SCHOOL CHOICE

ISSUES

OCTOBER 2007

IN DEPTH

MONOPOLY VS. MARKETS:

The Empirical Evidence on Private Schools and School Choice

By Greg Forster, Ph.D.

OUR CHALLENGE TO YOU

Our research adheres to the highest standards of scientific rigor. We know that one reason the school choice movement has achieved such great success is because the empirical evidence really does show that school choice works. More and more people are dropping their opposition to school choice as they become familiar with the large body of high-quality scientific studies that supports it. Having racked up a steady record of success through good science, why would we sabotage our credibility with junk science?

This is our answer to those who say we can't produce credible research because we aren't neutral about school choice. Some people think that good science can only be produced by researchers who have no opinions about the things they study. Like robots, these neutral researchers are supposed to carry out their analyses without actually thinking or caring about the subjects they study.

But what's the point of doing science in the first place if we're never allowed to come to any conclusions? Why would we want to stay neutral when some policies are solidly proven to work, and others are proven to fail?

That's why it's foolish to dismiss all the studies showing that school choice works on grounds that they were conducted by researchers who think that school choice works. If we take that approach, we would have to dismiss all the studies showing that smoking causes cancer, because all of them were conducted by researchers who think that smoking causes cancer. We would end up rejecting all science across the board.

The sensible approach is to accept studies that follow sound scientific methods, and reject those that don't. Science produces reliable empirical information, not because scientists are devoid of opinions and motives, but because the rigorous procedural rules of science prevent the researchers' opinions and motives from determining their results. If research adheres to scientific standards, its results can be relied upon no matter who conducted it. If not, then the biases of the researcher do become relevant, because lack of scientific rigor opens the door for those biases to affect the results.

So if you're skeptical about our research on school choice, this is our challenge to you: prove us wrong. Judge our work by scientific standards and see how it measures up. If you can find anything in our work that doesn't follow sound empirical methods, by all means say so. We welcome any and all scientific critique of our work. But if you can't find anything scientifically wrong with it, don't complain that our findings can't be true just because we're not neutral. That may make a good sound bite, but what lurks behind it is a flat rejection of science.

MONOPOLY VERSUS MARKETS:
THE EMPIRICAL EVIDENCE ON PRIVATE SCHOOLS & SCHOOL CHOICE

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MILTON & ROSE D. FRIEDMAN
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EXECUTIVE SUMMARY

This study presents new findings comparing public and private high schools using top-quality data from the Education Longitudinal Study (ELS), a long-term research project sponsored by the U.S. Department of Education. The ELS project tracks individual data on thousands of students, allowing researchers to conduct much better analyses than are possible with school-level data. This study also reviews the large body of previous empirical research on private schools and school choice programs.

Key findings include:

- The ELS data show that students in private schools made better academic gains than students in public schools, even after controlling for race, income, parental education and family composition. Between 10th and 12th grade, private schools provided one point of additional growth in math (out of 50 points) compared to public schools. Racial and ethnic differences accounted for up to one point of growth, differences in family income among those making at least $15,000 accounted for up to one point, having both parents live at home accounted for 0.3 points and parental education accounted for up to 0.7 points.
- Because the data used in this analysis track individual students over time, the analysis is better able to distinguish the influence of real differences in school quality on student outcomes from the influence of parents' and schools' selecting which students will attend private schools.
- The private school effect is substantial in size. One point out of 50 is equal to 2 percent of the total difference from the very lowest-scoring students to the very highest-scoring students. For purposes of illustration, if similar benefits are present in all grade levels, a student who attended private school for 12 years would reach a level of academic achievement six points higher out of 50, or 12 percent of the total spectrum from the highest to the lowest students, than that same student would have achieved with the equivalent years of public school education.
- The finding that private schools produce greater academic achievement confirms similar findings from a large body of previous research, including studies using optimal "random assignment" methods. However, it stands against the finding of a study released last year by the Department of Education, which drew on an inferior data set and used grossly inappropriate methods of analysis.
- The ELS data also show that race relations are very similar in public and private schools. Tenth graders in both kinds of schools have almost exactly the same numbers of close friends of other races, and characterize the race relations at their schools in very similar ways (though private school students are somewhat less likely to say that students of different races fight often at their schools). Previous research has shown that private schools in voucher programs have much lower levels of segregation than public schools in the same cities.
- Students in the ELS data set who were in private schools in 10th grade were less likely to drop out of school before 12th grade than public school students. However, removing the effects of student selection is much more difficult in analyses of dropout rates than it is in analyses of test scores, so this result should be interpreted with caution. Controlling for demographic factors, the analysis finds that private school students were three percentage points less likely to drop out than their public school peers. Racial and ethnic differences accounted for three to four percentage points, differences in family income among those making at least $15,000 accounted for three to five percentage points and having both parents live at home accounted for five percentage points. Parental education made the biggest difference; if both of a student's parents had dropped out, the student was 13 percentage points more likely to do so as well.
- Previous research finds that private schools in general, and school choice programs in particular, convey other benefits. They improve the academic outcomes of public schools through healthy competition, provide better special education services, do a better job of inculcating civic participation and tolerance for the rights of others, provide about the same level of protection against staff misconduct, and produce large fiscal savings for both state budgets and local public school districts.

ABOUT THE AUTHORS

Greg Forster, Ph.D., is a senior fellow and the director of research at the Milton and Rose D. Friedman Foundation, where he conducts research and writes about school choice policy. He has conducted empirical studies on the impact of school choice programs in Milwaukee, Cleveland, Florida and Texas, as well as national empirical studies of participation in school choice programs and the impact of charter schools. He also has conducted empirical studies of other education topics, including accountability testing, graduation rates, student demographics and special education.

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.

He received a Ph.D. with Distinction in political science from Yale University in 2002 and a B.A. *summa cum laude* from the University of Virginia in 1995. His book *John Locke's Politics of Moral Consensus* was published by Cambridge University Press in 2005.

ABOUT THE FRIEDMAN FOUNDATION

MILTON & ROSE D. FRIEDMAN FOUNDATION Educational Choice

The Milton and Rose D. Friedman Foundation, dubbed "the nation's leading voucher advocates" by the *Wall Street Journal*, is a non-profit 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 that 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.

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An Education Market or an Education Monopoly?

The main reason education policy in the United States is such a contentious issue is because Americans hold two fundamentally opposing worldviews when it comes to education. On one side are those who think that education can be safely entrusted only to a government-owned, government-run monopoly school system. On the other side are those who think that education for all students, including those in public schools, would be better served by opening that system to competition from private providers. On this view, even the public school system itself would be better off if it were not a monopoly.

There is a large body of empirical evidence that ought to inform this debate. It may not answer every question, but it provides much useful information. Unfortunately, the debate is too often dominated by myths and anecdotes rather than science.

This study contributes new empirical evidence taken from an especially high-quality U.S. Department of Education data set. These data cover all private schools, not school choice programs as such. But evidence on private schools is very relevant to the debate over whether monopolies or markets do a better job of educating students. It also reviews the existing body of previous research on private schools and school choice. This includes studies on academic achievement, dropout rates, improved outcomes at public schools, special education services, segregation and race relations, tolerance and domestic values, access to schools, safeguards against abuse, and the fiscal effects of school choice.

Some will object to the description of the existing public school system as a "monopoly," because private schools are permitted to operate alongside public schools. Some families are able to make the financial sacrifices necessary to pay a double price for education (once in taxes to support the public system and again in private tuition) to send their children to private schools.

However, the term "monopoly" does not always refer to the sole existing provider of a service. It can also refer to a dominant provider that is able to keep other providers from mounting a serious challenge to its dominance, such as by charging a price below the cost of production to drive other providers out of its market. This is exactly what public schools do, since they have access to tax revenue and therefore can give away their services for free, preventing any other provider from seriously challenging their dominance.

Milton Friedman once made this point by asking what would happen if government opened up taxpayer-funded hot dog stands on every street corner that gave away free hot dogs. Most of the private hot dog vendors, he observed, would go out of business. Thus, the government could create a monopoly on hot dogs without having to formally ban the existence of private providers, by using the special advantage of its exclusive access to taxpayer funds. This, Friedman said, is exactly what has happened in education.

Friedman's hot dog example could be expanded. Suppose the government's free hot dog stands were forbidden to sell kosher hot dogs, due to First Amendment concerns. And suppose further that some high-end consumers were willing to pay a very high price for hot dogs from prestigious private vendors. Thus, by serving niche markets, religious hot dog stands and high-priced

premium hot dog stands could stay in business in spite of the government monopoly. This is exactly what the private school sector looks like in the U.S. today—the large majority of private schools are low-cost religious schools, and virtually all of the rest are either high-cost prestige schools and schools that serve other niches, such as special education schools. A private school market that wasn't distorted by a government monopoly would look very different.

School choice policies allow students to get educational services from private schools using public funds, mitigating the special advantage (access to taxpayer financing) that currently makes the public school system a monopoly. School choice does not quite create a level playing field between public and private schools, because public schools still have tremendous advantages over private schools. For example, school choice programs usually provide private schools with only a limited portion of the taxpayer funding public schools receive. Also, public schools are widely thought of as the "default" school system. And they have large, powerful staff unions that spend millions of dollars on propaganda for the public system. Nonetheless, school choice does create a market—however lopsided—in educational services.

School choice is controversial because people have different expectations about the results of market forces. For example, opponents claim that if we move from the current education monopoly to an education market, the wealthy may get better services, but the poor would get worse services. Advocates respond that markets would provide all students with better services than the current monopoly system gives them: markets give schools a healthy competitive incentive to improve services to everyone in order to attract and retain students, while a monopoly provider has little incentive to improve services to anyone.

Because the controversy is rooted in different expectations of the way markets will affect education, the available evidence ought to play a crucial role in school choice debates. The public ought to know whether the evidence tends to show that the expectations of one side or the other are being borne out.

Why Scientific Methods Matter

There are currently 22 school choice programs in 13 states plus the District of Columbia; roughly 130,000 students attend private schools using vouchers or scholarships provided by these programs. With so many programs in operation, it isn't surprising that there is now a large body of high-quality empirical research on school choice programs. What is surprising is the extent to which opinion leaders are either ignorant of or dismissive toward this trove of information.

It is especially important to note the high scientific quality of the available research on school choice. Usually, it is very difficult to study the effects of education policy properly, because student outcomes are affected by so many different influences—including demographic factors (income, race, family structure, etc.), school type (public or private) 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.

When it comes to comparing public and private schools, the problem is compounded by selectivity. Students attending private schools are there because their families chose to make a financial sacrifice to put them there. In addition, some private schools are selective to some degree in admitting students. Thus, any observable differences between public and private school students may be due to differences in the schools or to parental and school selectivity.

The starting point of a scientific analysis is what is called "descriptive" information. This is just the facts—the way things are. Student X has income A, is of race B, comes from a family of structure C, attends a school with characteristics

D, E and F, is taught by a teacher with characteristics G, H and I, and so forth.

For some questions, descriptive information is enough. For example, critics charge that school choice programs do not provide broad-based access to schools for participating students, while claiming that public schools are committed to accepting every child. To determine whether these statements are true, all we need is descriptive information. As we will see below, the available descriptive information on these claims puts them into a very different light.

However, most of the time descriptive information by itself is not enough, because it does not allow us to disentangle which factors are contributing what to which outcomes. In these cases, "causal" analysis is needed.

For example, it is universally acknowledged that the average level of academic achievement is higher among students in private schools than among students in public schools. But there is a great deal of controversy over why this is. Critics of school choice often claim that it is solely due to the selection of students who enter and remain in private schools—students with higher levels of academic achievement are more likely to seek out private schools, and in turn the private schools are more likely to encourage such students to continue attending. On the other hand, school choice supporters argue that higher levels of academic achievement in private schools are at least partly attributable to the higher quality of the schools, in addition to the influence of selection.

Making things worse, many of the factors that affect student outcomes are not measurable. The enthusiasm that parents and teachers invest in a student's education has an important impact on the student's outcomes, but we have no scientific way to measure such things. Thus, these factors cannot be controlled for statistically.

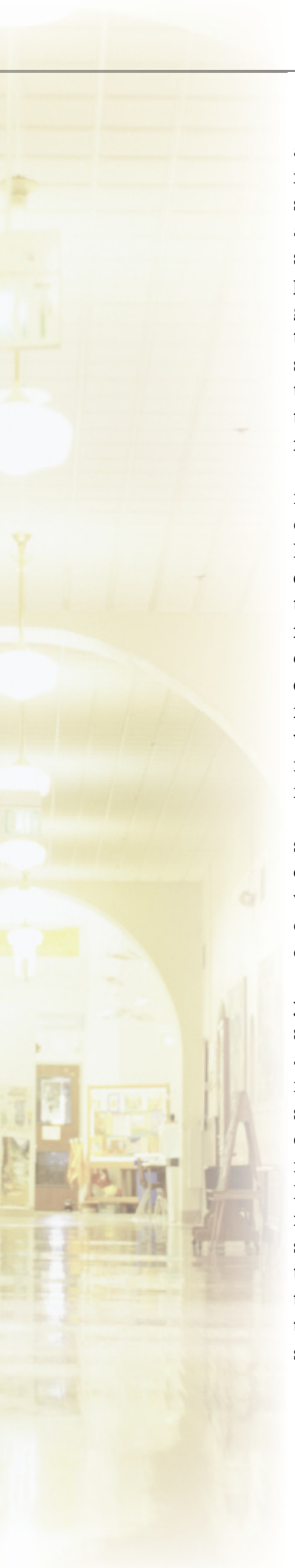
If these unmeasured factors are not systematically different among different groups of students, they don't affect the results of an analysis. For example, if we are comparing test scores of left-handed students and right-handed students in a school, we need not worry about the influence of unmeasured factors such as parental and teacher enthusiasm because these are very unlikely to be systematically different among right-handers and left-handers.

But a study's results will be undermined if it compares the outcomes of two groups of students where unmeasured factors are systematically different across the two groups. Parental enthusiasm might be expected to differ systematically between students who applied to participate in school choice programs and students who did not. Drawing a direct comparison between the outcomes of two such groups would be inappropriate.

This is where the scientific quality of the evidence comes in. 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, we can come to the wrong conclusions about what factors cause what outcomes. A poor or even mediocre quality study is more likely to falsely attribute causal power to a factor that doesn't really matter, or falsely attribute no causal power to a factor that does matter, or falsely attribute one type of influence to a factor that actually exerts a different type of influence.

The gold standard for empirical science is the method known as "random assignment." In this method, subjects are randomly divided into two groups, a group that will receive the treatment being studied (such as school choice) and a control group that will not receive it. Because the two groups are separated only by random assignment, they are likely to be very similar in every respect other than the treatment being studied. Thus, if the two groups have different outcomes, researchers can attribute that difference to the treatment with a high degree of certainty.

Random assignment studies are normally very rare in social policy. We do not usually have the opportunity to divide populations by random lottery and apply different policies to them. However, school choice has provided researchers with valuable opportunities to conduct random assignment research because school choice programs are often oversubscribed. When too many people



apply to participate in a school choice program, a random lottery is often used to determine which students will be invited to participate. This creates a naturally occurring random assignment situation—applicants who are invited to participate as a result of the lottery are the treatment group, and applicants who are not invited are the control group. Both groups are made up of students whose parents applied to participate in the program; they are separated only by whether their applications were accepted as the result of a random lottery.

Where a significant body of random assignment research exists, its findings should take precedence over the findings of other types of studies. No method is as good as random assignment at disentangling the influence of a treatment from the influence of other factors. In particular, the random assignment method is the best way to ensure that unmeasured factors are not secretly driving the results of a study, since unmeasured factors will not vary systematically across the winners and losers of a random lottery—by definition, nothing can vary systematically across a factor that is random.

However, this is not to say that random assignment research is the only kind worth considering. It may be the best kind of research, but where random assignment research cannot be conducted, other kinds of research are well worth conducting.

The next best research method is to track year-to-year changes in outcomes for individual students. Although it is not as good as random assignment, this is still a very good method, and its results are widely regarded as being high in scientific quality. 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 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.

The key to this method is not simply to have data about individual students, but to track them over time. Of course it's better in any case to have data such as demographic factors matched to individual students rather than simply to schools; it allows for a more precise statistical control for those factors. However, unless student outcomes are tracked over time, unmeasured factors unrelated to demographics will not be removed from the results. When students are tracked over multiple years and researchers can measure the change in outcomes for individual students, they can remove most of the influence of unmeasured factors.

The new findings on academic achievement presented in this study use this method. The analyses take advantage of data in the Education Longitudinal Study (ELS), a research project of the U.S. Department of Education. The data track thousands of individual students from 10th grade in 2002 to 12th grade in 2004. By tracking individual students over time, this study is able to isolate the results of school quality not only from demographic influences, but also from most of the influence of unmeasured factors. Thus, this study mostly overcomes the problem of selection of students into private schools.

If it is not possible to track individual students, good research can still be done by tracking year-to-year changes in individual schools. The unmeasured advantages of the students in a given school can reasonably be expected to be similar from year to year—if a school has highly advantaged students in 2006, it will probably 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.

When individual schools cannot be tracked, some other methods are scientifically acceptable, but should be accepted with a lower level of confidence. The significance we attribute to the results of a given study should depend on the method it uses and the nature of the question being addressed.

ACADEMIC OUTCOMES

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Academic Achievement

There have been a total of 10 analyses of school voucher programs using random assignment methods. As has already been noted, random assignment is the gold standard for social science. It provides top-quality evidence that removes the effects of selection from study results, allowing us to compare the effect of public and private schools on academic achievement independent of the quality of the students who are selected into private schools. This evidence ought to take precedence over studies using other methods.

Of the 10 studies available, eight find that students using school vouchers had higher levels of academic achievement than students who applied for vouchers but lost a random lottery and did not receive them (see Table 2). The other two studies also found positive results for vouchers, but in these two studies the results failed to achieve statistical significance, meaning that we cannot be at least 95 percent certain that the positive results are real and not the result of a fluke. In both of these studies, as we will see below, the failure to achieve significance is explainable. Overall, this constitutes an extremely strong body of evidence in favor of school vouchers.

> "Random assignment is the gold standard for social science. It provides top-quality evidence that removes the effects of selection from study results."

Like all studies, these random assignment studies are limited. They do not tell us everything. For example, because of the high level of mobility that prevails among the disadvantaged populations these programs were serving, the studies are not able to track students over very long periods of time; the longest period of analysis is four years. Moreover, two of the studies examine a program in Charlotte for which baseline achievement data are not available. These baseline data would tell us how the students in the treatment and control groups were performing before they entered the program, which would provide some additional statistical certainty about the results, and also allow us to confirm empirically that the treatment and control groups started out similar in their characteristics (as they ought to be if the random lottery was properly carried out).

In a set of studies performed by William Howell and Paul Peterson, the positive results for voucher programs in three cities were statistically significant for black students but not for other student groups or for the whole student population. As the authors point out, since black students are the most consistently underserved by public schools, they stand to gain the most from being offered a choice—and thus their improvements are easier to discern statistically.

Interestingly, this limitation on the positive results for vouchers did not recur in a later reanalysis of the results of Howell and Peterson's study in New York, conducted by a research team led by John Barnard. The reanalysis found statistically significant positive results for vouchers among all students, not just black students.

These limitations in the random assignment research on vouchers would be more serious if we did not have the same positive finding repeated over so many studies. If the two Charlotte studies were the only two studies available, we might have lingering doubts about whether there had been some problem in the random sampling. If the Howell and Peterson studies were all we had, we might wonder whether vouchers helped all students or only the most disadvantaged ones. But the six studies that do have baseline data should allay our concerns about the two that don't, and the five studies that do find positive results for all students should allay our concerns about the three that don't. To ignore the results of the majority of studies on grounds that the remaining minority of studies suffer from limitations is not a rational approach to the evidence.

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Of the two studies that did not find significant results, one—a study of the new voucher program in Washington D.C. by a team of researchers led by Patrick Wolf—is still ongoing. In this study, voucher students had higher test scores, but the results did not achieve 95 percent certainty, the conventional cutoff for considering results "significant." In math, the results achieved 93 percent certainty—just barely missing the cutoff. The reading results are much less certain than the math results, as is often the case in education studies.

The lack of statistical certainty may be due to the study having only a year's worth of data so far. In the eight studies discussed above, five found statistically significant results in the first year, but three did not; they required more years of data to achieve significance. Given that the math scores came so close to achieving significance in the first year, we ought to wait for future years of data before pronouncing a verdict on the effectiveness of the D.C. voucher program.

Even the result that came in at 93 percent certainty should not be dismissed. Placing the cutoff for statistical certainty at 95 percent is a long-standing conventional practice, just like placing the cutoff for driver's licenses at age 16. But it is essentially arbitrary. There is nothing magical about the difference between 94.49 percent certainty and 94.51 percent certainty, just as there is no particular reason to think that teenagers miraculously become responsible enough to drive at midnight on their 16th birthdays. Scientists generally recognize this fact; many of them report results as "moderately significant" if they're at least 90 percent certain—which the D.C. results are. Obviously we should respect the fact that 93 percent is not the same thing as 95 percent. But Moses did not come down from Mount Sinai with stone tablets saying, "Thou shalt not consider results significant unless they are 95 percent certain." It would be wrong to dismiss this moderately certain positive finding because of an arbitrary cutoff point.

The remaining random assignment study, conducted by Alan Krueger and Pei Zhu, deserves separate discussion because it uses inappropriate methods that violate the accepted rules of social science. The study is one of two reanalyses of the data from Howell and Peterson's previous random assignment study of a voucher program in New York. Krueger and Zhu's reanalysis found that voucher students had higher achievement levels than the control group, just as in the original analysis; however, in their reanalysis the results failed to achieve statistical significance. (The other reanalysis was the one by Barnard's team, which found statistically significant positive results for all voucher students.)

Other researchers have identified serious violations of sound scientific procedure in Krueger and Zhu's study.[1] The original analysis used the race of each student's mother to classify students by race, which is the method used by the U.S. Census and by most scientific research. Krueger and Zhu used racial identification from both mothers and fathers, a method that does not reflect the way most students really identify themselves by race and that is not generally used. Responsible scientists try to avoid making up their own new definitions of variables whenever they can because the opportunity to bias one's results by changing the definition of the variables is too great.

Worse, Krueger and Zhu applied their new definition of race to black students differently than they applied it to other students. They classified multiracial students with a black father as black, but classified multiracial students with fathers of other races according to the race of the custodial parent. This selective application of the new definition of race calls into question the validity of its use.

Krueger and Zhu also added to the data set new students for whom some information was missing, reducing the quality of the study's data. When data for a given factor are missing for all students (as in the Charlotte studies), researchers simply have to go without it. But it makes no sense to add students with missing data to the sample where we already have plenty of students for whom those data are present.

Most important, Howell and Peterson have shown that Krueger and Zhu were highly selective in their choice of statistical models. Howell and Peterson analyzed the data using 120 different statistical models and reported that all 120 find positive voucher effects, 108 of them finding statistically significant positive effects.[2] In other words, it wasn't enough for Krueger and Zhu to use the wrong model—they had to use just the "right" wrong model to prevent the positive results for vouchers from being statistically significant.

What's more, if Krueger and Zhu had only used their idiosyncratic and selectively applied definition of race without also adding in the students with missing data, the final results would have been significant no matter what model they used. If they had only added in the students with missing data without using their idiosyncratic and selectively applied definition of race, the results would also have been significant across all models. Krueger and Zhu had to commit both of these violations of legitimate procedure to get the results they got.

Unfortunately, deviation from legitimate scientific methods is not uncommon in research on education. Last year, a study was released bearing the stamp of the U.S. Department of Education that claimed to show public schools were just as good as private schools.[3] The study received a great deal of public attention. However, even before its release, researchers were denouncing its shoddy methods.

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Contrary to the claims of its authors, the study is unable to provide any information whatsoever about the relative quality of public and private schools, for a variety of reasons. It does not track student outcomes over time, but looks only at snapshots of test scores in isolated years. As we have seen, wherever possible it is necessary to track students—or, at the very least, schools—over time to remove the influence of unmeasured factors. More important, the study uses participation in federal programs such as the school lunch program

as a measurement of demographic variables. This is grossly inappropriate because it is much easier for public schools to participate in these programs than for private schools. The number of private school students who get subsidized lunches is not an accurate measurement of the school's poverty level, because it is difficult for private schools to get access to these subsidies. Finally, the study inappropriately controls for some variables, such as school size and absentee rates, that are "endogenous," meaning that other variables in the analysis exert causal influence over them. It is inappropriate to control for differences in school size and absentee rates when analyzing the effects of school type (public or private), because differences in those variables are themselves one of the effects of school type.

> "These studies provide a scientifically solid standard for evaluating school choice policies."

Given the persistent problem of bad research on education policy, the existence of a large body of top-quality random assignment studies is a great blessing. These studies provide a scientifically solid standard for evaluating school choice policies.

New Findings

The findings in this study examine private schools generally rather than school choice programs specifically, as is the case in the random assignment studies discussed above. However, findings on private schools generally are relevant to the debate over school choice. If private schools produce greater academic achievement, this will tend to support the view that markets work better than monopolies, as advocates of school choice claim. The opposite finding would tend to support the opposite view.

One additional reason to examine private schools generally is to gain some insight on the effect of an educational market on students who are not especially disadvantaged. All of the voucher programs studied by the existing random assignment research are targeted to serve disadvantaged students. It is worth finding out whether other students also benefit from access to a market in educational services.

The ELS data used for this analysis track individual students over time. As was discussed above, this means the analysis can remove most of the influence of unmeasured factors, since those unmeasured factors will be present in both the starting and ending years of the analysis. The effects of student selection into private schools can therefore be mostly isolated and removed, although selection may still affect the results to a small degree.

In the spring of 2002, ELS gave its 10th grade participants a math exam. It administered the same exam when it followed up with the same students in the spring of 2004. A reading test was also administered in 2002, but not in the 2004 follow-up, so we cannot analyze the change in reading scores. However, this is not a great loss, since reading scores are typically much more influenced by demographic factors than math scores. By focusing on math, we improve our ability to isolate the effect of school quality from other factors.

Scores on the exam are measured in standardized "T" scores, which allow for better comparisons between different groups of students. The mean result for all students taking the exam is set to a score of 50 points, and all other results are scored in such a way that the standard deviation of the scores is 10 points. This means virtually all students will have scores that lie between 25 points and 75 points, or within two and a half standard deviations of the mean. Changes in score results can therefore be interpreted as a certain number of points out of 50.

This analysis conducts a linear regression with the 12th grade math scores as the dependent variable and the 10th grade math scores as one of the independent variables, along with dummy variables (0 or 1) for whether the student attended private school and for various

demographic factors. Because the 10th grade scores were included as an independent variable, the regression measures the effects of all the other variables specifically on the change in math scores from 10th grade to 12th grade, rather than on the 12th grade scores as such.

Only students who remained in the same schools between spring 2002 and spring 2004 were included in the analysis. Data were weighted to ensure proper representation of the national population.

The results of the analysis are presented in Table 3. Scores of private school students grew an additional one point out of 50 over two years. Racial and ethnic differences accounted for up to one point of growth, differences in family income among those making at least $15,000 accounted for up to one point, having both parents live at home accounted for 0.3 points, and parental education accounted for up to 0.7 points.

This effect is substantial in size. One point out of 50 is equal to 2 percent of the distance from the very lowest—scoring students to the very highest—scoring students. And this captures only two years' worth of the benefits of attending a private school. For purposes of illustration, if similar benefits are present in all grade levels, a student who attended private school for 12 years would reach a level of academic achievement six points higher out of 50, or 12 percent of the total spectrum from the highest to the lowest students, than that same student would have achieved with the equivalent years of public school education.

"It is a common observation that public high schools have high dropout rates (about 30 percent nationwide, according to the research referenced below) while private high schools claim to have extremely low dropout rates."

Dropout Rates

It is a common observation that public high schools have high dropout rates (about 30 percent nationwide, according to the research referenced below) while private high schools claim to have extremely low dropout rates. But high-quality studies of dropout rates in private schools and school choice programs have been difficult to conduct.

Until recently, the most important problem was that researchers lacked a good measurement of dropout rates. School systems have various ways of manipulating official dropout statistics to conceal the true extent to which students leave high school without obtaining a diploma or transferring to another school. Hard as it may be to believe, it is only within the current decade that researchers have developed reliable methods of estimating the true dropout rate that are not subject to such manipulation.[4] These methods allow researchers to estimate a school's dropout rate using nothing more than grade-by-grade enrollment data.

However, this by itself can provide only descriptive information. The problem of sorting out causal forces remains. If private schools have lower dropout rates, is it because they're better at keeping students from dropping out? Or is it due to demographic differences and/or the selection into private schools of students who are less likely to drop out?

This problem is much more difficult to overcome when examining whether students drop out than it is when examining students' test scores, because with dropout rates it is impossible to track changes in students' outcomes over time. A given student either drops out or does not; we cannot track changes in results from year to year as we do with test scores. Since dropping out is not susceptible to tracking changes over time, the influence of unmeasured factors is difficult to remove.

Researchers are still struggling to overcome this difficulty insofar as is possible. The best previous study to address the question is Jay

Greene's comparison of dropout rates in Milwaukee public schools with rates in private schools participating in that city's school voucher program. In addition to its regular public schools, Milwaukee maintains six special-purpose public high schools that practice selective admissions. The students at these schools must apply to attend them and must qualify for them academically. Thus, we have the opportunity to compare public and private schools where roughly similar selection effects are at work. This does not completely eliminate the difficulty, but it does as good a job of overcoming it as is possible. Greene found that private high schools in the Milwaukee voucher program had a dropout rate of 36 percent, while Milwaukee's selective public high schools had a dropout rate of 59 percent. The dropout rate for Milwaukee public schools as a whole was a shocking 64 percent—almost two out of every three students who started high school failed to graduate.[5]

"Greene found that private high schools in the Milwaukee voucher program had a dropout rate of 36 percent, while Milwaukee's selective public high schools had a dropout rate of 59 percent. The dropout rate for Milwaukee public schools as a whole was a shocking 64 percent—almost two out of every three students who started high school failed to graduate."

Another approach to the problem is to examine whether neighborhoods with more private schools have lower dropout rates. Studies using this approach have found that the presence of private schools reduces the chances that students will drop out, either because some students are benefiting from a private school education or because greater competition from private schools is prompting the public schools to improve.[6]

New Findings

One major advantage of the ELS data set is that researchers need not estimate the dropout rate using the methods referred to above. Estimation methods are normally required for two reasons: tracking individual students is extremely cumbersome, and the entities that typically do the tracking are biased. With ELS, however, we can track individual students without relying on biased data sources.

Unfortunately, ELS does not provide us with the opportunity to compare students in schools with roughly similar selection effects, as Greene did in Milwaukee. The ability to control for demographic variables at the individual student level, rather than at the school level as in many education studies, does provide some increased ability to sort out real differences in school quality from selection effects. Specifically, it allows us to remove the influence of selection effects that are related to measurable demographic factors. However, a significant amount of selection effect will remain in the results because of the influence of unmeasured factors. The results of the analysis should therefore be interpreted with caution.

In the ELS data set, 10 percent of all 10th graders in public high schools in spring 2002 had dropped out by spring 2004, the semester when they would have graduated. Only 2 percent of private school 10th graders dropped out over the same period.

These figures are much lower than the real dropout rates in pubic and private schools, for reasons we ought to expect given the nature of the ELS data. Most important, ELS begins tracking students at the end of 10th grade, or about halfway through their high school careers. This means many students will already have dropped out of school before ELS gets to them. In addition, ELS will have been unable to find some students for the follow-up interview in spring 2004, and it is reasonable to expect that dropouts will have been more difficult to find than graduates. Estimates of graduation rates for public schools

that are very widely accepted as accurate place the public school dropout rate at about 30 percent, not 10 percent.[7]

Fortunately, these factors do not undermine the value of ELS in comparing public and private schools, for two reasons. First, the effects of these factors are likely to be similar across both school sectors. Second, the ability to control for demographic factors of individual students decreases the chance that this problem will introduce bias.

The real value of the ELS data set is not in calculating the dropout rate, but in comparing the effect of attending a public or private school on the chances a student will drop out. This analysis conducts a linear regression analysis in order to remove the effects of demographic factors and selection effects as far as possible. The dependent variable was a dummy (0 or 1) for whether a student dropped out of school; the independent variable was a dummy for whether the student attended private school in 10th grade and various dummies for demographic factors.

Students who were being home schooled in spring 2004 or who were attending a different school than they had attended in spring 2002 were excluded from the analysis.[8] Data were weighted to ensure proper representation of the national population.

The results of the analysis are listed in Table 4. Private school students were three percentage points less likely to drop out than their public school peers. Racial and ethnic differences accounted for three to four percentage points. Those with family incomes between $15,000 and $50,000 were three to five percentage points more likely to drop out than those with family incomes above $50,000; differences in family income did not have a statistically significant effect on dropout rates among those making at least $50,000. Having both parents live at home accounted for five percentage points. Parental education made the biggest difference. If both of a student's parents had dropped out, the student was 13 percentage points more likely to do so as well. Those whose parents graduated from high school (or got a GED) but did not attend college were two to five percentage points more likely to drop out than those whose parents attended college. Differences in parents' education did not have a statistically significant effect on dropout rates among those whose parents attended at least some college.

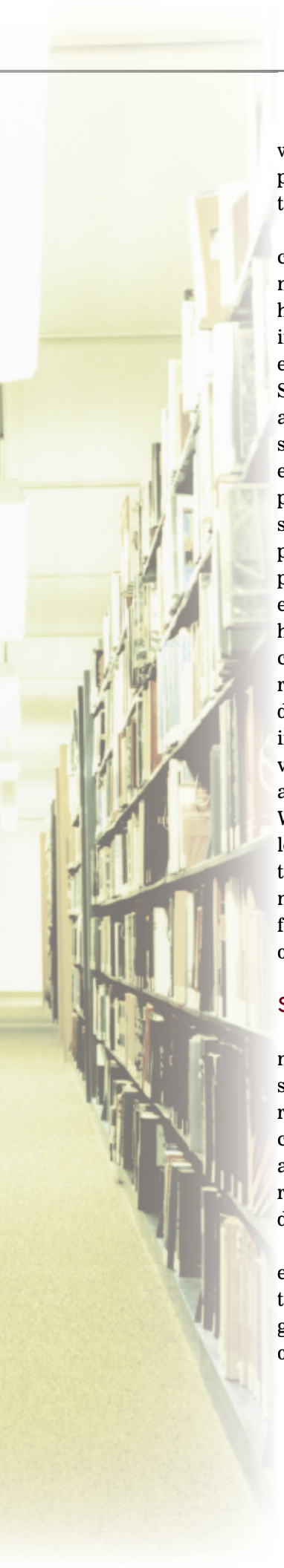
Improving Public Schools

Perhaps the most important concern about school choice is the effect it has on public schools. Many people acknowledge that school choice helps the students who use it, but are worried that it will make public schools worse by draining money or by "creaming" the best students.

However, the evidence on the real-world effect of existing school choice programs shows that this is not the case. No empirical study anywhere in the U.S. has ever found that public schools had worse outcomes when exposed to school choice. And there is a strong body of empirical evidence showing that school choice makes public schools better, not worse (see Table 5). The fears that public schools would be harmed by school choice have simply failed to materialize.

> "The fears that public schools would be harmed by school choice have simply failed to materialize."

The research has consistently found that where students can use school choice to attend any school, public or private, the public schools make bigger academic improvements. Four studies of a school choice program in Florida have found that public schools eligible for vouchers made dramatic improvements relative to other Florida public schools. Two studies of Milwaukee's voucher program found that Milwaukee public schools whose students were eligible for school choice made larger academic gains than other Mil-



waukee public schools. Studies of school choice programs in Maine, Vermont and Texas confirm these findings.

This outcome is counterintuitive to many people, and they have a hard time believing what the empirical evidence clearly shows. So it is worth looking at some of the reasons school choice might be expected to improve public schools. One reason is because it allows parents to find the right particular school for each individual child. Every child is unique and has unique educational needs, and no one school can be the right school for every child. Another reason is that school choice doesn't actually drain money from school budgets, as we will see in more detail below. Finally, school choice provides positive incentives for improvement that are lacking in the traditional monopoly system. When public schools know that students can leave using school choice if they are not getting an education, those schools have a much more powerful incentive to improve their performance and keep those students from walking out the door.

"The public school system maintains a large and costly bureaucracy whose purpose is to deliver special education services; since private schools do not have a similarly large and visible special education bureaucracy, many people assume private schools do not provide special education services."

Special Education Services

Services for disabled students is another common area of concern for school choice. The public school system maintains a large and costly bureaucracy whose purpose is to deliver special education services; since private schools do not have a similarly large and visible special education bureaucracy, many people assume private schools do not provide special education services.

Studying outcomes for disabled students is even more difficult than studying most educational subjects. Since student disabilities run the gamut from mild to severe, and the exact severity of each student's disability is difficult to quantify, it is hard to measure how well schools are doing relative to how well they could be doing given the students they have. Furthermore, there is not even a consensus on what measurements are appropriate for evaluating the academic achievement of disabled students.

However, at least one study has compared special education services in public and private schools. Florida's McKay voucher program allows any disabled student in public schools to move to a private school. An empirical evaluation of the program conducted by Greene and the author compared the services these students had received in their previous public schools with the services they received in private schools through the voucher program.

Parents reported much higher rates of satisfaction with their children's academic progress and services received in private schools; students were also victimized by their peers less often and less likely to exhibit behavior problems. Two thirds of participating families reported that their previous public schools did not provide all the services they were required to provide under the federal special education law, while only 12 percent reported that their private schools didn't provide services they promised to provide. Students in private schools were served about the same regardless of race, income or disability type.

To ensure that students who had unsatisfactory experiences would be included, the authors also collected data on the roughly 10 percent of families who had been in the program in the previous year but were no longer participating. These former participants also reported that their private schools had served them better than their previous public schools. More than 90 percent of them said the program should continue for others, even though they were no longer using it themselves.[9]

CIVIC AND SOCIAL CONCERNS

CIVIC AND SOCIAL CONCERNS

Segregation and Race Relations

It often is claimed that school vouchers lead to greater segregation. However, this claim is rarely checked against the available evidence. In fact, the evidence is all on the other side—voucher programs provide a greatly reduced level of racial segregation by breaking down neighborhood barriers.

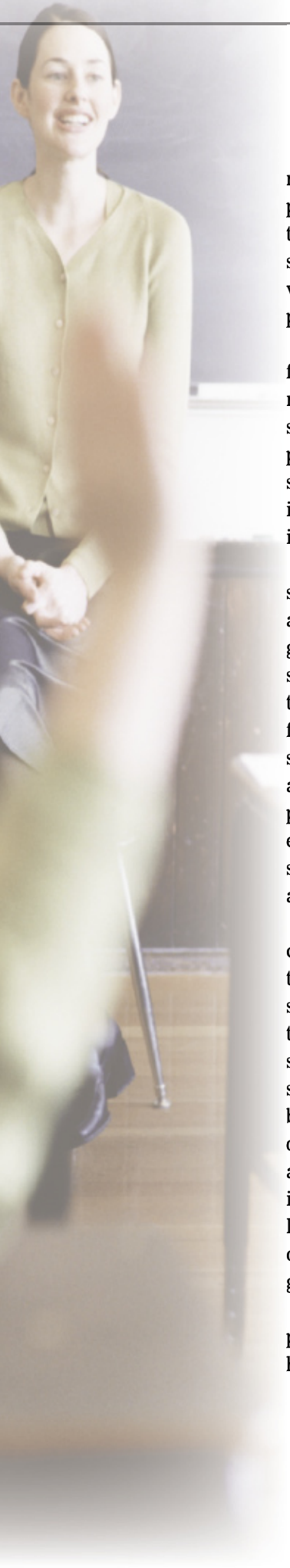
Contrary to many people's intuitions, there are good reasons to expect that school vouchers will reduce segregation. In the current monopoly system, school attendance is determined by where people live, so public schools inevitably reproduce the segregation that arises from segregated housing patterns. Widespread residential segregation virtually ensures that the public school system remains heavily segregated in spite of all efforts to the contrary. Private schools, by contrast, typically draw students from a larger geographic area than public schools. This means private schools have the potential to mitigate the effects of residential segregation in a way public schools cannot—but only if students of all income levels have access to private schools. Vouchers provide that access.

> "Contrary to many people's intuitions, there are good reasons to expect that school vouchers will reduce segregation."

As with the research on academic outcomes, there is a great deal of research on segregation that uses inappropriate empirical methods. Many studies compare the racial composition of schools to the racial composition of school districts or municipal units such as cities. This method is inappropriate because the boundaries of the school districts and municipalities themselves may be drawn in ways that create segregation. If we have a 98 percent white school situated in a 98 percent white school district, and in a nearby neighborhood we have a 98 percent black school situated in a 98 percent black school district, segregation is clearly occurring, but we will not see it if we do not adopt some external standard by which to measure.

Even cruder methods have been used. Some studies assume that higher levels of minority enrollment always equal lower segregation. Some studies determine whether a choice program will promote integration by measuring how many minority students exercise choice, without looking at the end result of the choices students make. If white students predominate among the participants exercising choice, but those white students use the program to transfer from overwhelmingly white schools to schools with larger minority populations, then the program will reduce segregation. Some studies have even gone so far as to set up public schools as the ideal standard of desegregation, such that any difference between public and private schools is considered by definition to be evidence of segregation in private schools.

There are also more subtle problems. Private schools are disproportionately made up of elementary grades, and elementary grades draw from a smaller geographic area than secondary grades. Thus, to ensure a fair comparison, it is



not enough to compare all public schools to all private schools; like grades must be compared to like grades. Also, kindergarten programs should not be compared, because access to and voluntary participation in public kindergarten programs is uneven.

A recent literature review by the author found seven studies that used valid empirical methods to compare segregation levels in public schools to segregation levels in private schools participating in voucher programs. All seven studies found that segregation levels were lower in private schools serving voucher students than in public schools.[10]

The evidence on segregation in private schools generally (as opposed to specifically at private schools participating in voucher programs) is mixed. It is not surprising that private schools generally are not necessarily better integrated than public schools, because minority families are less likely to be able to afford to send their children to private schools. In the absence of vouchers, which provide access to private schools for all students, income differences present a barrier to integration in private schools, just as residential segregation presents a barrier to integration at public schools.

The author has identified four studies that compare segregation levels in public schools to those of private schools generally. Two of these studies were local and two were national. The two local studies and one of the two national studies looked at classrooms rather than whole school buildings, and were thus able to get a better picture of the daily experience of students. On the other hand, the study that looked at whole schools was the most comprehensive, including schools nationwide (unlike the two local studies) and all grade levels (unlike the other national study, which looked only at first grade).

The two local studies found that students in private schools were somewhat more likely to have racially integrated classrooms than students in public schools. The national analysis of first graders came to the opposite conclusion, finding that first grade classrooms in public schools are somewhat more likely to be integrated. The national study that included all grades reached a third result, finding that segregation levels in public and private schools were virtually the same.[11]

In addition to measuring levels of segregation, at least one analysis has compared the state of race relations in public and private schools. Greene examined federal data and found that racial disruptions occur much less frequently in private schools.[12]

New Findings

The ELS data set does not allow us to compare segregation levels in public and private schools. However, it does allow us to compare the state of race relations within those schools.

During the 10th grade data collection, students were asked to name their best friends and record some basic information about them. Space was provided for students to name up to three best friends. Among the information they recorded was the race of each best friend. This allows us to examine how often students in public and private schools identified a best friend of a different race.

Not all students identified three best friends; some identified one or two. And not all students recorded the race of every best friend they identified. The best measurement to use is therefore the percentage of a student's best friends with their races recorded who were of a different race from the student. Where no race was recorded for a best friend, that friend was ignored (i.e. treated as though no friend had been reported). Students who did not report the race of at least one best friend were excluded from the analysis entirely.

ELS also asked students whether "students make friends with students of other racial and ethnic groups" at their schools, and whether

"fights often occur between different racial/ethnic groups" at their schools. Students could respond that they strongly agreed, agreed, disagreed or strongly disagreed. In these analyses, and in the analysis of best friends, data were weighted to ensure proper representation of the national population.

The results of these analyses are presented in Table 8. Students in public and private schools had virtually identical numbers of best friends of other races. Those who had no friends of other races made up 62 percent of the students in both types of school, those with one out of three friends of another race made up 18 percent in both types of school, those with one of two friends of another race made up 1 percent (this category is much smaller because not many students reported data on only two friends), those with two out of three friends of another race made up 8 percent of public schools and 7 percent of private schools, and those whose friends were all of other races made up 11 percent of public schools and 12 percent of private schools.

Public and private school students also characterized race relations at their schools in similar ways, though in one category private schools have better race relations. Those who agreed that students at their schools made friends of other races easily, including both those who just agreed and those who agreed strongly, made up 89 percent of public school students and 93 percent of private school students. Those who agreed that students of different races fought often at their schools made up 28 percent of public school students and 6 percent of private school students. And among those who disagreed, public school students were much more likely to just disagree than to disagree strongly (48 percent versus 24 percent), while private school students were much more likely to disagree strongly (32 percent versus 62 percent).

Tolerance and Democratic Values

Another common claim is that private schools don't do as good a job as public schools of teaching students to have good civic values, such as tolerance for the rights of others. This claim, too, is not often checked against the available evidence—which, as with the claims discussed above, runs in the other direction.

Just as many people find it counterintuitive that vouchers provide lower levels of segregation, many have difficulty believing that private schools could do a better job of teaching tolerance and democratic values. However, there are several reasons this might be the case. One is that private schools are simply better at teaching, as the evidence discussed above shows. The same qualities that make them better at teaching math might make them better at teaching tolerance. Another possibility is that private schools, which often grow organically out of cultural traditions, can provide students with cultural roots; a considerable body of research has found that individuals who are secure in their own cultural identities are more likely to tolerate the different cultural identities of others.[13] Private schools may also benefit from being legally permitted to have a point of view on controversial subjects, rather than having courts constantly looking over their shoulders to make sure they remain "neutral" (whatever the court decides that means) on all subjects of any controversy. This regime may breed a strong reluctance in public schools to allow controversial issues to be raised in the classroom at all—which would make it much harder for them to convey a tangible sense of

"Private schools may also benefit from being legally permitted to have a point of view on controversial subjects, rather than having courts constantly looking over their shoulders to make sure they remain "neutral" (whatever the court decides that means) on all subjects of any controversy."

what tolerance really is and why it is needed. As Charles Glenn has remarked, "We may have set ourselves an impossible task in seeking to provide a single model of education that is to be at once capable of nurturing character and civic virtue and yet inoffensive to the convictions of any parent."[14]

Wolf recently published a literature review that identified 59 findings from studies that compare civic values in public and private schools. Of these, 23 findings used random assignment (taking advantage of random lotteries to admit applicants to voucher programs) or other highly rigorous methods that removed most of the influence of student selection into private schools. The other 36 used more basic methods. Of the 23 especially rigorous findings, 11 found better civic values in private schools, 11 were neutral and only one found better civic values in public schools. The 36 more basic findings broke down into 20 finding better civic values in private schools, 13 neutral and two finding better values in public schools.[15]

The most commonly studied question on civic values was whether public or private school students were more likely to show tolerance for the rights of others. Such studies typically ask students to identify their least liked group. Students often pick groups such as the Ku Klux Klan, Nazis, Communists, pro-life or pro-choice groups, gay activists or the religious right. Students are then asked whether they would be willing to let members of this least-liked group engage in political activities such as marching in their town, running for elected office or having a book sympathetic to its views in the local library.

> "The most commonly studied question on civic values was whether public or private school students were more likely to show tolerance for the rights of others."

Wolf identified 13 highly rigorous findings on tolerance, of which eight were neutral and five found higher levels of tolerance in private schools. He also identified eight more basic analyses of tolerance, of which six found more tolerance in private schools, one was neutral and one found more tolerance in public schools. Some of the studies Wolf identified looked only or predominantly at Catholic schools. Since some have claimed that Catholic schools are better than some other types of private schools at teaching civic values, Wolf provided a separate summary of findings from studies that looked at all types of private schools.[16] He identified 45 such findings, of which 22 found stronger civic values in private schools, 20 were neutral and three found stronger values in public schools. Among findings on tolerance for the rights of others, nine found that private school students were more tolerant, seven were neutral and one found that public school students were more tolerant.

Access to Schools

Many people think that private schools are highly selective in the students they accept, so school choice will not provide all students with broad access to schools. Some school choice programs, including the prominent Milwaukee voucher program, have responded to this perception by requiring every participating private school to accept all voucher students who apply, distributing admission slots by random lottery if there are more applicants than the school can take. However, not all school choice programs require this, so the question of private schools' selectivity ought to be looked at more closely.

This is a question that only calls for descriptive data; causal questions are not at issue. Studies using advanced statistical methods are not necessary to address the question. Even so, we do not have as much information on private school admissions as we might like. The decentralized nature of the private school sector—the very decentralization that allows

private schools to offer students choices and an educational marketplace—makes it difficult to gather this sort of data comprehensively.

The evidence we do have, however, provides much reassurance about students' access to private schools. Contrary to stereotype, it appears that most private schools are not highly selective. Like public schools, they want to serve as many students as they can—that's why they're there.

Howell and Peterson concluded that private schools serving voucher students in New York, Washington D.C. and Dayton were not highly selective. They compared students who were offered a voucher and used it to attend a private school with students who were offered a voucher but nonetheless didn't attend a private school, finding that the two groups were very similar in their academic and demographic characteristics. What's more, only 1 percent of students were turned away from a school due to low test scores.[17] Similarly, evaluations of voucher programs in Charlotte and San Antonio, and of a nationwide scholarship program, found no demographic or academic differences between students who received a voucher or scholarship and used it to attend a private school and those who received one but did not use it.[18] And a national evaluation of Catholic schools, which educate almost half of all private school students, finds that the typical school accepts 88 percent of applicants.[19]

Just as private schools do not appear to be very selective in admissions, they also do not appear to be very selective as to which students they permit to continue attending. Howell and Peterson found that fewer than 1 percent of students in the voucher programs they evaluated changed schools due to an expulsion.[20] John Witte's evaluation of the Milwaukee voucher program found that voucher students were rarely expelled.[21] Evaluations of voucher and scholarship programs in other cities also found that expulsion was rare.[22] And the national evaluation of Catholic schools found that the average school dismisses fewer than two students per year—again, less than 1 percent of the total.[23]

Moreover, it is not the case, as opponents of school choice often assert, that every public school accepts every student. Nationwide, about 1 percent of public high school students are expelled each year and about 0.6 percent are segregated into specialized schools.[24] Additionally, about 1.2 percent of all disabled students receiving "public" education are contracted out to private schools because their local public schools can't handle their disabilities.[25]

There is nothing wrong with the public school system's policy that every school does not have to accept every student. There are good reasons why not every school should take every student. Advocates of school choice would just like to see their opponents stop applying a double standard, under which public schools get no blame for not accepting every student but private schools are painted as being somehow sinister for doing the same.

Safeguards against Abuse

Yet another concern about school choice is the accountability of private schools. Critics often describe private schools as "unregulated" and "unaccountable."

To begin with, these statements are not true as a simple matter of law. All 50 states have laws and regulations governing private schools, ensuring the health and safety of students and making sure that only bona fide schools are allowed to satisfy the requirements of mandatory attendance laws.

School choice also creates a powerful accountability mechanism for parents by allowing them to hold schools responsible for performance. When public schools fail to perform or commit abuses, parents have few viable options. But when parents are armed with school choice, they can hold schools accountable by withdrawing their children and finding better schools. This provides a powerful incentive for schools not to allow things to go wrong in the first place, lest they lose their students.

However, it is worth looking for empirical

evidence on the level of misconduct in public and private schools. This is another very difficult area to study empirically—both public and private schools work hard to prevent cases of abuse from being publicized. Reliable data are hard to obtain.

One study, conducted by the author and Matthew Carr, has addressed this difficulty by using the Nexis news database to measure the occurrence of misconduct in public and private schools. Not all cases of misconduct will make the newspapers, of course. But since journalists want to report on scandals in both public and private schools, and both kinds of schools want to prevent scandals from being publicized, the appearance of news stories about school misconduct provides a reasonable measure for purposes of comparison. The study found that in 11 states with school choice policies plus Washington D.C., misconduct cases occurred somewhat disproportionately in public schools rather than in private schools.[25]

Fiscal Effects

Finally, one of the most frequent complaints about school choice is that it drains money from public schools. This seems plausible on the surface—some amount of money from the state treasury (or from tax receipts, in the case of tax-credit scholarship programs) that would otherwise have gone to public schools is going to support students in private schools instead. However, the actual fiscal effect of school choice on public schools, and on state budgets, is a more complicated story.

In a typical school choice program, state funds associated with participating students are redirected, but local funds remain in the local school districts even after students have left. This is because local school funding is not generally tied to enrollment, and doesn't change when enrollment changes. Public schools therefore lose only part of the funding that goes with each school choice student. But they lose all of the student, and therefore all of the student's costs. In other words, school choice reduces public schools' costs more than it reduces their revenues—saving them money.

Critics of school choice often counter that schools have fixed costs that don't go down when students leave—keeping the lights on in the school building and so forth. This is certainly true, but the savings produced by school choice are typically much larger than any plausible estimate of fixed costs.

"This is because local school funding is not generally tied to enrollment, and doesn't change when enrollment changes."

School choice also saves money for state budgets. The amount of money a state spends per student in a school choice program is typically less than the state portion of public school spending. For example, if the state portion of public school spending is $6,000 per student and the state offers students a $5,000 voucher, every voucher student saves the state $1,000.

A national study by Susan Aud has examined the fiscal effects of every existing school choice program, going back to the founding of the Milwaukee voucher program in 1990. To ensure a generous allowance for fixed costs, the study counts only savings in the variable category of "instructional" expenditures, rather than in the total school budget. This is an overly conservative assumption, since many categories of spending other than instruction are known to be predominantly variable costs rather than fixed costs.

The study found that from 1990 to 2006, school choice saved $422 million for local school districts. It also saved $22 million for state budgets.[27] This finding is confirmed by other fiscal analyses of proposed school choice programs in numerous states.[28]

CONCLUSION

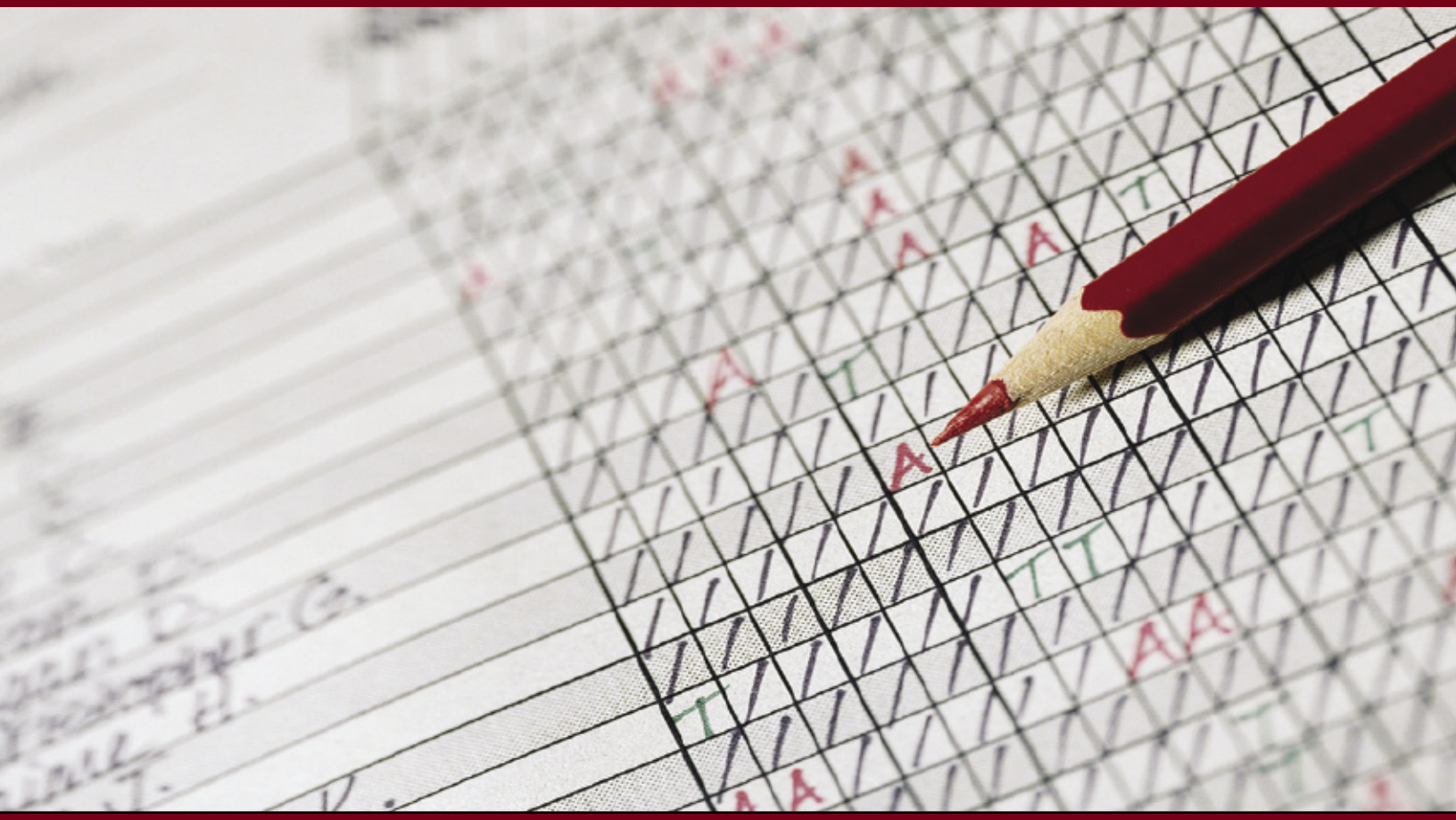
CONCLUSION

The evidence on private schools and school choice does not answer all questions. It is subject to some methodological limitations. On some issues, we don't have as much evidence as we would like. And the benefits of school choice identified by these studies are sometimes moderate in size—not surprising, given that existing school choice programs are restricted to small numbers of students and limited to disadvantaged populations, hindering their ability to create a true marketplace that would produce dramatic innovation.

However, these caveats should not be permitted to obscure the strength and depth of the evidence supporting school choice. A large body of top-quality studies consistently shows that school choice produces higher academic achievement for the students who have the opportunity to use it. On this issue, the evidence supporting school choice is as strong as the evidence on any social policy question whatsoever.

The available evidence also supports private schools and school choice on the issues of dropout rates, improving academic outcomes at public schools, segregation and race relations, tolerance and democratic values, special education services, access to schools, safeguards against abuse and fiscal effects. On these issues the scientific quality of the evidence ranges from top-notch (tolerance and democratic values) to very good (positive impacts on public schools) to good (segregation and race relations) to fair but still acceptable (dropout rates). But in all cases the evidence we have supports school choice.

The research consensus on these issues ought to be acknowledged and allowed to affect the public debate over school choice. For all the faith that the American public has in science—faith for which we scientists should be grateful—the public and its opinion leaders still have a long way to go in learning what the science really says about education. But the disconnect between the claims made about school choice and what the empirical evidence shows about it cannot last forever. The mythology that keeps the monopolists going is a house of cards that will eventually fall, and the bigger the monopolists build it, the more disastrous their collapse will be.



TABLES

Table 1

Monopoly vs. Markets: Overview

MONOPOLY (Public Schools without Choice)		MARKETS (Public Schools + Choice)
✓	PUBLIC SCHOOLS SERVE STUDENTS	✓
	PRIVATE SCHOOLS SERVE STUDENTS	✓
✓	ALL STUDENTS HAVE ACCESS TO SCHOOLS	✓
	EVERY SCHOOL REQUIRED TO TAKE EVERY STUDENT	
	HIGHER ACADEMIC ACHIEVEMENT	✓
	HIGHER GRADUATION RATES	✓
	IMPROVED PUBLIC SCHOOLS	✓
	IMPROVED SERVICES FOR DISABLED STUDENTS	✓
	REDUCED SEGREGATION	✓
	MORE SOCIALLY TOLERANT STUDENTS	✓
	STRONGER CIVIC PARTICIPATION	✓
✓	REGULATED FOR HEALTH & SAFETY	✓
✓	PROTECT STUDENTS AGAINST STAFF MISCONDUCT	✓
	PARENTS CAN HOLD SCHOOLS ACCOUNTABLE	✓
	INCREASES PUBLIC SCHOOL BUDGETS	✓
	SAVES TAXPAYER MONEY	✓

Table 2

Top-Quality Research Shows that Vouchers Improve Academic Outcomes

Studies using random assignment, the gold standard of social science, consistently find that students using school vouchers have higher academic achievement than students who applied for vouchers but lost a random lottery and did not receive them.

Random Assignment Study	Location	Result
Jay Greene, Paul Peterson and Jiangtao Du, "School Choice in Milwaukee: A Randomized Experiment," in *Learning from School Choice*, eds. Paul Peterson and Bryan Hassel, Brookings Institution, 1998.	Milwaukee	After four years, voucher students had reading scores 6 NCE points higher than the control group, and math scores 11 points higher. NCE points are similar to percentile points.
Cecilia Rouse, "Private School Vouchers and Student Achievement," *Quarterly Journal of Economics*, May 1998.	Milwaukee	After four years, voucher students had math scores 8 NCE points higher than the control group. NCE points are similar to percentile points.
Jay Greene, "Vouchers in Charlotte," *Education Next*, Summer 2001.	Charlotte	After one year, voucher students had combined reading and math scores 6 percentile points higher than the control group.
William Howell and Paul Peterson, *The Education Gap*, Brookings Institution, 2002.	New York	After three years, black voucher students had combined reading and math scores 9 percentile points higher than the control group.
William Howell and Paul Peterson, *The Education Gap*, Brookings Institution, 2002.	Washington D.C.	After two years, black voucher students had combined reading and math scores 9 percentile points higher than the control group.
William Howell and Paul Peterson, *The Education Gap*, Brookings Institution, 2002.	Dayton	After two years, black voucher students had combined reading and math scores 6.5 percentile points higher than the control group.
John Barnard, Constantine Frangakis, Jennifer Hill and Donald Rubin, "Principal Stratification Approach to Broken Randomized Experiments: A Case Study of School Choice Vouchers in New York City," *Journal of the American Statistical Association*, June 2003.	New York	After one year, voucher students had math scores 5 percentile points higher than the control group.
Alan Krueger and Pei Zhu, "Another Look at the New York City School Voucher Experiment," *American Behavioral Scientist*, January 2004.	New York	The voucher students had higher scores, but the results did not achieve statistical significance. Subsequent analysis has demonstrated that this occurred because the study used inappropriate research methods that violate the norms of the scientific community; if legitimate methods are used, the positive results for vouchers become significant.
Patrick Wolf, Babette Gutmann, Michael Puma, Lou Rizzo and Nada Eissa, "Evaluation of the D.C. Opportunity Scholarship Program: Impacts after One Year," U.S. Department of Education, June 2007.	Washington D.C.	After one year, the voucher students had higher scores, but the results did not achieve statistical significance. For math scores, the results were 93 percent certain, just below the conventional 95 percent threshold (results above 90 percent are sometimes described as "moderately" significant). This study is ongoing and the positive results for vouchers may achieve statistical significance in future years, as has always happened in previous studies using legitimate methods.
Joshua Cowen, "School Choice as a Latent Variable: Estimating the 'Complier Average Causal Effect' of Vouchers in Charlotte," *Policy Studies Journal*, November 2007.	Charlotte	After one year, voucher students had reading scores 8 percentile points higher than the control group, and math scores 7 points higher.

Table 3

ELS Data: Private Schools Provide Bigger Academic Gains

Variable	Effect on Growth in Math Scores from 10th Grade to 12th Grade	Significance
Student attends a private school	+1.1 points	0.000***
Student's mother and father live at home	+0.3 points	0.001***
STUDENT'S RACE/ETHNICITY		
American Indian/Native Alaskan	(-0.7 points)	0.125
Black	-0.5 points	0.001***
Hispanic	-0.3 points	0.065†
Multiracial	+0.5 points	0.026*
Asian/Native Hawaiian/Pacific Islander	+1.0 points	0.000***
STUDENT'S FAMILY INCOME		
None	(-0.8 points)	0.264
$1,000 or less	-0.8 points	0.067†
$1,001 - $5,000	-1.5 points	0.000***
$5,001 - $10,000	-0.9 points	0.007**
$10,001 - $15,000	-0.6 points	0.016*
$15,001 - $20,000	-0.5 points	0.022*
$20,001 - $25,000	-0.5 points	0.010**
$25,001 - $35,000	-0.6 points	0.000***
$35,001 - $50,000	-0.3 points	0.025*
$75,001 - $100,000	(-0.1 points)	0.447
$100,001 - $200,000	+0.7 points	0.000***
$200,001 or over	+1.1 points	0.000***
HIGHEST EDUCATION LEVEL OF STUDENT'S PARENTS		
Did not complete high school	-0.5 points	0.036*
High school diploma or GED	-0.7 points	0.000***
Attended 2-year postgraduate institution	-0.4 points	0.014*
Graduated from 2-year postgraduate institution	-0.6 points	0.000***
Attended college	-0.3 points	0.035*
Received Master's degree	+0.5 points	0.001***
Received Ph.D. or professional degree	+0.4 points	0.040*

*Note: Results are from an exam with a score range of 50 points (to ensure comparability of scores across student subgroups, results are expressed in standardized "T" scores, where the average student's score is 50 and the standard deviation is 10 points, so that virtually all students' scores will fall within the range between 25 and 75, or within 2.5 standard deviations of the mean). The "Significance" column provides the p-value for each result; † = $p \leq 0.1$; * = $p \leq 0.05$; ** = $p \leq 0.01$; *** = $p \leq 0.001$. To remove the influence of unobserved variables as much as possible, 12th grade scores were used as the dependent variable and 10th grade scores were included as an independent variable, in addition to the variables listed above. The coefficient for 10th grade scores was +0.9 points and the p-value was 0.000. Only students who remained at the same school between 10th grade and 12th grade were included in the analysis. All the variables listed above are dummy variables (0 or 1). Where multiple demographic groups are compared (for race/ethnicity, income and parental education), no variable is included for the group containing the most students; results for other groups are therefore expressed relative to the results for the largest group. For example, more students fell into the "parents graduated from college" category than any other parental education category, so that category was excluded, and results for each other parental education category are expressed relative to that category; students whose parents attended college without graduating had a result of -0.3 points, meaning their math scores grew more slowly than those of students whose parents graduated from college by a difference of 0.3 points. Student data were weighted to ensure proper representation of the national population.*

Table 4

ELS Data: Private School Students Are Less Likely to Drop Out

Variable	Effect on Chance that a Student Will Drop Out	Significance
Student attends a private school	-3 percentage points	0.001***
Student's mother and father live at home	-5 percentage points	0.000***
Student's race/ethnicity		
American Indian/Native Alaskan	(0 percentage points)	0.979
Black	+4 percentage points	0.000***
Hispanic	+3 percentage points	0.001***
Multiracial	+3 percentage points	0.013*
Asian/Native Hawaiian/Pacific Islander	-4 percentage points	0.003**
Student's family income		
None	+7 percentage points	0.069†
$1,000 or less	+4 percentage points	0.077†
$1,001 - $5,000	+6 percentage points	0.002**
$5,001 - $10,000	+6 percentage points	0.000***
$10,001 - $15,000	(+2 percentage points)	0.172
$15,001 - $20,000	+5 percentage points	0.000***
$20,001 - $25,000	+5 percentage points	0.000***
$25,001 - $35,000	(+1 percentage point)	0.420
$35,001 - $50,000	+3 percentage points	0.000***
$75,001 - $100,000	(0 percentage points)	0.957
$100,001 - $200,000	(0 percentage points)	0.858
$200,001 or over	(-1 percentage points)	0.621
Highest education level of student's parents		
Did not complete high school	+13 percentage points	0.000***
High school diploma or GED	+5 percentage points	0.000***
Attended 2-year postgraduate institution	+3 percentage points	0.001***
Graduated from 2-year postgraduate institution	+2 percentage points	0.085†
Attended college	(0 percentage points)	0.702
Received Master's degree	(0 percentage points)	0.837
Received Ph.D. or professional degree	(-1 percentage point)	0.254

*Note: The "Significance" column provides the p-value; † = $p \leq 0.1$; * = $p \leq 0.05$; ** = $p \leq 0.01$; *** = $p \leq 0.001$. All variables in the analysis were dummy variables (0 or 1); the dependent variable represents whether a student dropped out. Students who were being home schooled in spring 2004 or who were attending a different school than they had been attending in spring 2002 were excluded. Where multiple demographic groups are compared (for race/ethnicity, income and parental education), no variable is included for the group containing the most students; results for other groups are therefore expressed relative to the results for the largest group. For example, more students fell into the "parents graduated from college" category than any other parental education category, so that category was excluded, and results for each other parental education category are expressed relative to that category; students whose parents never graduated high school had a result of +13 percentage points, meaning they were 13 percentage points more likely than students whose parents graduated from college to drop out of school. Student data were weighted to ensure proper representation of the national population.*

Table 5

The Evidence Shows that Vouchers Improve Public Schools

No empirical study anywhere in the U.S. has ever found that public schools had worse outcomes when exposed to school choice, and a large body of research finds that the healthy competition from school choice actually makes public schools better.

Study	Location	Result
Caroline Hoxby, "Rising Tide," *Education Next*, Winter 2001.	Milwaukee	Milwaukee public schools subject to voucher competition made greater academic gains than similar schools not facing competition. Schools where a high percentage of students were eligible for vouchers made gains greater than those of the control group by 3 percentile points per year in math, 5 points per year in science, 3 points per year in language, and 3 points per year in social studies.
Christopher Hammons, "The Effects of Town Tuitioning in Maine and Vermont," Friedman Foundation, January 2002.	Maine & Vermont	Public schools close to towns that have the school voucher program known as "town tuitioning" had better academic outcomes than other public schools. If a town decided to begin tuitioning its students, a public school one mile away could expect to see its test scores increase by 3 percentile points on average, that would be a 12 percent gain over existing scores.
Jay Greene and Greg Forster, "Rising to the Challenge: The Effect of School Choice on Public Schools in Milwaukee and San Antonio," Manhattan Institute, October 2002.	Milwaukee	Gains in 4th grade test scores were much higher in schools where more students were eligible for vouchers, such that a school with 100 percent student eligibility could be expected to improve 15 points more in four years than a similar school with only 50 percent student eligibility.
Jay Greene and Greg Forster, "Rising to the Challenge: The Effect of School Choice on Public Schools in Milwaukee and San Antonio," Manhattan Institute, October 2002.	San Antonio	The Edgewood public school district, whose students were offered vouchers, outperformed 85 percent of all Texas school districts in annual academic gains relative to local student demographics and resources.
Jay Greene and Marcus Winters, "Competition Passes the Test," *Education Next*, Summer 2004.	Florida	Failing public schools facing the threat of vouchers produced significantly greater academic gains than other Florida public schools. Schools whose students were already being offered vouchers made even greater gains, outscoring other Florida schools by 15 points.
Rajashri Chakrabarti, "Closing the Gap," *Education Next*, Summer 2004.	Florida	Florida's public school accountability program did not spur low-performing schools to improve until it introduced the threat of competition from vouchers; after the voucher threat was introduced, low-performing public schools began making considerable academic gains relative to other Florida public schools.
Jay Greene and Marcus Winters, "An Evaluation of the Effects of D.C.'s Voucher Program on Public School Achievement and Racial Integration after One Year," Manhattan Institute, January 2006.	Washington D.C.	The Washington D.C. voucher program, in which public schools are insulated from competitive incentives by large federal subsidies, has no impact on academic achievement in public schools.
David Figlio and Cecilia Rouse, "Do Accountability and Voucher Trends Improve Low-Performing Schools?" *Journal of Public Economics*, January 2006.	Florida	Florida's public school accountability program caused low-performing public schools to improve. Unlike previous studies (see above), it found evidence suggesting the improvements may be a combination of the voucher threat and the stigma of being labeled "low-performing."
Martin West and Paul Peterson, "The Efficacy of Choice Threats within School Accountability Systems: Results from Legislatively Induced Experiments," *Economic Journal*, March 2006.	Florida	Failing public schools in Florida facing the threat of vouchers produced significantly greater year-to-year test score gains than other Florida public schools.

Table 6

ACADEMIC OUTCOMES

MONOPOLY (Public Schools without Choice)	OUTCOMES	MARKETS (Public Schools + Choice)
	HIGHER ACADEMIC ACHIEVEMENT A large body of studies using random assignment methods, the scientific gold standard, consistently shows that students who use vouchers to attend private schools learn more than similar students who apply for vouchers but don't get them (see p. 16-20).	✓
	HIGHER GRADUATION RATES Public schools only graduate about 70 percent of students who start high school—and only half of minority students. Private schools have significantly better graduation rates, and the evidence suggests that this cannot be attributed only to student demographics (see p. 20-22).	✓
	IMPROVED PUBLIC SCHOOLS No empirical study anywhere in the U.S. has ever found that public schools got worse when exposed to school choice, and a large body of studies find that they get better, thanks to the healthy competitive incentives and parental accountability provided by choice (see page 22-23).	✓
	IMPROVED SERVICES FOR DISABLED STUDENTS School choice gives disabled students who aren't being appropriately served the opportunity to find schools that will serve them better. The evidence indicates that private schools in school choice programs provide better services to disabled students than public schools (see p. 23).	✓

Table 7

SEGREGATION AND CIVIC VALUES

MONOPOLY (Public Schools without Choice)	OUTCOMES	MARKETS (Public Schools + Choice)
	REDUCED SEGREGATION School choice breaks down the neighborhood barriers that keep public schools persistently segregated. Empirical studies consistently show that private schools in school choice programs have lower segregation levels than public schools (p. 26-28).	✓
	MORE SOCIALLY TOLERANT STUDENTS Private schools teach tolerance more effectively. A large body of empirical research overwhelmingly finds that students in private schools and in school choice programs are more likely to respect the rights of groups they dislike than public school students (see p. 28-29).	✓
	STRONGER CIVIC PARTICIPATION Students in private schools and in school choice programs are more likely to vote, volunteer, and engage in other forms of civic participation than public school students (see p. 28-29).	✓

Table 8

ELS Data: Race Relations Are Very Similar in Public and Private Schools

Variable	Public Schools	Private Schools
Percentage of each student's best friends who are of a different race (out of up to three best friends)		
100%	11%	12%
67%	8%	7%
50%	1%	1%
33%	18%	18%
0%	62%	62%
Percentage of students agreeing that at their schools "students make friends with students of other racial and ethnic groups"		
Strongly agree	30%	39%
Agree	59%	54%
Disagree	9%	5%
Strongly disagree	2%	1%
Percentage of students agreeing that at their schools "fights often occur between different racial/ethnic groups"		
Strongly agree	7%	1%
Agree	21%	5%
Disagree	48%	32%
Strongly disagree	24%	62%

Note: Students were invited to record information on their best friends, up to a maximum of three best friends. Students and their best friends were classified as American Indian/Native Alaskan, Asian, black, Hispanic, multiracial, Pacific Islander/Native Hawaiian or white. This analysis divides the number of a student's best friends who were of a different race than the student by the total number of best friends the student reported (usually three). In cases where students did not provide the race/ethnicity of one or more of the best friends they reported, those friends were excluded. Students who did not report the race of any of their best friends were excluded from the analysis of best friends, but were included in the other two analyses. Student data were weighted to ensure proper representation of the national population.

Table 9

ACCESS ISSUES

MONOPOLY (Public Schools without Choice)	ACCESS ISSUES	MARKETS (Public Schools + Choice)
✓	**PUBLIC SCHOOLS SERVE STUDENTS** With school choice, students don't lose the option to go to public schools. And school choice drives public schools to produce better academic outcomes (see p. 22-23).	✓
	PRIVATE SCHOOLS SERVE STUDENTS School choice provides families with new options. In addition to public schools, parents can take advantage of the private market to find the best school for their child's unique needs.	✓
✓	**ALL STUDENTS HAVE ACCESS TO SCHOOLS** Contrary to stereotype, most private schools are not highly selective. They want to educate as many students as they can—that's what they're there for. That's why students in school choice programs have not had difficulty finding schools that want to serve them (see p. 29-30).	✓
	EVERY SCHOOL REQUIRED TO TAKE EVERY STUDENT In some school choice programs, every school is not required to take every student. But public schools aren't required to take every student, either (see p. 29-30).	

Table 10

SAFEGUARDS

MONOPOLY (Public Schools without Choice)	SAFEGUARDS	MARKETS (Public Schools + Choice)
✓	**REGULATED FOR HEALTH & SAFETY** Private schools in every state are subject to laws and regulations that ensure a safe and healthy environment for all students.	✓
✓	**PROTECT STUDENTS AGAINST STAFF MISCONDUCT** In addition to what state laws and regulations require, private schools adopt further safeguards to protect students. The evidence indicates that staff misconduct does not occur any more frequently in private schools than it does in public schools (see p. 30-31).	✓
	PARENTS CAN HOLD SCHOOLS ACCOUNTABLE If students in public schools aren't learning, or are unsafe or abused, parents have few effective options to protect their children. With school choice, parents can hold schools accountable by withdrawing their children from unsatisfactory schools.	✓

Table 11

FISCAL EFFECT

MONOPOLY (Public Schools without Choice)	FISCAL EFFECT	MARKETS (Public Schools + Choice)
	INCREASES PUBLIC SCHOOL BUDGETS When a student enters a school choice program, local school funding is typically left behind, increasing the per-student budgets of public schools. Nationwide, school choice programs have saved a net total of $422 million for local school districts since 1990 (see p. 31).	✓
	SAVES TAXPAYER MONEY Thanks to the efficiency produced by market forces, private schools do a better job than public schools for about half the cost. Nationwide, school choice programs have saved a net total of $22 million in state budgets since 1990 (see p. 31).	✓

ENDNOTES

[1] See for example Caroline Hoxby, "School Choice and School Competition: Evidence from the United States," Swedish Economic Policy Review, 2003.

[2] Paul Peterson and William Howell, "Voucher Research Controversy," Education Next, Spring 2004.

[3] Henry Braun, Frank Jenkins and Wendy Grigg, "Comparing Private Schools and Public Schools Using Hierarchical Linear Modeling," U.S. Department of Education, July 2006.

[4] For a discussion of these issues, see Jay Greene and Marcus Winters, "Public High School Graduation and College-Readiness Rates: 1991-2002," Manhattan Institute, February 2005.

[5] Jay Greene, "Graduation Rates for Choice and Public School Students in Milwaukee," School Choice Wisconsin, September 2004.

[6] Derek Neal finds that students who are more likely to be attending Catholic schools, as measured by the local percentage of Catholic schools and Catholic populations, are less likely to drop out; see Derek Neal, "The Effects of Catholic Secondary Schooling on Educational Achievement," *Journal of Labor Economics*, January 1997. Thomas Dee finds that public schools have lower dropout rates in districts with higher concentrations of private schools; see Thomas Dee, " Competition and the Quality of Private Schools," *Economics of Education Review*, October 1998.

[7] Jay Greene and Marcus Winters, "Leaving Boys Behind: Public High School Graduation Rates," Manhattan Institute, April 2006; see also the annual "Quality Counts" issue of Education Week.

[8] Some students dropped out and then returned to school before the 2004 follow-up interview, which is why students attending different schools were present in the original data.

[9] Greg Forster, "Freedom from Racial Barriers: The Empirical Evidence on Vouchers and Segregation," Friedman Foundation, September 2006.

[10] For the two local studies and the national study that included all grades, see Forster, "Freedom." For the other study, see Gary Ritter and Sherri Lauver, "Racial Integration for Young Students in Public and Private Schools: New Evidence from the ECLS-K," American Educational Research Association annual meeting, April 2003.

[11] Jay Greene, "Civic Values in Public and Private Schools," in Learning from School Choice, eds. Paul Peterson and Bryan Hassel, Brookings Institution, 1998, p. 99.

[12] John Sullivan, James Pierson and George Marcus, Political Tolerance and American Democracy, University of Chicago Press, 1982.

[13] Charles Glenn, The Myth of the Common School, University of Massachusetts Press, 1988, p. 285.

[14] Patrick Wolf, "Civics Exam," Education Next, Summer 2007.

[15] In addition to studies that explicitly focused on Catholic schools, Wolf also excluded studies based on data from a survey of Hispanics, in which Catholic schools would have overwhelmingly predominated.

[16] Jay Greene and Greg Forster, "Vouchers for Special Education Students: An Evaluation of Florida's McKay Scholarship Program," Manhattan Institute, June 2003.

[17] William Howell and Paul Peterson, The Education Gap, Brookings Institution, 2002, chapter 3.

[18] Howell and Peterson, Education Gap, chapter 3; and Jay Greene, "Vouchers in Charlotte," Education Matters, Summer 2001.

[19] Anthony Bryk, Valerie Lee and Peter Holland, Catholic Schools and the Common Good, Harvard University Press, 1993, p. 128.

[20] Howell and Peterson, Education Gap, p. 83.

[21] Howell and Peterson, Education Gap, p. 83.

[22] Howell and Peterson, Education Gap, chapter 3.

[23] Bryk, Lee and Holland, Catholic Schools, p. 129.

[24] Jill DeVoe, Katharin Peter, Sally Ruddy, Amanda Miller, Mike Planty, Thomas Snyder and Mike Rand, "Indicators of School Crime and Safety: 2003," U.S. Department of Education, October 2003.

[25] Digest of Education Statistics 2006, U.S. Department of Education, 2007, Table 49.

[26] Greg Forster and Matthew Carr, "Disruptive Behavior: An Empirical Evaluation of School Misconduct and Market Accountability," Friedman Foundation, June 2007.

[27] Susan Aud, "Education by the Numbers: The Fiscal Effect of School Choice Programs, 1990-2006," Friedman Foundation, April 2007.

[28] For a complete list of state-level studies of the fiscal impact of school choice, see www.friedmanfoundation.org/friedman/research/ShowResearch.do.

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