year after the voucher element of the program was removed, *Voucher Eligible* schools gained only 11 developmental points. Results for *Voucher Threatened* and *D schools* followed similar patterns.[18]

The only empirical study conducted on Florida's McKay voucher program was also released in 2008. The McKay program allows any disabled student in Florida public schools to use a voucher. Conducted by Greene and Winters, now of the University of Arkansas, the study used student-level data over five years to measure the relationship between the academic performance of disabled students in public schools and the number of private schools accepting McKay vouchers nearby. While the Carnoy, et. al. study in Milwaukee found no relationship between the presence of private schools nearby and voucher improvements (though it did find that exposure to vouchers through student eligibility produced improvements), the Greene and Winters study found a strong relationship between the presence of private schools participating in the McKay program and voucher improvements.

The strongest effect of the McKay program was among students classified as learning disabled, representing 61 percent of all Florida disabled students. At a public school with an average number of private-school McKay competition within five miles, the positive impact of the McKay program was equal to 16 points in math and 24 points in reading among learning disabled students.[19]

Other Programs

Four studies have been conducted on the impact of voucher programs in other places. Three of these studies find that vouchers improve public schools; one finds that vouchers make no visible difference to public school outcomes.

The first of these studies, in 2002, was conducted by Christopher Hammons of Houston Baptist University. Hammons examined

century-old voucher programs in Maine and Vermont. When these states first created public schools, they gave small towns the option of "tuitioning" their students – using public funds to pay for their students to attend private schools or nearby public schools – rather than building their own public schools.

Hammons measured the relationship between a public school's academic achievement and its distance from the nearest "tuitioning" town. Using regression analysis, he found a positive relationship. The relationship was strong enough that if a town one mile away from a school began tuitioning its students, the percentage of students at the school passing the state's achievement test could be expected to go up by 3 percentage points.[20]

In the same 2002 study in which they examined the impact of the Milwaukee program (see above), Greene and Forster also examined the impact of a large-scale privately funded voucher program targeted to the Edgewood school district, in San Antonio, Texas. Unfortunately, it was not possible to differentiate between Edgewood schools that were more or less exposed to competition from the voucher, because the program offered vouchers to every student in the Edgewood district. Greene and Forster instead examined the performance of the district as a whole.

Controlling for demographics and local resources, they found that Edgewood's year-to-year test score gain outperformed those of 85 percent of school districts in Texas. Given that Edgewood is a high-poverty (93 percent eligible for lunch programs) and high-minority (97 percent Hispanic) district, the study concludes that such a high statewide academic rank for Edgewood suggests that vouchers produced public school improvements.[21]

In 2006, Greene and Winters released a study of how the federal voucher program in Washington, D.C. impacts public schools. Because eligibility for the voucher program is restricted to a relatively small number of students, particularly in the program's first year (when the study was conducted), Greene and Winters measured exposure to the voucher program by measuring the distance between each public school and the nearest private school participating in the voucher program. They found no visible relationship.[22]

The D.C. voucher program is the nation's only voucher program with a "hold harmless" provision that allocates additional money to the public school system to "compensate" for the loss of students. This is intended to insulate the public school system from the impact of competition from vouchers. Thus, the absence of a visible effect in this study does not detract from the research consensus in favor of a positive impact from vouchers on public schools.

Finally, in a 2008 study, Forster examined the impact of Ohio's EdChoice voucher program on public schools. The EdChoice program offers vouchers to all students attending chronically failing public schools. In the program's first year —the year covered by Forster's study – schools were eligible if they had been designated in a state of "academic emergency" by the state in each of the last three years. The definition was subsequently expanded to include more schools.

Forster used regression analysis to examine year-to-year test score changes in schools where students were eligible for vouchers. Forster found positive effects from the EdChoice program in math scores for 4th and 6th grade students and reading scores for 6th grade students, and no visible effect in other grades. The positive effects ranged from 3 to 5 points in one year.[23]

ALTERNATIVE THEORIES

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The body of high-quality research that consistently shows that vouchers improve public schools has grown ever larger over the years.

The body of high-quality research that consistently shows that vouchers improve public schools has grown ever larger over the years. It has also grown more methodologically sophisticated. As the first studies on this subject emerged, some speculated that the improvements in public schools might be caused by other factors besides positive incentives from vouchers. The empirical research did not ignore these questions, but rigorously tested the alternative hypotheses that were offered.

Is It Vouchers or Student "Dredging"?

One alternative explanation for the positive results in these studies is the change of composition in the student population caused by vouchers. This theory speculates that the worst students may be using the vouchers, leaving behind the better students in public schools. This would increase the level of academic achievement among public school students without actually improving the schools. Moreover, some believe that students exert strong "peer effects" on one another's performance; on this theory, the removal of the worst students from public schools might produce a multiplier effect, causing student achievement to go up significantly.

For this theory to be true, vouchers would have to be attracting participants disproportionately from among the lowest performing students. Instead of taking away the best students, as so many opponents of vouchers claim, on this theory vouchers would be taking away the worst students. So while some critics claim that vouchers "cream," others claim that they "dredge."

The direct evidence on this question supports neither the creaming nor the dredging hypothesis. As has already been noted above, studies directly comparing voucher applicants with the population of students who were eligible to apply have found that the applicants were very similar to the eligible population not only in terms of demographics, but also in terms of educational achievement. If vouchers were either creaming or dredging, this would not be the case.[24] While it would be good to have more evidence on this question, the evi-

dence that we do have does not support either creaming or dredging.

However, it is also worth looking more broadly at the evidence provided by studies on the impact of voucher programs. Comparing the characteristics of voucher applicants to those of the eligible population is difficult, because it is cumbersome to collect data on the eligible population that does not apply. There are therefore fewer high-quality studies that directly measure this comparison, so we should also consider what the broader body of evidence indicates about this question.

Perhaps the most important piece of additional evidence in the broader literature is the impact Florida's A+ program has on public schools that are merely threatened with vouchers. There has been no movement of students in these schools, yet vouchers have a positive impact.

It is also worth noting that a number of studies in Florida have tracked the achievement of individual students. These studies would not be misled by the immediate impact of population shifts, since they follow students rather than whole schools. It is true that these studies would not exclude any peer effects, if such effects exist. But in order to rescue the "dredging" hypothesis, we would have to conclude that the entire positive effect from vouchers in all these studies was attributable solely to peer effects. Given that the direct evidence finds no such "dredging" occurring in cases where we are able to measure it, and that the studies on Florida's A+ program find a positive voucher impact even where no students have changed schools, this is not a remotely plausible hypothesis.

Related to the issue of changes in student composition is the issue of changes in school resource allocation. As has been noted above, school choice doesn't drain money from public schools, it improves their financial situation by leaving behind more resources to serve fewer students. If we wanted to deny the existence of a positive effect from voucher competition, we might attribute the positive effects of vouchers to this fiscal benefit.

It is worth bearing in mind that this would not be an argument against vouchers even if it were true, because if vouchers only benefited public schools by saving them money, they would still be benefiting public schools. However, as we have seen, the evidence in Florida shows a positive voucher effect even where no students have actually changed schools, simply as a result of the threat of vouchers. Thus, the evidence consistently shows that vouchers improve schools through competition as well as by saving them money.

Is It Vouchers or a Stigma Effect?

After Greene's initial study of Florida's A+ voucher program, two alternative theories were offered that would attribute the study's positive finding to factors other than the influence of vouchers. One of these is the hypothesis that Greene's study was observing a "stigma effect." The stigma hypothesis is that schools assigned an F grade by the state improve in order to remove the stigma of being labeled as failing, rather than responding to voucher competition.

Before considering how subsequent studies have examined this hypothesis, it is worth noting that stigma is not a possible explanation for the positive findings of all five studies conducted on vouchers in Milwaukee, the study of Florida's McKay program, or the study of town tuitioning vouchers in Maine and Vermont. In these programs, public schools were exposed to vouchers without being publicly stigmatized. Thus, there is no way to attribute the positive impact associated with these voucher programs to stigma.

In their follow-up study, Greene and Winters checked for a stigma effect in Florida by examining schools that had received an F five years previously, but no Fs in the preceding four years. These schools were threatened with vouchers if they got another F in the three years following their first F. However, in the final year observed by the study, these schools were no longer threatened with vouchers if they got an F. However, these schools were still schools that had been labeled as failing. Greene and Winters found that, rather than seeing any gains associated with the stigma effect,

these schools actually backslid a little, relinquishing some of the gains associated with being a *Voucher Threatened* school.

Other studies have tested the stigma hypothesis in other ways. Chakrabarti's 2004 analysis, published alongside Greene and Winters' study in *Education Next*, compared the performance of schools placed in the lowest performance category under the A+ program and under the state's previous school evaluation program. Since the previous program included no vouchers, it provided an opportunity to test for the presence of a stigma effect without the possibility of confusion between a voucher effect and a stigma effect. As has been outlined above, her comparison showed that the previous program, without vouchers, did not close the gap between the lowest and second-lowest performance categories, indicating that there was no positive effect from being placed in the lowest category. Conversely, under the A+ program, schools in the lowest category did make substantial progress in closing the gap with the next-lowest category.

In her 2006 study comparing Florida's A+ vouchers to the Milwaukee voucher program, Chakrabarti used regression analysis to test the validity of this observation. She found that under the previous school evaluation program, schools in the lowest-performing category did not close the gap with either the second-lowest or third-lowest performance groups, indicating that there was no positive effect from being placed in the lowest category. She expanded this analysis in her 2007 study to examine not only whether there was an impact on the average score, but also on whether there was an impact on how many students fell into each performance category on the exam. Her findings were again negative.

In the 2007 study she also conducted a different test, examining the relationship between the concentration of private schools near an F school just before the voucher program was initiated and the strength of the positive effect of the program on F schools. She found that F schools that had more private schools nearby when the program began responded to the program more strongly, implying that the positive results of the program are due to competition and not a stigma effect.

The 2004 Figlio and Rouse study also tested for stigma by comparing the performance of F schools under the A+ plan to the performance of schools in the lowest performance category under the state's previous school evaluation program. Unlike Chakrabarti's two later studies, this study did find that putting schools into the lowest performance category under the previous program had a positive impact on outcomes. However, the impact of the previous program was not as large as the impact of the A+ program. Figlio and Rouse concluded that the A+ program has a positive impact on schools both because of a stigma effect and because of competition from vouchers. They estimated that the stigma effect was larger than the competitive effect, but their findings affirmed that both exist.

Finally, Forster's 2008 study of the A+ program tested the stigma hypothesis in a very different way. Forster separately examined the impact of receiving an F grade in each year from 2001 through 2006. He found that the impact varied in size dramatically depending on the year—from a very large impact in the first year vouchers were widely available to a more moderate impact in later years, as the percentage of eligible families using the voucher went down due to obstacles created by the state department of education, and an even more moderate impact after vouchers were removed from the program. Since the stigma of getting an F grade did not change from year to year, but the status of vouchers in the A+ program did, the dramatic changes in the impact of the program cannot plausibly be attributed entirely to stigma.

Given that other voucher programs show a positive effect without the possible presence of stigma, and that all studies of the A+ program that have specifically examined the question have concluded either that there is no stigma effect or that the stigma effect coexists with a competitive voucher effect, there do not seem to be reasonable grounds for attributing the positive results from the A+ program to a stigma effect.

Is It Vouchers or Regression to the Mean?

The other alternative theory that emerged after Greene's original study of the A+ program is the "regression to the mean" or "mean reversion" hypothesis. Regression to the mean, also known as mean reversion, is a statistical phenomenon under which failing schools are more likely to improve than to get worse simply because they can't much worse than they already are. When a variable approaches zero it becomes more likely to go up rather than down, simply because there's less room to go down before it hits the "floor" of zero.

As with the stigma hypothesis, we should note that other voucher programs have shown positive effects without a strong possibility of confusion caused by regression to the mean. The improvements in public schools caused by Milwaukee's voucher program,

unanimously affirmed by all five studies in that city, are unlikely to be caused by regression to the mean. While the schools that were more exposed to vouchers did start out lower on the scale of academic achievement than those less exposed to vouchers, they were not the "lowest of the low," schools singled out because of chronic failure, as in the A+ program. The results from Florida's McKay program and from town tuitioning vouchers in Maine and Vermont are even more clearly not caused by regression to the mean; in these cases the exposure to vouchers is not systematically related to the academic performance of the schools.

In their follow-up study, Greene and Winters tested for regression to the mean in the A+ program by comparing F schools to other schools that had very similar test scores but had not received Fs. These schools did not receive Fs because the school grades were not exclusively based on test scores. They found that the F schools made greater gains even though both types of schools (the F schools and the similarly-scoring schools that did not receive Fs) were equally subject to the possibility of regression to the mean.

In their 2004 study, Figlio and Rouse tested for regression to the mean by examining the behavior of test scores at low-scoring schools in 1995, before either the A+ plan or the previous school evaluation system was in place. They found that schools that would have been labeled as failing schools under either of these later systems did not exhibit any visible tendency towards rising test scores. Thus, the rising test scores observed under the later systems cannot be attributed to regression to the mean.

West and Peterson, in their 2005 study, tested for regression to the mean by conducting two additional comparisons that measured the performance of F schools as compared to two groups of low-scoring D schools (selected by two different criteria for what counted as "low-scoring"). In both these comparisons they found that the actual baseline test scores – their academic achievement at the time when the grades came in – of the F schools and the comparison D schools were not statistically different (that is, there were no "statistically significant" differences). Yet in both comparisons the F schools outperformed the D schools, signaling that getting an F had a positive impact that was not attributable to regression to the mean.

Chakrabarti's 2006 and 2007 studies tested for regression to the mean in the A+ program using two methods. First, she used 1998 data and assigned schools the letter grades they would have gotten if the A+ program had been in effect in that year, and tested to see whether "1998 F" schools made gains relative to "1998 D" schools and "1998 C" schools. They did not. Her second method was to compare results in F schools and D schools in a single subject (reading, math or writing) where those schools scored similarly. Since a school's grade is based on its performance across multiple subjects, it is possible to identify a set of F schools and D schools that are similar in their performance in one given subject. This analysis also found that regression to the mean was not driving the study result. The 2006 study also tested its Milwaukee analysis for regression to the mean by examining the behavior of test scores before the voucher program was implemented. Here the analysis also found no evidence of regression to the mean.

Forster's 2007 study of the A+ program excludes regression to the mean in the same way it excludes the stigma hypothesis: by comparing results in each year from 2001 to 2006. Over this period, the impact of the voucher program varied considerably, and the variations tracked the changing status of vouchers in the program. Regression to the mean, by contrast, would have been roughly equally present in all years. The existence of variations, and especially of variations that track the changing status of vouchers, renders it implausible that regression to the mean could be driving the results.

In addition, Forster's 2008 study of Ohio's EdChoice program, the only study of that program to date, checked for regression to the mean. Forster conducted a second analysis in which his data set included only schools located in school districts that had been labeled "major urban – very high poverty" by the state. The results of the regression analysis were virtually identical as the results from the original, statewide analysis. That there was no change in result between the analysis that included all schools and the analysis that included only schools located in the most troubled districts suggests that regression to the mean was not driving the results.

Perhaps most important, the studies using regression discontinuity (Figlio and Rouse 2004, Chakrabarti 2006, Chakrabarti 2007 and Rouse, Hannaway, Goldhaber and Figlio 2007) all confirmed the positive effect from the voucher program. A regression discontinuity design excludes regression to the mean because the schools in the treatment group (high-scoring F schools) and the control group (low-scoring D schools) begin with similar test scores. The influence of regression to the mean will be similar on both groups, so any systematic differences in results can be attributed to the vouchers and not to regression to the mean.

WHY AREN'T PUBLIC SCHOOLS FIXED YET?

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The empirical evidence consistently shows that vouchers have succeeded in improving public schools.

Among those who wish to distract the public from this large body of high-quality scientific evidence, one of the most common strategies is to complain that public schools in places like Milwaukee are still failing to educate so many of their students. Milwaukee public schools were widely dysfunctional in 1990 when the voucher program was enacted, and they remain widely dysfunctional today. There has been no "Milwaukee miracle."

But the absence of a dramatic "miracle" is not a valid reason to conclude that vouchers aren't helping. Just because a car can't go 700 miles per hour doesn't mean it can't go 70 miles per hour, and a man who cannot walk on water may still be able to swim. The empirical evidence consistently shows that vouchers have succeeded in improving public schools. It is not difficult to see how vouchers might have a positive effect without working miracles.

Other Factors Besides Vouchers Affect Schools

The overall performance of a school system is affected by countless factors. Some of these factors, such as political policymaking, can change quickly and dramatically. As a result, the overall performance of a school system can never by itself provide a reliable guide to whether any one factor (such as vouchers) is having a positive effect. If a man with asthma starts taking a new medication, and at the same time takes up smoking, his overall health and ability to breathe may not improve but this has no bearing on the question of whether the medicine is helping.

The only way to know whether vouchers are having a positive impact is to conduct empirical research using high-quality scientific methods. The whole purpose of these studies is to isolate the impact of vouchers from the impacts of all the other factors that influence academic outcomes, so that we can measure it accurately. Given the remarkably unanimous

research supporting the positive impact of vouchers everywhere they are allowed to affect public schools, to respond by holding up the continued failure of public schools overall is simply obscurantism.

Voucher Programs Are Heavily Restricted

The positive impact of voucher programs on public schools identified in the empirical research is sometimes modest in size. That is hardly surprising, given that existing voucher programs are also modest in size. If modest programs produce modest benefits, not dramatic benefits, is the logical conclusion to deny that voucher programs have any benefits and give up on them? Or to expand them until they are large enough to have a dramatic impact?

Existing voucher programs are hindered by limits on the number of students they may serve, limits on the types of students they may serve, limits on the purchasing power they are allowed to provide, limits on families' ability to supplement that purchasing power, limits on how students may be admitted to participating schools, and so forth. These limits are detailed in the 2008 Friedman Foundation report "Grading School Choice."

Yet some people demand that these programs, while still restricted in size and scope, must produce Herculean results or else be given up as hopeless. No matter how clear the scientific evidence showing that vouchers improve public schools, we still hear the response that public schools haven't yet been radically transformed in places with vouchers, therefore vouchers had no effect.

Some of the most restrictive limits are imposed in the Milwaukee voucher program. That program was the early pioneer that founded the modern school choice movement. Because it started at a time when vouchers did not have a national movement behind them, the Milwaukee program had to accept more political compromises than recent school choice programs have had to accept. For the same reason —because it was the original pioneer—the Milwaukee program is taken to be the flagship voucher program and is the nation's most prominent school choice program. So, ironically, the program that labors under the worst restraints, which therefore ought to be expected to produce especially modest results, is actually expected to produce a "Milwaukee miracle" and vindicate all vouchers everywhere. This is simply unreasonable.

CONCLUSION

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Vouchers do, in fact, improve public schools.

Even if vouchers did not improve public schools, there would still be other reasons to implement them. They provide a better education to those who use them, they provide better services for disabled students, they put students into schools that are more racially integrated, they improve students' civic values, they save the public money, and so forth.[25]

But vouchers do, in fact, improve public schools. Of the seventeen empirical studies conducted on this question, 16 find that vouchers improve public schools and one—the only one examining a program that insulates public schools from voucher competition—finds no visible difference. No empirical studies find that vouchers harm public schools.

The benefits of competition in education are clearly established by the evidence. The only remaining question is whether the evidence will be permitted to shape public debate on the question of vouchers.

ENDNOTES

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[5] Caroline Hoxby, "Rising Tide," *Education Next*, Winter 2001.

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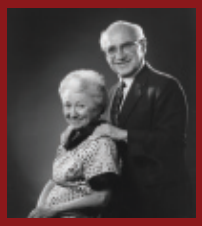

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