5-24-2017

The Wisconsin Role in the School Choice Movement

John F. Witte
University of Wisconsin-Madison, witte@lafollette.wisc.edu

Patrick J. Wolf
University of Arkansas

UNIVERSITY OF ARKANSAS | College of Education & Health Professions
Education Reform

WORKING PAPER SERIES

The Wisconsin Role in the School Choice Movement

John F. Witte
Professor Emeritus
University of Wisconsin-Madison
witte@lafollette.wisc.edu

Patrick J. Wolf
Distinguished Professor
University of Arkansas
pwolf@uark.edu

May 24, 2017

EDRE Working Paper 2017-12

Abstract

Wisconsin Governor Tommy Thompson led a Midwestern policy revolution in the late 1980s and early 1990s centered on providing parents with more school choices. Since those early years, school choice in the forms of private school vouchers, public charter schools, and public school open enrollment have spread across almost all of the country. Longitudinal evaluations of the effects of the Milwaukee Parental Choice Program (MPCP), the voucher program initiated by Governor Thompson, indicate that student achievement outcomes were not consistently affected by vouchers but other vital student outcomes, including educational attainment, civic values, criminal proclivities as well as parent and student satisfaction were positively influenced by participation in private school choice. A generally similar pattern of results applies to public charter schools and open enrollment. Parents across the U.S. tend to have more educational options in no small part due to the pioneering initiatives of Tommy Thompson. Although the evidence on school choice, and the desirability of the policies themselves, remains fiercely contested 30 years later, our assessment is that, on balance, disadvantaged families in Wisconsin and elsewhere are no worse off and most likely somewhat better off if they have availed themselves of the school choice opportunities that Governor Thompson helped to make possible.

Keywords: school vouchers, school choice, charter schools, open enrollment, Milwaukee Parental Choice Program, policy innovation, Wisconsin

Introduction[1]

The school choice movement in the United States is three decades old. And, at least initially, it was a Midwestern phenomenon. Most of the differing forms of educational choice began in either Minnesota, with at-risk statewide alternative schools followed almost immediately in 1987 by statewide open enrollment and then public charter schools, or in Wisconsin, with the first private-school voucher program in 1990 and charter schools that grew out of a longstanding magnet school program in Milwaukee. Both states created post-secondary options for high school students to obtain college credits. Ohio followed in the wake of Wisconsin and Minnesota in establishing school choice programs involving charters and vouchers.

It is not clear which of these options is most important in that all have grown considerably and spread throughout the Unites States. Although residency is still the primary method of assigning students to public schools, that method, almost universal for public school attendance thirty years ago, is no longer the only option in any state and is declining in its primacy every year (Egalite & Wolf, 2016). Much of this change is due to the foresight of a few early pioneers, most notably Wisconsin Governor Tommy Thompson. This paper tracks the school choice movement that Governor Thompson helped create, in its various forms, with an emphasis on school vouchers, which the authors have been studying for much of their professional lives.

We first discuss the beginning of the Milwaukee Parental Choice (voucher) Program and then describe its expansion within Wisconsin and the effects of the program on students during two study periods. We then describe how, from the origin of school vouchers in Milwaukee,

[1] An earlier version of this paper was presented at the policy conference "Tommy@30," Wisconsin State Capitol, Madison, WI, May 23, 2017. We are grateful to Corey DeAngelis for expert research assistance that substantially enhanced the quality of this paper. Any remaining errors remain the sole responsibility of the authors.

vouchers have expanded to other states and the effects they have had on students and families. We then describe the development and subsequent expansion of public school choice options focusing primarily on charter schools and open enrollment. Finally, we review in relatively broad strokes what is known concerning the effects of these movements on student outcomes, and the future of education in America.

Wisconsin and the First Educational Voucher Program in America

The first private school voucher program in the United States began in 1990 in Milwaukee, Wisconsin. Historically, the Milwaukee Public School (MPS) District followed a path in the second half of the twentieth century similar to many other large-city districts in America. In 1967 the district was over 70 percent white and less than one-quarter black, with Hispanics and people of other ethnicities totaling approximately 3 percent; 30 years later the numbers were 18% white; 62% black; and 20% other races, with Hispanics comprising 13% (Witte, 2000, p. 37).

As the demographics changed so did the racial tensions between a mostly white school administration and black activists in the district. Two of the most vocal and powerful activists were Howard Fuller and Representative Annette "Polly" Williams (D-Milwaukee). They had joined together in the 1980s to save North Division High School, which was almost all black, from being closed by the administration. Fuller was also behind a state-sponsored commission to study the Milwaukee Metropolitan schools in 1984.[2] That commission released devastating statistics on gaps in test scores between students of different races and between MPS and the suburban districts. By the late 1980's Polly Williams, with support from Fuller, was proposing the creation of a new, mostly all black school system, made up from a number of MPS schools.

[2] John Witte was the Executive (staff) Director of that commission. His staff was responsible for research and report writing.

In part to counteract that proposal, Republican Governor Tommy Thompson proposed a 1987 bill for a school voucher program in Milwaukee that he attempted to add to the 1988-89 budget bill. Williams did not support it and it failed. However, when it became clear that a new district was not in the cards, in the next budget cycle, Williams proposed a new voucher program that Thompson supported and was able to get through the legislature in 1990 (Witte, 2000, pp.43-44).

The Milwaukee Parental Choice (voucher) Program (MPCP) began in the fall of 1990 with seven private schools and 341 students. It was a highly constrained and targeted program, with eligible students limited to Milwaukee residents with incomes at 175% of the poverty line or less. Participants had to have been in an MPS school in the prior year or entering kindergarten. The program was capped at 1 percent of the MPS enrollment (approximately 1000 students). And most importantly, the private schools had to be secular and could not enroll more than 49% of their students in the voucher program. The maximum voucher amount was $2,446. Thus the program was small, constrained in many ways, and only open to a minute portion of Milwaukee private schools, of which over 80% were religious (Witte, 2000, pp. 44-46).

As might have been easily predicted in 1990, over the next 25 years, the voucher program and movement in Wisconsin grew substantially in terms of programs, policy changes, costs and the numbers of schools and students participating (Figure 1). Although some of the constraints were altered immediately (phased in as part of the original legislation), a major legislative change to allow entry of religious schools occurred in 1996, approved by the Wisconsin Supreme Court in 1998. That opened the floodgates, in that it was tied to major increases in total students and schools. Within three years, the MPCP went from a small pilot program of less than 20 private schools serving less than 1,000 students to a full-sized private school choice program of over 80 private schools serving more than 6,000 students.

(Figure 1 goes about here.)

Subsequently, three new programs, which still remain small relative to MPCP, were enacted. The first was a program for Racine, Wisconsin (RPCP) that is very similar to the current design of the MPCP. Then, a state-wide program (WPCP) was enacted that remains targeted only to very low-income students. Last year a voucher program for students with disabilities was launched, for which enrollment data are not yet available. The enrollment and other statistics for the three major programs are depicted for the 2016-17 school year in Table 1.

(Table 1 goes about here.)

As is apparent, voucher programs have come a long way in Wisconsin since the fledgling program enacted in 1990. In all dimensions there has been expansion. The number of distinct programs has increased from 1 to 4. The number of participating students has grown 1000 percent (341 to 33,781); the number of schools by 3000 percent (7 to 209); the voucher value is over 3 times the original amount; and family income limits in the two urban programs have grown from 175 percent of poverty to 300 percent, to now include families of four with incomes less than $73,401. Almost $250 million in education spending is channeled through the various voucher programs in Wisconsin. Is it money well spent? We address that question next.

Student and Parental Effects of the Milwaukee Parental Choice Program

Studies of school choice have included a wide range of issues that include effects on students and families, on the schools in which choice students enroll, on public schools in the same area, and on the communities in which choice options exist. Because we want to take a close look at Milwaukee and also include other findings across the country, in this paper we will

restrict our analysis to student effects, primarily effects on standardized tests, attainment (graduating from high school and attending college), and attitudinal and behavioral outcomes. In-depth studies of the MPCP have been conducted twice. What we will call *Study I* was conducted from 1990 to 1995; *Study II* began in 2006 and a portion of it is still ongoing. Of the two, *Study II* is the superior study in that much more was known about how to study large-scale educational interventions and also because the researchers had vastly more resources at their disposal. In addition, the second study included tracking students for attainment purposes, which is the portion of that study that is still ongoing. And as it turns out, the effects on attainment were very significant. John Witte was the lead researcher for *Study I*, and Patrick Wolf and Witte were co-principal investigators for *Study II.*

Standardized Achievement Tests. In each study it was necessary to select a "control" group to which voucher students could be compared. Random assignment through school or program lotteries normally is the best method in such evaluations (e.g. Anderson & Wolf, 2017). In *Study I*, the randomly assigned sample was highly questionable for various reasons including a low number of students who lost a lottery, high and differential attrition across the two groups of lottery winners and losers over time, and a lack of clear documentation regarding the lottery procedures (Witte, 2000, p. 136-137). Because of these limitations, in *Study I* we included all students who received vouchers as the treatment group but picked the comparison groups from Milwaukee Public School (MPS) students who were eligible for free or reduced-price lunch (which was 185% of the poverty line), and then we picked a second group as a random sample of all MPS students. The low-income group gave us somewhat of a better match, which we later verified through surveys of parents in each group.[3]

[3] There were some interesting results of these, and other comparisons between the samples of families in *Study I*. Actually the voucher families were considerably poorer than the public school sample and they were more likely to

In Milwaukee *Study II*, from 2006 to 2011, we also were unable to use a randomized sample of students. Our charge was to evaluate the effect of the MPCP for all of the students in grades 3-9 who were participating. Only a small fraction of those students were admitted to the program through grade-level lotteries at specific schools (Witte *et al*, 2008). To evaluate a representative sample of students in the program we had no choice but to use quasi-experimental methods. Specifically, we used a sampling procedure for the public school control group that advances the comparison group validity considerably over prior research. We first selected a random sample of students in private schools with vouchers based on their numbers in each grade. That made the random sample a representative sample of students in the program. For the ninth-grade we included all students because we wanted to also study high school graduation rates. We then focused on the base 2006 standardized test score in reading and math of the selected voucher students. For each student we located the set of public school students in the same grade that simultaneously lived in the same *neighborhood* and had very close 2006 test scores.

Why the same neighborhood? The reason is that research by demographers indicate that people who live together in neighborhoods share attitudes, behaviors, and situations, such as exposure to crime. These types of commonalities are indirect measures of those unobserved factors that concern us in setting up comparison groups. From the list of all public school neighborhood students we selected a student to match to each MPCP student using what are called "propensity scores." These scores take into consideration other variables such as race, ethnicity, gender, and income to come up with a score measuring the goodness of the match to

be single-parent (almost always women-headed) families. However, the voucher parents were more educated and education of their children meant more to them than other values. They were also more likely to practice some form of religion (Witte, 2000).

the individual voucher student. We then selected the top scoring candidate to be in the comparison group.

The analysis of student test scores in *Study I* and *Study II* were both value-added studies that estimated changes in test scores in reading and math from a base test year. Simply put that means that all analyses controlled for base-line test scores with the outcome of interest being a test taken after the baseline test, usually in yearly increments. They both controlled for different sets of family and student background variables.[4] The analysis in *Study II* was more sophisticated because statistical methods and computer programming had advanced considerably, and the study sample was larger. However, the basic analytic techniques were similar enough that the results presented below are both valid and actually quite similar.

The results described below are listed separately for each of the study periods, *Study I* from 1990 to 1996 and *Study II* from 2006 to 2011. In each case we describe the results briefly and in non-technical terms. These results were reported publicly in each study in extensive policy reports. They have also been published in refereed scholarly books and journals. The initial reports are available from the authors, with those from *Study II* also on a website: http://www.uaedreform.org/milwaukee-parental-choice-program-evaluation/. In the rare cases

[4] One issue in most education studies is that some variables are present for all students in terms of "administrative data" that districts must collect and thus are available for all students. These are usually: gender, age, race, eligible for free lunch, and disability status. Some have family below poverty line as a measure of income. Other variables used in our models come from parent surveys. These include parent education, better income measures, and a large set of attitude and other behavioral measures. The problem is that not all parents respond to surveys so the samples including just administrative variables differ from those that also include survey data. The latter reduce the sample sizes (N) and may introduce bias due to which families respond to the survey. In *Study I* survey responses were high for urban surveys (in the 20% rates); but for *Study II* they were over 50% because we had the resources to pay respondents.

where our results changed slightly from the policy reports to the refereed articles we favor the findings in the refereed articles.

The general conclusions for both studies are that there were no consistent statistically significant differences using value-added measures of test results between the voucher students and the public school comparative samples over the four years of each study. There were some controversies and nuances in the two studies however.

Study I. The official reports for *Study I* indicated there were no statistically significant results in any year in either reading or math for our most robust model with the largest N. If survey data are included, which allowed for variables such as parental education, income, and involvement, but with a considerably reduced N, in year two the reading estimate was negative for voucher students and statistically significant. However, in the last two years the differences were very close to zero.

There was a significant controversy over the fourth year math scores with a team of researchers from Harvard University headed by Paul Peterson (Greene, Peterson& Du, 1998). That group used a different comparison group – students who lost choice program lotteries in 1990. They find a very large effect when this very small group is used. We found no significant effect for math in year four using any of our statistical models. However, when we reanalyzed their control group we found definitive evidence that the students who remained in the study over time were far from a random sample of lottery losers. Indeed, the control group students who remained until the end had much lower prior test scores, were poorer and came from families with lesser educated parents than the controls who left the study. The ones who left probably moved out of MPS or went to private schools when they did not receive vouchers. Also it turned out that with their small comparison group, five students accounted for the

significant negative results and had scores close to zero on the math test in year four (when they averaged the 33rd percentile in year three). These five students probably simply put their names on the tests and turned them in without attempting to answer any questions. When they were excluded, the positive math result for the MPCP in year four was not significant (Witte, 2000, Chapter 6).

Study II. In the second study, which had a number of technical advantages over the first study and is therefore more definitive, the researchers ultimately concluded that there were no consistent differences between the voucher sample and matched control group. The descriptive differences are presented in Figure 2. The methods we used to model these results were sophisticated but were all value-added results with extensive control variables (Witte *et al*, 2014). Again there were some issues in the last year. The first three years after the 2006 baseline test (2007 to 2009) produced mostly statistically significant, negative value-added results in math, with the MPS comparison group doing better than the voucher sample. But this was not the case in the fourth year when the differences were not significant. However, in reading the opposite occurred with the voucher students doing better than the matched sample in years 2007 and 2008, but the differences were not significant. However, as with math, there was considerable improvement in reading outcomes for the voucher students in the fourth year and the difference with the control group was statistically significant at the .05 level.

(Figure 2 goes about here.)

The big issue is why the jump in the fourth year (2010) in both subjects? After follow-up analyses, we determined that the result was a combination of the voucher program and the effect of high stakes tests but more the latter than the former. The legislature had passed a requirement that first took place in 2010 that all students receiving vouchers in the private

schools had to be tested and the results aggregated to the school level, published, and entered on the state web site. Prior to that point we were responsible for testing only our sample, the test was "low stakes" for the private schools, and we tested them whether they were still in private schools or if they were in MPS. As it happened, those who returned to MPS prior to 2010 did not experience the jump that those that were still in the private schools did. That suggested test pressure in the newly tested private schools probably produced the upward results after years of quite consistent lower results (Witte, *et al*, 2014). The conclusion that there were no positive test results favoring the voucher students is thus a bit simplified, but there were also several years of negative math effects of the voucher program to offset the positive final reading effects even if it was a true, and not test-induced result.

Thus, in summary our best estimates over ten years of study were that for achievement tests, there were no consistent differences from the base year between voucher students and comparison groups drawn from students in public schools. That is not the result for attainment.

Student Attainment (Graduation). An attainment study was not possible for *Study I*. Because of this lapse, we included in our sample the entire census of MPCP ninth graders in the base year of 2006 to maximize the sample we could follow beyond graduation in 2010 and into college.[5] The results of that study are definitive, clear, and arguably the most important finding in voucher studies to date. The latter is contingent on how much importance one places on graduating from high school and going on to a four-year college. Social science research has placed very high importance on that outcome (e.g. Neal, 1997; Lleras-Muney, 2005; Owens,

[5] As it turned out, we should also have sampled all eighth graders because we were able to stretch our funds to another year and more to follow those students. To date we have tracked the ninth graders two years after high school and eighth graders one year.

2010). As we demonstrate in the article reporting those results (Cowen, *et al*, 2013) graduating from high school is positively correlated with a lot of very good things (higher immediate and lifetime income, solid family structures, access to higher education, etc.) and negatively correlated with a lot of bad things (jail, out of wedlock births, drug and alcohol dependency, etc.).

As displayed in Figure 3, the results were quite simple. Compared to the control group, students receiving vouchers in the 2006 cohort graduated from high school and attended four year colleges at between 4 and 7 percentage point higher rates than the comparison group of 2006 public school students. All of these voucher attainment advantages were statistically significant at acceptable levels. The MPS students graduated from high school after five years and enrolled at two-year colleges at significantly higher rates than the MPCP students, but those are mere consolation prizes. Fewer MPCP students graduated in five years because so many more of them graduated in four years and fewer voucher students enrolled in two-year colleges because so many more of them enrolled in four-year colleges. The colleges that the voucher students attended also appeared to be of higher status than the ones attended by public school students. Most importantly, the 2006 cohort of high school freshmen voucher students had a 6 percentage point higher persistence rate into their sophomore year of college than the MPS comparison students, which bodes well for eventual college completion. Although 6 percentage points higher four-year college enrollment and persistence may not appear to be a high number to some, it is an extremely steep increase for the disadvantaged population of students in a large urban city school district such as Milwaukee. Since only 21 percent of students in the MPS comparison group attended a four-year college, the MPCP college enrollment rate of 27 percent represents an increase of nearly 30 percent in the likelihood of college attendance attributable to

the MPCP (Cowan, *et al*, 2013). Subsequent tracking of students, now having completed college, indicate that voucher students completed at higher rates and graduated earlier, with the first cohort of 2006 freshmen attaining approximately eight additional months of college on average than the public school comparison group (Witte *et al*, 2013).

(Figure 3 goes about here.)

Attitudes and Behaviors of Students and Parents. There are many measures of educational outcomes beyond test scores and attainment but they are often overlooked. Some are considered "soft measures" by some researchers and some are very difficult to study due to cross-sector differences in school policies and practices.[6] Because of these issues our studies measured discipline and safety in schools, as well as school satisfaction, through student and parent surveys. Although parents might be somewhat inaccurate and "rosy" in their assessments of school conditions, their errors are not likely to be concentrated on one side of the comparison. That makes parent survey responses more valid than administrative data when conducting these comparisons.

The overall theme from *Study I* was that parental satisfaction with their child's school was much more positive for voucher families than families in the public school control group. This included both parental evaluations of current private schools in contrast to parental evaluations of current schools by public school parents, as well as voucher parent comparisons between their child's current school and prior public schools. Because of limited resources, in the first year, 1991, both parents in the MPS control groups (MPS random; MPS random low-

[6] For example, our Study II research indicated that MPCP were enrolling substantial numbers of students with disabilities but were not assigning them an official special education label, leading the Department of Public Instruction to falsely claim that less than 2 percent of MPCP students had disabilities (Wolf, Witte & Fleming, 2012). Different types of schools also have different policies and documentation practices for suspensions and expulsions, rendering administrative data on these important issues highly suspect for comparison purposes.

income) and applicants to the voucher program were twice sent mailed surveys. Subsequently only new voucher parent applicants were sent surveys through 1995. Thus comparisons between groups were based on 1991 MPS parent surveys and yearly surveys on voucher parents.

The first set of issues involved why parents sought vouchers? The answers were very consistent over the five years. MPCP parents listed education quality, teacher pedagogy and quality, and superior discipline and safety in private schools as the most important factors affecting their decisions (Witte, 2000, p. 63). A second issue was the difference between applicants and non-applicants in terms of dissatisfaction with their prior (public) schools. Those who applied for vouchers were extremely dissatisfied with their prior school experience compared with those who did not attempt to obtain a voucher (Witte, 2000, p.65). Finally, there were also some important demographic differences between the MPCP and MPS parents. MPCP parents were overwhelmingly black throughout the five years. Also MPCP families tended to have lower incomes than even the low-income sample of MPS parents, but they had higher education levels. They also were more religious in terms of beliefs and activities.

Other parental data also involve comparisons between responses about behavior and attitudes. The most striking results were that voucher-school parents expressed considerably higher satisfaction on almost all dimensions of schooling - the largest difference being in the areas of highest priority they listed for why they sought vouchers – educational and teacher quality and discipline in the school. The results also indicated considerably more participation of choice parents in all aspects of education – school activities, school organizations and involvement at home. In summary, parent response to the voucher program, based on parent surveys, in the first study of the MPCP were consistently positive.

In the second study, from 2006 to 2011, much more surveying was done with a much higher response rate partly due to hiring a professional survey firm who persisted in subject contacts and offered money for complete surveys.[7] Surveys included both parents and students from grades 4 to 9. The surveys in *Study II* were more extensive and included such questions as political activity and knowledge, and civic duties. These questions have produced further insights into voucher program effects.

Some of the first issues asked in both studies included how families learned of choice options, why some families applied for vouchers and others did not, and the comparative characteristics of MPCP parents and their MPS control group counterparts. An article by David Fleming and co-authors (2015) addresses the first two of these issues. The leading mechanisms for learning about choice were identical to the results from *Study I* and the same for MPCP and MPS parents: friends and relatives and their child's school. The characteristics of choosing parents were somewhat different in *Study II* than in the first study. One important difference was that by the time of the second study, the program had become much more racially diverse than in the early years, in which MPCP students were almost all black. By 2006, 56.7% were black, 24.5% Hispanic, and 15.8% white (Witte, *et al*, 2008, p.17). As with the first study, MPS parents had somewhat lower incomes. However, in this later study they had somewhat higher levels of education (Fleming, *et al*, 2015; Witte, *et al*, 2008). However, the overall education of MPCP parents was considerably lower than the first time around.[8] Also, as in *Study I*, religion was

[7] The response rates for parents were 65.4% for MPCP parents and 51.6% for MPS. Student response rates were 84.5% for MPCP and 46.6% for MPS (Witte, *et al*, 2008, p. 16).

[8] The average income of MPCP families was $23, 371 compared to $27,577 for MPS families. For education, in *Study I*, 46 percent of MPCP mothers had some college education, while in *Study II*, only 30 percent of MPCP parents and 26.3 percent of MPS parents in our sample are in the "some college education" category (Witte, *et al*, 2008, p.18-19).

more important for voucher parents and MPCP families were more likely to engage in religious activities than their MPS counterparts.

There was, however, a difference in reported parental involvement between the two sectors in *Study II*. As reported above, in the first study MPCP parents were more involved in all measures of parental involvement, in the school and at home. In *Study II*, while school activities remained higher for MPCP parents, home involvement was actually reportedly higher for MPS parents.

In terms of parental attitudes, there was also a shift from *Study I* in that the importance placed on education expectations, which were higher for MPCP families earlier, were the same between groups in the second study. On the other hand, the satisfaction of MPCP parents with most school characteristics was higher than MPS parents, although both sets of parents were reasonably well satisfied (Witte, *et al*, 2008, p. 26). One measure of school satisfaction that seemed to differ from *Study I* to *Study II* was the "grade" parents gave to their schools on an A to F, 0 to 4 point scale. In the first study, MPCP grades ranged over the years from an average of 2.0 in the first year (C) to 2.7 by the last year; while MPS schools ranged from 2.4 to 2.8. Overall there was no statistical difference between the samples. The MPCP grades reflected a very difficult first two years of the program (Witte, 2000, p. 68). The second study resulted in average grades for MPCP of 3.4 while MPS averaged 3.0. Thus both sets of parent grades for their schools were improved, but the grades for MPCP schools were statistically higher.

The same findings carried over to students. Overall voucher students expressed great satisfaction with most aspects of their schools. The difference on agreement rates for items such as , "My school promotes a drug-free environment," was that MPCP students tended to Strongly Agree, while MPS students used the Agree category more often. That was true of most student

responses. On the behavioral side MPCP students reported fewer disciplinary actions against them and fewer suspensions, but as noted above, these are notoriously hard to validate because of differing school-level policies.

Political and civic duty has also been studied as a result of the second Milwaukee voucher study. In a study by David Fleming and colleagues (2014), differences in civic responsibilities between voucher parents and the MPS control group parents were explored. They stated: "We find that voucher students demonstrate modestly higher levels of political tolerance, civic skills, future political participation, and volunteering when compared to public schools students. Further analyses indicate these results may be driven in part by those students attending Catholic and other religious schools." (Fleming, *et al*, 2014, p. 2). In a similar vein, Fleming (2014), in exploring the political connections and activity of voucher and non-voucher parents, found voucher parents are more likely to connect government to education, to report learning about government from participation in the voucher program, and to be more politically active in general.

Finally, Corey DeAngelis and Patrick Wolf (2016) used the *Study II* sample to examine the effect of the MPCP on criminal behavior. Wisconsin is unique in posting every criminal charge in a publicly searchable database that includes the person's name and birthdate along with details of the case. They found that students in the MPCP had lower rates of criminal activity when they were 22-25 years old but the results were only statistically significant for males who remained in private schools of choice throughout high school. Young females commit far fewer crimes than young males so it was difficult for the study to identify an MPCP crime effect on females.

In summary, many of the findings from the first and second wave of studies are similar. For the main, parental knowledge of and reasons for choosing vouchers are very similar. The parents of MPCP students in both studies are poorer but more highly educated than their MPS peers. Families differed in *Study II*, however, both in terms of a dramatic increase in racial diversity of the program, and in that MPS parents had more involvement at home with their children, and had higher expectations for their children's future education. The results were similar in terms of overall satisfaction with their respective school, with MPCP parents and students expressing higher level of satisfaction on most measures in both studies. *Study II* also produced evidence that the MPCP has positive effects on civic outcomes including reducing the likelihood of young men committing crimes.

Expansion of Vouchers to Other States

Following Milwaukee's lead, a number of other states have subsequently enacted voucher programs of various forms. An indication of the growth is provided in Figure 4, which has the most recent state and program counts, including the District of Columbia. Twenty-five states currently have some type of voucher program, with programs temporarily stayed pending court action in several of them. The state and program count differ in that several states have multiple programs, with Ohio leading with five, and Wisconsin now has four.

(Figure 4 goes about here.)

One interesting finding is that the most popular voucher programs are those that apply to students with special needs. There are several reasons for this. First, special needs students are viewed as a vulnerable population and a program to provide these students and families with options is politically more palatable. Second, to date, none of these programs have been challenged in court, which is far from the situation with voucher programs for non-special needs

students. Also of interest is that none of the special needs programs have family income limits, but almost all of the non-disability voucher programs currently have some level of income limitation. The exceptions are long-running "town-tuitioning" programs in rural parts of Maine and Vermont that have private but not public schools, and Ohio's statewide Educational Choice Scholarship Program and Cleveland Scholarship and Tutoring Program, both of which prioritize service to low-income students even though income is not an eligibility criteria. The most common income limit is 200% of the poverty line with the Milwaukee and Racine Wisconsin programs having the highest at 300%. Because they are also the oldest, it remains to be seen if other states will subsequently raise their income eligibility levels over time.

What is somewhat more remarkable perhaps is that many voucher programs have been studied, often in a very sophisticated manner. The final year results of 22 separate studies of standardized test scores in voucher programs are presented in Table 2. Included are several studies of privately-funded scholarship programs that operate like state voucher programs in some ways both not others. These include those in New York City, Dayton and Toledo, all of which were part of the same randomized field trial. We have sorted these studies into four categories: 1. studies in which the results were positive for the group of all voucher students; 2. studies in which the results were positive for one or more subsets of voucher students (e.g. for blacks, but not Hispanics or whites); 3. studies where there were no statistically significant differences between the voucher and control groups; and 4. studies in which the results were negative for voucher students. In most cases the percent results provided are annual differences from baseline scores.

(Table 2 goes about here.)

The results clearly favor voucher programs, with nine studies reporting statistically significant favorable results for the full group of voucher students in comparison to public school control groups. We include in this category our Study II results because, although the switch to a high-stakes test clearly played an important role, the reading gains were significantly higher for the voucher students in the final year of the analysis. Another four studies, although three are from the privately funded New York voucher experiment, report some positive findings for subsets of students, with null findings for other groups. Five studies of four programs report no significant differences between groups, and four others report negative results in one or more test scores. The latter again contain two studies of the Louisiana program, which was rushed into place over the summer of 2012 with only one-third of private schools in the state participating in part due to its extensive regulatory requirements (Mills & Wolf 2017; Kisida, Wolf & Rhinesmith 2015).

To date the attainment results that we noted as so important in Milwaukee have only been studied in one other voucher program. The official evaluation of the District of Columbia Opportunity Scholarship Program, which Patrick Wolf led on behalf of the U.S. Department of Education, concluded that using a voucher in the nation's capital increased the high school graduation rate of participating students by 21 percentage points, from 70 to 91 percent (Wolf *et al* 2013). Unlike the Milwaukee *Study II*, the DC voucher study was not able to track student educational attainment beyond high school.

Public Charter Schools and Public School Open Enrollment

Charter Schools. The first charter school in the United States was City Academy in St. Paul, Minnesota, which opened in 1992. From the very beginning, charter schools were much less contested by public school proponents than were vouchers. For example, even the National

Education Association chartered several schools. As of 2013-14, 2.5 million students in 6,500 schools were enrolled in charter schools (National Center for Education Statistics, 2016a). This was close to 5 percent of the total number of students enrolled in primary and secondary public schools. This total was up from approximately 1 percent of student in 2001-02.

Figure 5 indicates that as of 2016, 44 states had charter school laws on the books. There is a clear pattern in the way state charter laws have been amended over time. In addition, an early study of the amendment process for these laws indicated that amendments almost always relaxed restrictions on the creation, number, and type of charter schools allowed (Shober, Manna, & Witte, 2006). Charter schools vary enormously in terms of their form, pedagogy, and organization. This variance occurs both across states and within states and school districts. However, in general there are some common elements in most charters. They are always publically funded, and they have "charters" that are created by authorizers, often following a specific state format. These charters usually specify school organization, how they will be managed and goals of the school, and how these goals will be measured. In return for having to meet formal goals (or their charter will be revoked), they are less regulated than traditional public schools and may be exempted from district labor contracts, including at times having non-union teachers.

(Figure 5 goes about here.)

Authorizing powers for charter schools do vary considerably between states. For example, as depicted in Figure 4, almost all states allow districts to authorize charter schools. Interestingly an exception to this is the first charter state of Minnesota in which initially only a state board could authorize charter schools. The logic was that this was the only way to create truly independent schools. However, few states followed that pattern, although just 11 states only

allow districts to authorize whereas 32 states allow non-district organizations of some form to be authorizers. Also, half of the state statutes limit charter student or school enrollment in districts.

What are the effects of charter schools on student achievement? Again, as with voucher programs, there have been a number of studies of charter schools on standardized test scores. These have been summarized best in a meta-analysis of charter school studies by Julian Betts and Emily Tang (2016). The results of that summary study are depicted in Figures 6 and 7. The effects on reading scores are given in Figure 6, and math in Figure 7. The results are shown in standard deviation units for the tests (on the horizontal axis). Scores to the right of the zero point show positive effects for charters as compared to the respective control groups in the study. The diamonds indicate the average difference in standard deviations between charter and control groups; the line extending horizontally from the diamonds indicates a 95% confidence interval for the mean estimate. If the line hits or crosses the zero point the result is not significantly different from zero for that test and study. The size of the box around the triangle indicates the weight of the study, which is affected, among other variables, by the size of the samples of students in the study.

(Figures 6 and 7 go about here.)

As is readily apparent, the overall conclusion must be that charter schools usually have positive effects on standardized test scores. The overall global mean of these studies is given by the dashed line. In both figures, that line is about the same point and the study average is statistically significant but relatively small in standard deviation terms. The average for reading (Figure 6) is pulled down considerably by the three relatively large negative effects for studies in

Massachusetts, San Diego, and Utah. Also, the reading results tend to vary more widely than those for math.[9]

There have also been several studies of the effects of charter schools on attainment. And these tend to be even more positive, and have larger effect sizes than the results for standardized tests. The first ever study of charter school attainment effects was conducted at the Preuss School, a charter school located on the campus of the University of California San Diego (UCSD). In the early 2000s the Preuss School was oversubscribed and used enrollment lotteries to determine admissions. Researchers at UCSD exploited the lottery data to conduct a randomized control trial (McClure at al. 2005, Strick 2009). The entering classes at the Preuss School are particularly small, and researchers examined only cohorts from the graduating classes of 2005 and 2006. The total sample of treatment and control students barely numbered 100 overall, after adjusting for attrition from the sample. Preuss students had significantly higher college attendance rates, according to the authors' preferred comparison.

The first large scale random assignment study of charter schools was conducted in New York City between 2007 and 2009, by which time more than 100 charter schools were operating within city limits (Hoxby, Kang and Murarka 2009). The impacts of New York charter schools on the likelihood of high school graduation were positive but imprecisely estimated, leading to a conclusion that the effects were not significantly different from zero.

Perhaps unique amongst major American cities, Chicago's charter school market share is higher at the high school level than at the elementary level. The city's charter high schools have been subject to an ongoing evaluation by a team of researchers including John Witte (e.g.

[9] Note that there is only a math score for Idaho and it is quite positive, but borderline significant and has a very small weight, which undoubtedly indicates a very small sample size (thus the very long confidence interval line).

Zimmer *et al* 2009; Booker, Gill, Sass & Zimmer 2014). The evaluations of Chicago charter high schools are limited to students who attended charter schools in eighth grade; students who went on to attend charter schools are compared to students who went on to attend other public schools. Charter high school impacts on high school graduation and college attendance were positive and statistically significant. Charter attendees were 7 percentage points more likely to graduate from high school and 11 percentage points more likely to attend college than their former charter junior high classmates who attended traditional public schools (Booker *et al,* 2009).

Florida, statewide, was one of the first and most aggressive adopters of charter schools. It has long had some of the largest statewide enrollments in charters. Florida charter high schools have been part of the same evaluation project as Chicago charter schools (Zimmer *et al,* 2009). The same research design has been used, as well. Charter high schools in Florida have been found to have consistently positive and significant impacts on attainment. Florida charter school students are 11 percentage points more likely to graduate from high school and 10 percentage points more likely to attend college.

One of the most ambitious choice-based school reform efforts of the last two decades took place in Harlem. A network of new charter schools was founded as part of a larger effort to provide community services, healthcare and early childhood education to students in Harlem and nearby neighborhoods. The effort was named the Harlem Children's Zone (HCZ). The HCZ charter schools were routinely oversubscribed and used enrollment lotteries. Dobbie and Fryer (2013) exploited the lotteries at the middle school level to conduct a randomized control trial of the charter schools' impacts on college enrollment, finding that winning the HCZ charter school lottery increased the likelihood of a student attending college by 14 percentage points, an

especially large positive impact for the population of disadvantaged students in the region.

As with voucher programs, we see that public charter schools demonstrate more consistent and larger positive effects on student attainment than on student achievement. Many of the charter studies reviewed here use lotteries for admission, so we can rule out higher levels of parent motivation as the reason why students in charters graduate from high school and enroll in college at higher rates. As with voucher programs, it is possible that students become more committed to the educational project if they attend a school of choice. Choice schools also might outperform traditional public schools at instilling character traits of conscientiousness and persistence in children which later pay off in higher levels of educational attainment. Finally, the staff at schools of choice might more closely monitor student behaviors and assignments in ways that keep them on track for graduation, a possibility suggested by some of our qualitative work in Milwaukee (Stewart *et al*, 2012).

Open Enrollment. Open enrollment allows families to send their children to public school districts other than the district of their residence. Forms of open enrollment go back before other forms of choice and originally were linked to the problems of school segregation. However, those programs were often city or regionally specific and never extended to the entire state as the current open enrollment policies usually do. For example, in Milwaukee the Chapter 220 program was created as part of a court desegregation settlement. That program allowed minority students from Milwaukee to attend suburban schools and white suburban children to attend Milwaukee schools. Recently, the program was closed in lieu of statewide open enrollment.

The nation's first mandatory inter-district open enrollment program was enacted, as were so many other public school choice options, in Minnesota in 1988 (Boyd, Hare, & Nathan 2002). By 2016, expansion of open enrollment policies has almost completely covered the nation. As

indicated in Figure 8, 47 states now have some form of open enrollment. As with charter school laws, there is considerable variation between states. Twenty-nine state programs have mandatory provisions. Districts must participate, although all programs have exemptions of various kinds. The most common exemption is space non-availability. If districts cannot accommodate students because the school if full, they may deny student transfers. A number of states also have rules that allow denial if students have behavioral problems, have been suspended, etc. Originally, some states allowed districts to deny transfers if it harmed their racial balance, such as would be the case if white students wanted to transfer from a minority majority district. However, a decisive 2007 U.S. Supreme Court ruling in *Parents Involved in Community Schools Inc. v. Seattle School District* essentially eliminated those refusals. Most state laws do, however, have clear provisions that districts cannot deny student entry based on race, gender, or national origin.

(Figure 8 goes about here.)

The incentives in open enrollment are powerful in that in all cases some level of funding leaves the sending district and is given to the receiving district. The most common amount is the per pupil state aid the sending district would receive. This sum follows the student and obviously provides an incentive for receiving districts to accept students if they have capacity in classrooms. For them the marginal costs of educating the student are low (Reback, 2008).[10]

Unfortunately, to date, we know of very few studies of the educational effects of open enrollment. Those studies that do exist are very state or city specific. One study in 2011analyzed the characteristics of students transferred using open enrollment in both Minneapolis and Denver (Carlson, Lavery, and Witte, 2011). The findings were intriguing. In general, higher test scores

[10] In most states, for each transfer student receiving districts gain (and districts of residence lose) an amount of funding equal to the non-compensatory aid per pupil provided by the state. In the case of students with special needs, the district of residence must also compensate the receiving district for the costs of fulfilling those needs (Reback, 2008).

predicted movement. However, in both cities, but more so in Denver, those students who left the larger districts for the surrounding suburban districts were students that had higher test scores than their peers in Denver or Minneapolis. However, they went to districts with test scores that were on average higher than the scores of the transferring students. Thus they were leaving districts where they were superior students to enter districts where they would be on the lower end educationally.

A study by Valerie Ledwith is one of the few that estimates changes in student test scores following increased mobility induced by open enrollment. Although she concludes that the effects are positive controlling for a range of student background factors, she also is cautious because neighborhood effects are difficult to incorporate into the analysis and clearly have an impact. She says: "Taken together, these results highlight the complexity of the geography of opportunity associated with educational outcomes and the need for continued research on the sociospatial dimension of scholastic achievement" (Ledwith, 2010).

Finally, Julie Berry Cullen and her colleagues (2005) examined the attainment outcomes of open enrollment policies within the Chicago Public Schools. After applying several strategies to control for student and parent motivation, they conclude that students who transferred to career academies experienced higher high school graduation rates that could be attributed to the open enrollment policy. Students who choose other types of schools also graduated at higher rates but that attainment effect could not be linked, causally, to the program. As with vouchers and charters, it appears that higher levels of student attainment are the clearest positive benefits of the sorts of school choice initiatives championed by former Wisconsin Governor Tommy Thompson.

Conclusion

A movement that began in Governor Tommy Thompson's office in 1987 and in the Wisconsin legislature in 1990 has been the most important fundamental change in education since the desegregation efforts of the 1960s and 1970s. Because of the spread of school choice, literally millions of students who would have had to attend their residentially assigned school, now have choices – and in many cases multiple choices. For some they can attend private schools that they probably could not have afforded without vouchers. They may also have an array of different educational options through a variety of district charter schools. Finally, they may be able to transfer out of their residential district altogether and into another public school in another district or at least a school within their district outside of their neighborhood assignment zone.

There are, however, limits to this movement. Some are political in that some states shirk most or all of these options. But, more importantly, geography does play a considerable role in school choice. Small, rural districts are at an obvious disadvantage. Private schools may not exist in these districts. Resources may be limited in providing the array of choices created by charter schools (e.g. Batdorff *et al*, 2014). Distance also plays a key factor that could practically limit open enrollment. Although education markets face these imperfections and challenges, they still provide many schooling opportunities to disadvantaged families that did not exist 30 years ago.

Whether school choice is commendable or not is obviously a highly contentious issue. For those working in or strongly connected to public schools, vouchers are an anathema and their feelings are very strongly held. Equally as strong may be the positions of families, or their advocates, who have students that are trapped in underperforming and perhaps unsafe assigned public schools. This is especially the case for poor, often minority families who cannot easily move to the suburbs or afford to purchase private education. The fact that those options always have been available to middle class families sets up a form of inequality of opportunity that is

pernicious to its core. Other forms of educational choice do not elicit the hostile opposition that vouchers set off. However, there remains disagreement over the value of competition that these policies to some degree enhance. Both ends of that debate can be extreme.

Finally, as this paper has shown, the evidence for the educational effects of choice are generally positive, but some view them as underwhelming. Most of the studies are short-term, although our MPCP studies are exceptions in this regard. The evidence in support of the various forms of school choice increasing test scores is decidedly mixed. Surprisingly, school choice interventions demonstrate their clearest positive effects on non-cognitive outcomes such as attainment, civic values, and crime reduction.

One offshoot of the choice movement that is often overlooked is that the movement, and the varying beliefs toward it, has spurred a great deal of research on education. That research has helped lead to better data and much more refined analytical and statistical techniques over the last 30 years. Both of the authors of this paper are extremely proud of their role in that research revolution. We thank Governor Tommy Thompson's foresight and that of many other Wisconsin legislators and citizens for allowing us the opportunity to spend our careers doing that research and hopefully helping some families and students and the communities in which they live.

Tables and Figures

Table 1. Wisconsin Voucher Programs for the 2016-17 School Year.

	Students	Schools	Family Income Cap (% Poverty)	Family Income Cap ($ family of four)	Maximum Voucher Amount ($)	Cost ($ millions)
Milwaukee MPCP	28,188	121	300%	$73, 401	$7,323 (k-8); $7969 (9-12)	$203.7
Racine RPCP	2,532	19	300%	$73, 401	$7,323 (k-8); $7969 (9-12)	$18.3
Wisconsin WPCP	3,061	121	185%	$45,263	$7,323 (k-8); $7969 (9-12)	$22.6
State Totals	33,781	209 (with program overlaps)	Varies	Varies	$7,323 (k-8); $7969 (9-12)	$244.6

Source: "Wisconsin, Racine, and Milwaukee Voucher Enrollments Announced," Wisconsin Department of Public Instruction News Release, October 21, 2016.

Table 2. Results of Major Experimental & Quasi-experimental Voucher Studies in the United States, Final Year of Study

Benefit	Study	City	Finding – Private School Choice
All Students (9 studies)	Cowen (2008)	Charlotte	+8 points in reading, +7 points in math
	Figlio (2011)	Florida	+4 points in both reading and math
	Greene (2001)	Charlotte	+ 6 points on combined reading and math test
	Greene(1998)	Milwaukee	+6 points in reading, +11 points in math
	Howell *et al* (2002)	DC	+3 points combined reading & math
	Rouse (1998)	Milwaukee	+8 points in math, no effect in reading
	Witte *et al* (2014)	Milwaukee	+10% of a standard deviation and reading, no effect in math
	Wolf *et al* (2013)	DC	+13% of a standard deviation in reading, no effect in math
	Anderson & Wolf (2017)	DC	+24% of a standard deviation in reading, no effect in math
Some Students (4 studies)	Barnard *et al* (2003)	New York	+5 points in math for students leaving low-performing schools
	Jin *et al* (2010)	New York	+4 points in math for students leaving low-performing schools
	Howell *et al* (2002)	New York	+4 points for African-American students on combined reading/math test
	Howell *et al* (2002)	Dayton	+6.5 points for African-American students on combined reading/math test
No Effect (5 studies)	Krueger & Zhu (2004)	New York	No difference in math or reading
	Bettinger & Slonin (2008)	Toledo	No difference in math
	Bitler *et al* (2013)	New York	No difference in math or reading by quartile
	Metcalf *et al* (2002)	Cleveland	No difference in math or reading
	Witte (2000)	Milwaukee	No difference in math or reading

Negative (4 studies)	Abdulkadiroglu *et al*. (2016)	Louisiana	Negative effects on math but not reading after 1 year
	Dynarski *et al*. (2017)	DC	Negative effects on math but not reading after 1 year
	Figlio (2017)	Ohio	Negative effects on math but not reading after 4 years
	Mills & Wolf (2017)	Louisiana	Negative effects on math and reading after 2 years

Source: Compiled by authors.

Figure 1. MPCP Participating Students & Schools, 1990-2016

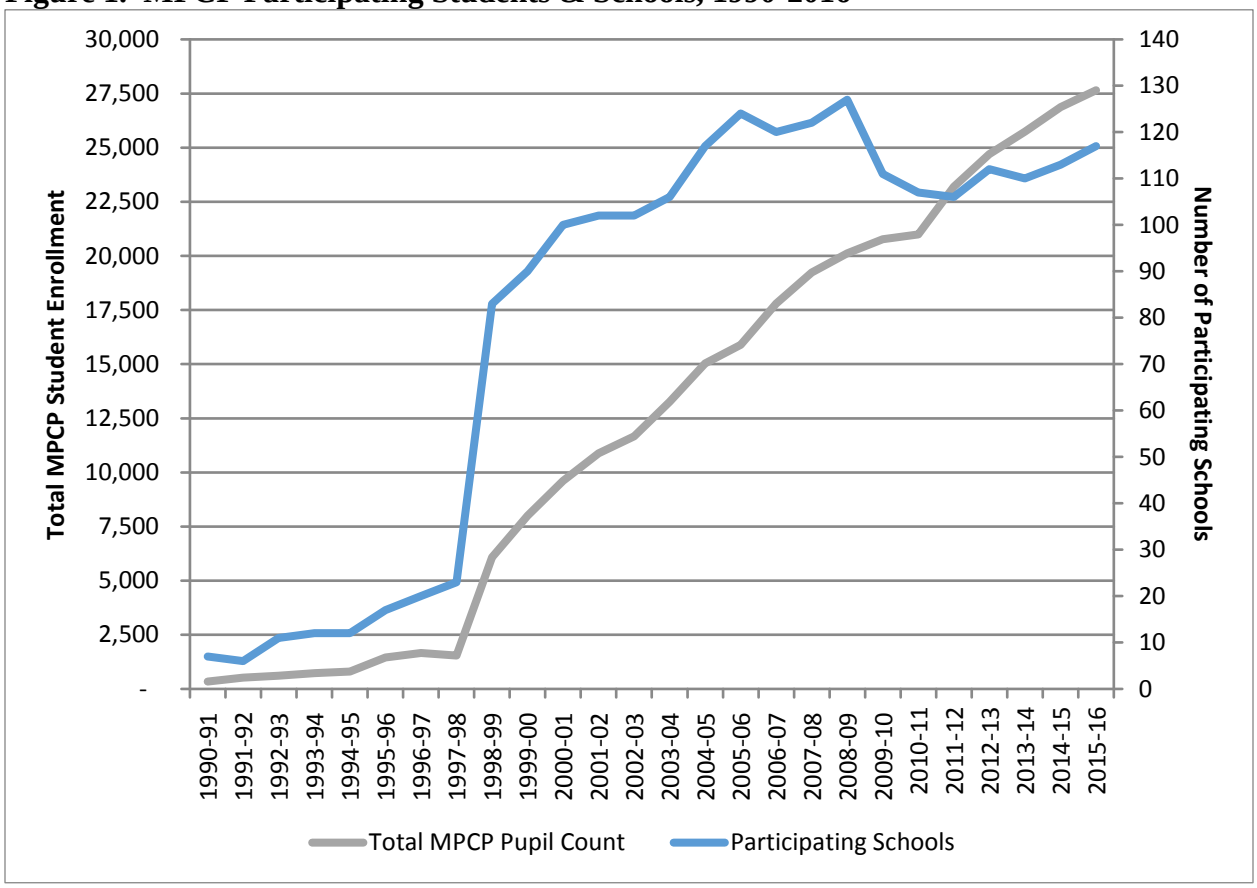
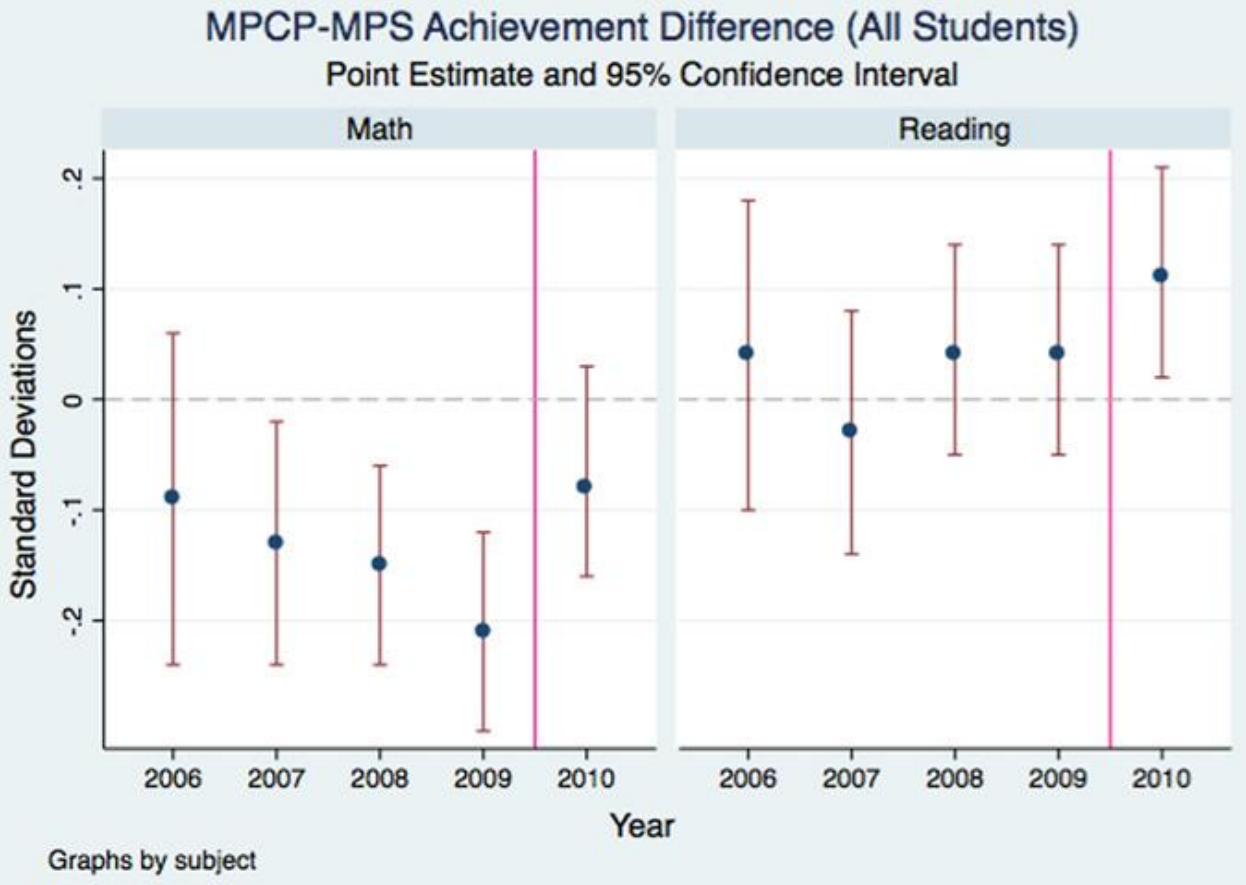
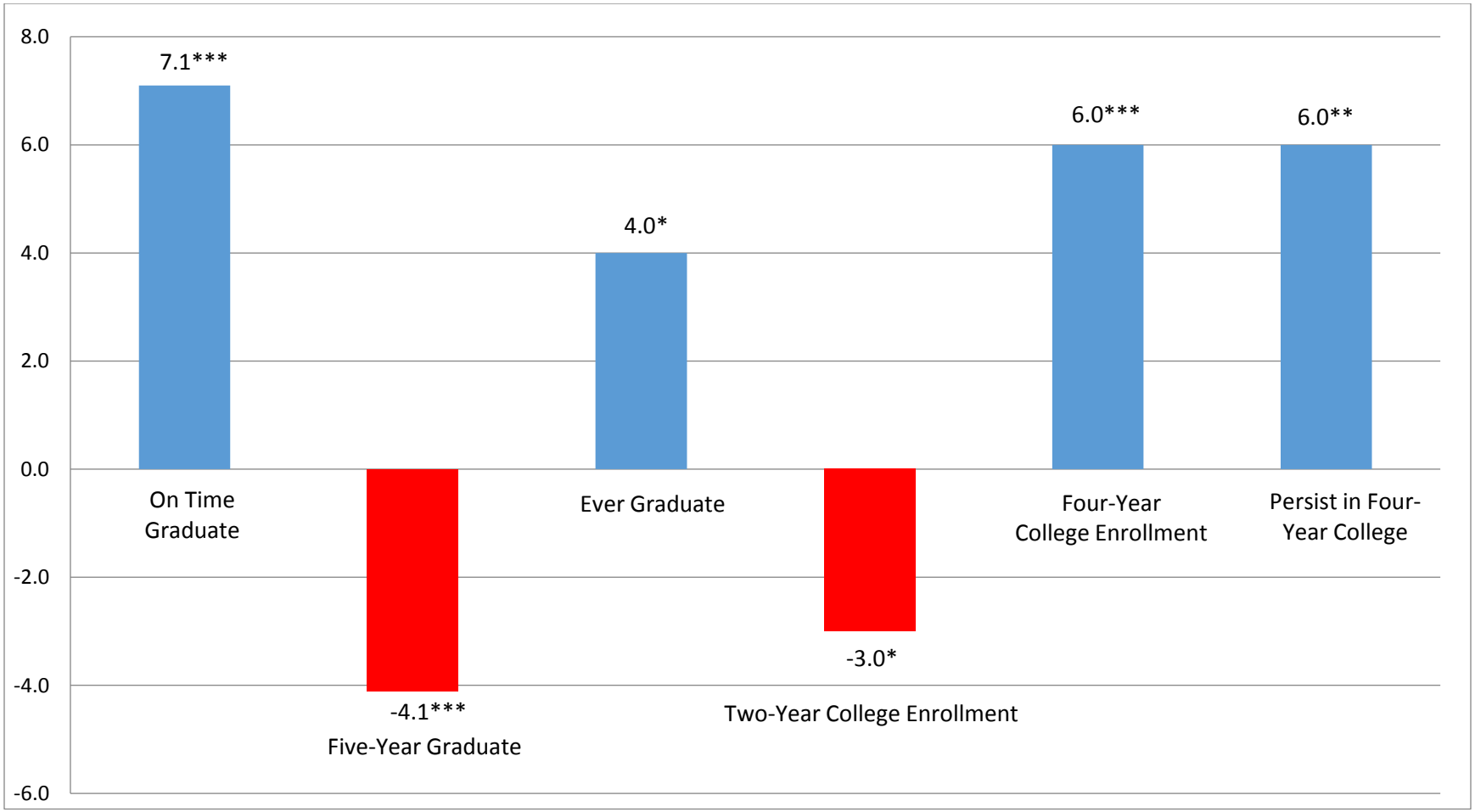


Figure 3. Achievement Test Results for *Study II*



Source: Witte, *et al*, 2014.

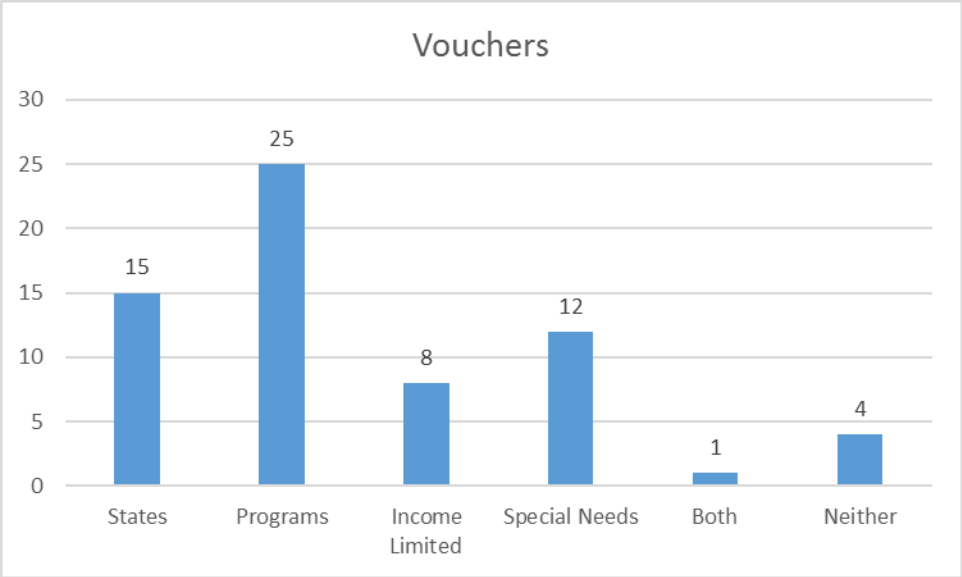
Figure 3. Attainment Results from *Study II*



Note: MPCP advantages appear in blue, MPS advantages appear in red. * Statistically significant at p < .10, ** p < .05, *** p < .01, two-tailed test.

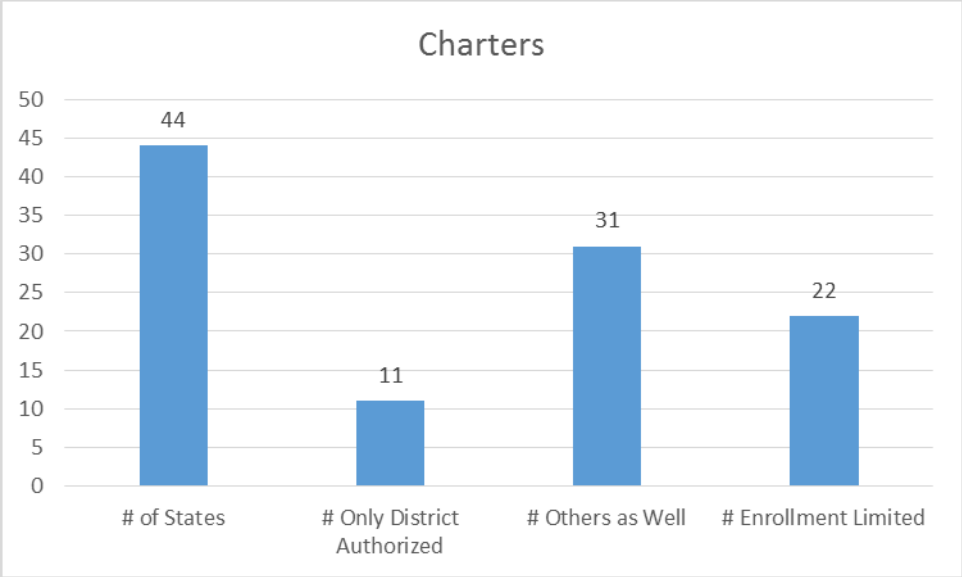
Source: Cowen *et al*, 2013

Figure 4. Number and Type of Voucher Programs, March 2017



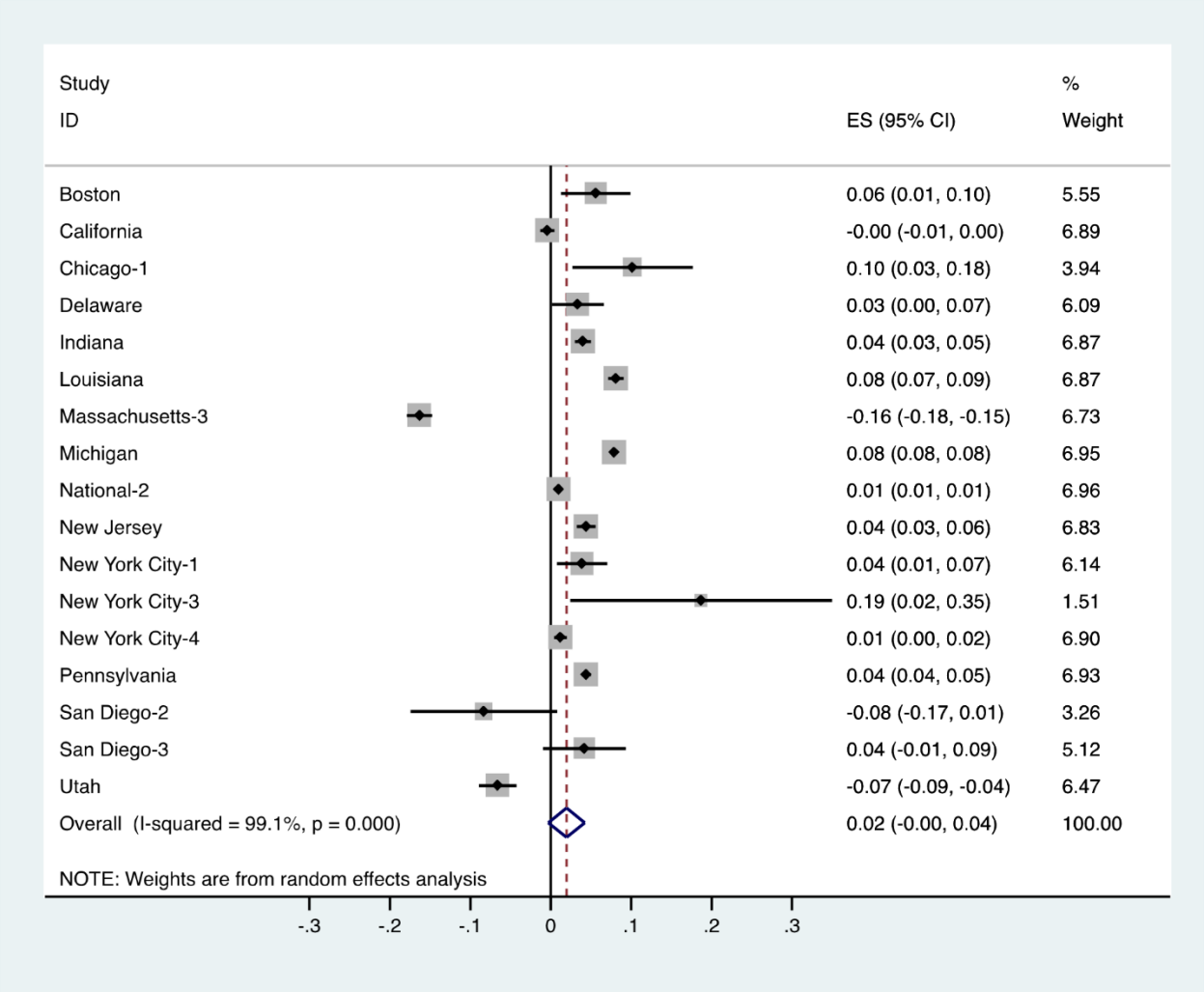
Source: Education Commission of the States, March 2017

Figure 5. Number and Type of Charter Programs, November, 2016



Source: Education Commission of the States, November, 2016.

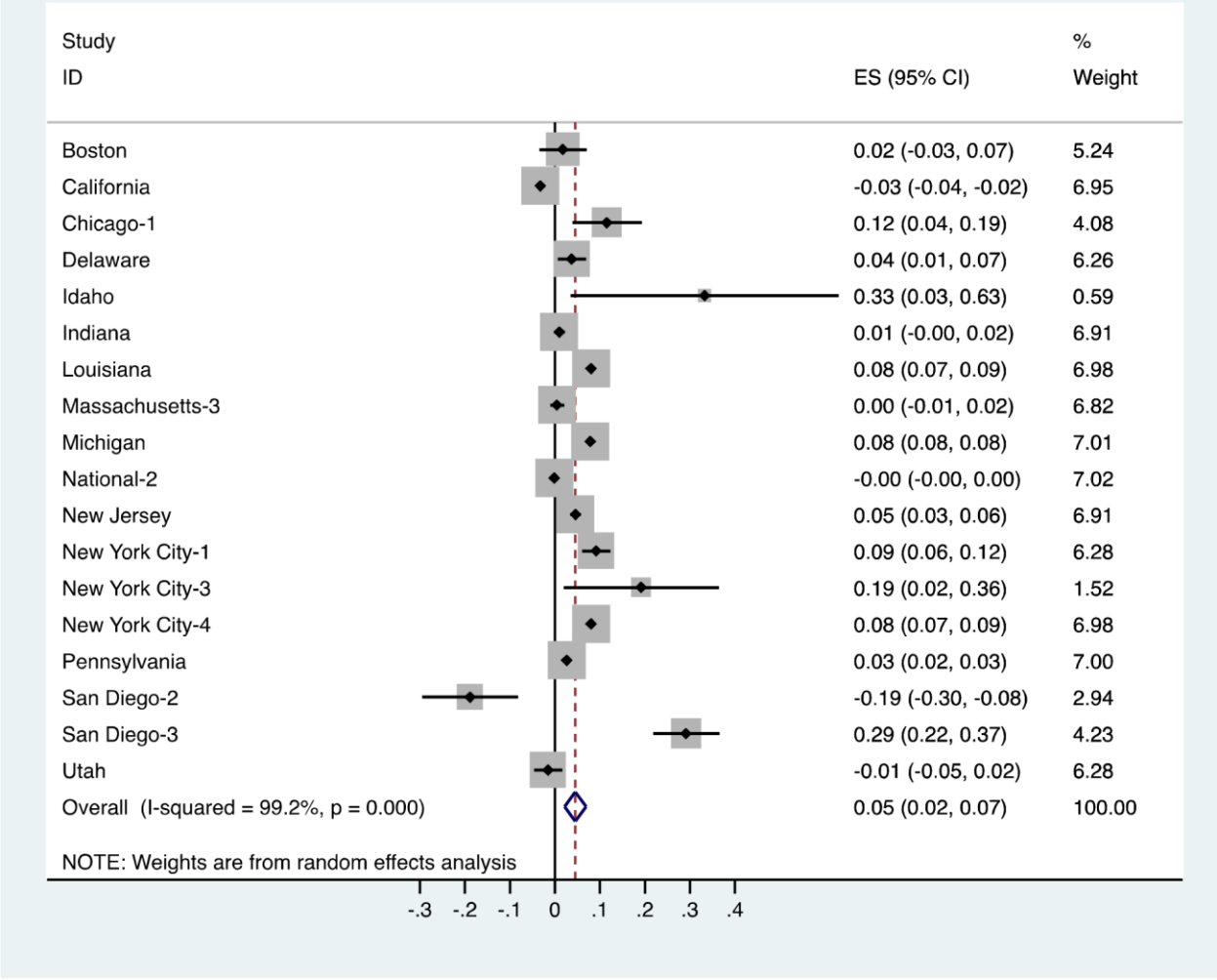
Figure 6. Elementary School Reading Effect Sizes by Study, Showing Weights Ascribed by Random-Effects Meta-Analysis to Each Study



Notes: The horizontal lines show the 95% confidence interval, which is also indicated in the second column from the right. The rightmost column shows the weight ascribed to each study, with the size of the square proportional to these weights. The overall effect size estimate is shown at the bottom. Geographic locations with estimates from multiple studies have unique numbers appended to their labels to distinguish between studies. Appendix Table 1 indicates the author and year of the study referenced by each Study ID label.

Source: Betts and Tang, 2016.

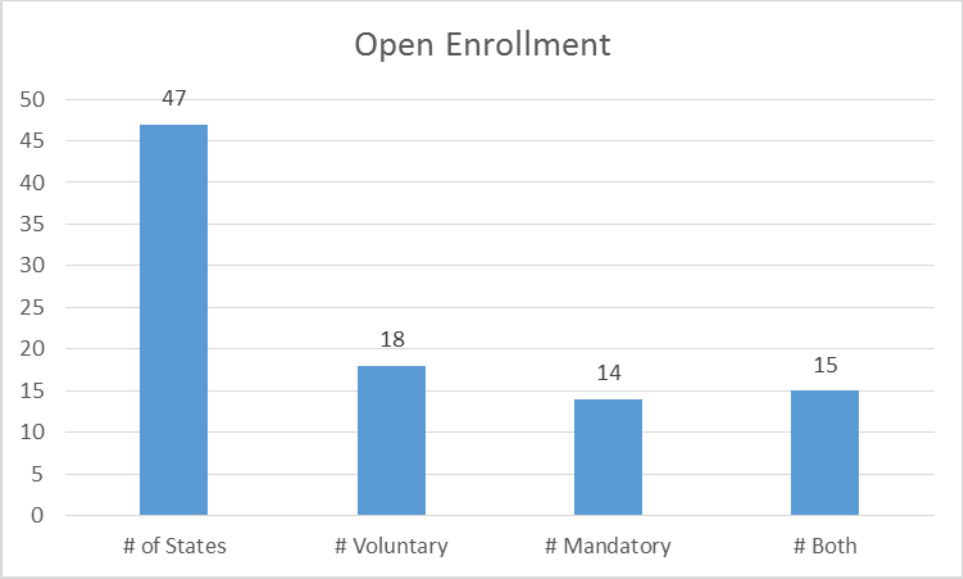
Figure 7. Elementary School Math Effect Sizes by Study, Showing Weights Ascribed by Random-Effects Meta-Analysis to Each Study



See notes to Figure 1.

Source: Betts and Tang, 2016.

Figure 8. Number and Type of Open Enrollment Programs, November 2016



Source: Education Commission of the States, November 2016.

References

Abdulkadiroglu, A., Pathak, P. A., & Walters, C. R. (2015). *School Vouchers and Student Achievement: First-year Evidence from the Louisiana Scholarship Program* (NBER Working Paper No. 21839). Cambridge, MA: National Bureau of Economic Research.

Anderson, K. P., & Wolf, P.J. (2017). *Evaluating School Vouchers: Evidence from a Within-Study Comparison*. Economics Research Network, EDRE Working Paper No. 2017-10.

Barnard, J., Frangakis, C. E., Hill, J. L., & Rubin, D. B. (2003). Principal Stratification Approach to Broken Randomized Experiments: A Case Study of School Choice Vouchers in New York City. *Journal of the American Statistical Association,* 98(462), 299-323.

Batdorff, M., Maloney, L., May, J., Speakman, S., Wolf, P. J., & Cheng, A. (2014). *Charter School Funding: Inequity Expands*. School Choice Demonstration Project, University of Arkansas, Fayetteville, AR.

Bettinger, E., & Slonim, R. (2006). Using Experimental Economics to Measure the Effects of a Natural Educational Experiment on Altruism. *Journal of Public Economics*, 90(8), 1625-1648.

Betts, J. R., & Tang, Y. E. (2016). A Meta-Analysis of the Literature on the Effect of Charter Schools on Student Achievement. Paper given at the SREE National Conference, Washington, DC.

Bitler, M., Domina, T., Penner, E. K., & Hoynes, H. (2015). Distributional Effects of a School Voucher Program: Evidence from New York City. *Journal of Research on Education Effectiveness,* 8(3), 419-450.

Booker, K., Gill, B., Zimmer, R., & Sass, T. R. (2009). *Achievement and Attainment in Chicago Charter Schools*. Santa Monica, CA: RAND Corporation.

Booker, K., Gill, B., Sass, T., & Zimmer, R. (2014). *Charter High Schools' Effects on Educational Attainment and Earnings*. Mathematica Policy Research.

Boyd, W. L., Hare, D., & Nathan, J. (2002). *What Really Happened? Minnesota's Experience with Statewide Public School Choice Programs*. Minneapolis, MN: Center for School Change.

Carlson, Deven, Lavery, Lesley, Witte, John F. (2011). The Determinants of Interdistrict Open Enrollment Flows: Evidence from Two States. *Educational Evaluation and Policy Analysis*, 33(1).

Cowen, J. M. (2008). School Choice as a Latent Variable: Estimating the "Complier Average Causal Effect" of Vouchers in Charlotte. *Policy Studies Journal*, *36*(2), 301-315.

Cowen, J. M., Fleming, D. J., Witte, J. F., Wolf, P. J. & Kisida, B. (2013). School Vouchers and Student Attainment: Evidence from a State-Mandated Study of Milwaukee's Parental Choice Program. *Policy Studies Journal*, 41, 147–167.

Cullen J. B., Jacob B. A., Levitt S. D. (2005). The Impact of School Choice on Student Outcomes: An Analysis of the Chicago Public Schools. *Journal of Public Economics*, 89, 729–760.

DeAngelis, C., & Wolf, P. J. (2016). *The School Choice Voucher: A 'Get Out of Jail' Card?* Economics Research Network, EDRE Working Paper 2016-03.

Dobbie, W., & Fryer, R. G., Jr. (2013). *The Medium-Term Impacts of High-Achieving Charter Schools on Non-Test Score Outcomes*. Cambridge, MA: National Bureau of Economic Research.

Dynarski, M., Rui, N., Webber, A., Gutmann, B., & Bachman, M. (2017). *Evaluation of the DC Opportunity Scholarship Program: Impacts After One Year*. NCEE 2017-4022. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

Egalite, A. J., & Wolf, P. J. (2016). A Review of the Empirical Research on Private School Choice. *Peabody Journal of Education*, 91(4), 441-454.

Figlio, D. N. (2011). Evaluation of the Florida Tax Credit Scholarship Program: Participation, Compliance and Test Scores in 2009-10. Report to the Florida State Department of Education.

Figlio, D., & Karbownik, K. (2016). *Evaluation of Ohio's EdChoice Scholarship Program: Selection, Competition, and Performance Effects*. Washington, DC: Fordham Institute.

Fleming, D.J. (2014). Learning from Schools: School Choice, Political Learning, and Policy Feedback. *The Policy Studies Journal*, 42, 55-78.

Fleming, D. J., Cowen, J. M., Witte, J.F., and Wolf, P,J. (2015) Similar Students, Different Choices: Who Uses a School Voucher in an Otherwise Similar Population of Students?" *Education and Urban Society*, 47(7), November 2015, pp. 785-812.

Fleming, D. J., Mitchell, W., & McNally, M. (2014). Can Markets Make Citizens? School Vouchers, Political Tolerance, and Civic Engagement. *Journal of School Choice*, 8(2), 213-236.

Greene, J. P. (2001). Vouchers in Charlotte. *Education Matters*, 1(2), 55-60.

Greene, J. P., Peterson, P. E., & Du, J. (1998). Effectiveness of School Choice: The Milwaukee Voucher Experiment. *Education and Urban Society*, *31*, 190–213.

Howell, W. G., & Peterson, P. E., with Wolf, P. J., & Campbell, D. E. (2002). *The Education Gap: Vouchers and Urban Schools*, Washington, DC: Brookings.

Hoxby, C. M., Murarka, S, & Kang, J. *Technical Report: How New York City's Charter Schools Affect Achievement*. Cambridge, MA: New York City Charter Schools Evaluation Project.

Jin, H., Barnard, J., & Rubin, D. B. (2010). A Modified General Location Model for Noncompliance with Missing Data Revisiting the New York City School Choice Scholarship Program Using Principal Stratification. *Journal of Educational and Behavioral Statistics*, 35(2), 154-173.

Kisida, B., Wolf, P. J., & Rhinesmith, E. (2015). *Views from Private Schools: Attitudes about School Choice Programs in Three States*. American Enterprise Institute, Washington, DC.

Krueger, A. B., & Zhu, P. (2004). Another Look at the New York City School Voucher Experiment. *American Behavioral Scientist*, 47(5), 658-698.

Ledwith, V. (2010). The Influence of Open Enrollment on Scholastic Achievement among Public School Students in Los Angeles. *American Journal of Education*, 116(2), 243-262.

Llera-Muney, A. (2005). The Relationship Between Education and Adult Morality in the United States. *The Review of Economic Studies*, 72, 189-201.

McClure, L., Strick, B., Jacob-Almeida, R., & Reicher, C. (2005). The Preuss School at UCSD: School Characteristics and Students' Achievement. University of California, San Diego, The Center for Research on Educational Equity, Assessment and Teaching Excellence.

Metcalf, K. K., West, S. D., Legan, N. A., Paul, K. M, & Boone, W. J. (2003). *Evaluation of the Cleveland Scholarship & Tutoring Program: Summary Report 1998-2002*. Bloomington, IN: Indiana University School of Education.

Mills, J. N., & Wolf, P. J. (2017). Vouchers in the Bayou: The Effects of the Louisiana Scholarship Program on Student Achievement after Two Years. *Education Evaluation and Policy Analysis*, Online First.

National Center for Education Statistics. (2016). *Education Digest*. Washington, DC: U.S. Department of Education, Institute of Education Sciences.

Neal, D. (1997). The Effects of Catholic Secondary Schooling on Educational Achievement. *Journal of Labor Economics*, 15(1), 98-123.

Owens, A. (2010). Neighborhoods and Schools As Competing and Reinforcing Contexts for Educational Attainment. *Sociology of Education*, 83(4), 287-311.

Reback, R. (2008). Demand (and Supply) in an Inter-district Public School Choice Program. *Economics of Education Review*, 27(4), 402-416.

Rouse, C. E. (1998). Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program. *Quarterly Journal of Economics*, 113(2), 553-602.

Shober, A. F., Manna, P., & Witte, J. F. (2006). Flexibility Meets Accountability: State Charter School Laws and Their Influence on the Formation of Charter Schools in the United States. *Policy Studies Journal*, 34(4), 563-587.

Stewart, T., Jacob, A.M., Jensen, L.I. (2012). *School Site Visits: What Can We Learn from Choice Schools in Milwaukee?* Fayetteville, AR: University of Arkansas Department of Education Reform.

Strick, B. (2009). College Enrollment and Persistence of Preuss Alumni. University of California, San Diego, The Center for Research on Educational Equity, Assessment and Teaching Excellence.

Witte, J. F. (2000). *The Market Approach to Education*. Princeton, NJ: Princeton University Press.

Witte, J.F., Wolf, P.J., Cowen, J.M., Fleming, D.J., and Lucas-McLean, J. (2008). *MPCP Longitudinal Educational Growth Study Baseline Report*. Fayetteville, AR: University of Arkansas, Department of Education Reform. Education Working Paper Archive. SCDP Milwaukee Evaluation Report 5.

Witte, J. F., Cowen, J., Fleming, D., Wolf, P. J., & Kisida, B. (2013). School Vouchers and Student Attainment: New Evidence from a State-Mandated Study of Milwaukee's Parental Choice Program. 3rd Annual Conference of the European Political Science Association, Barcelona, Spain, June 20-22.

Witte, J.F., Wolf, P.J., Cowen, J. M., Carlson, D., & Fleming, D. F. (2014). High Stakes Choice: Achievement and Accountability in the Nation's Oldest Urban Voucher Program. *Education Evaluation and Policy Analysis*, 36(4), 437-456.

Wolf, P. J., Fleming, D. J., & Witte, J. F. (2012). Special Choices: Do Voucher Schools Serve Students with Disabilities? *Education Next*, 12(3), 16-22.

Wolf, P. J., Kisida, B., Gutmann, B., Puma, M., Eissa, N., & Rizzo, L. (2013). School Vouchers and Student Outcomes: Experimental Evidence from Washington, DC. *Journal of Policy Analysis and Management*, 32(2), 246-270.

Zimmer, R., Gill, B., Booker, K., Lavertu, S., Sass, T. R., & Witte, J. F. (2009). *Charter Schools in Eight States: Effects on Achievement, Attainment, Integration, and Competition*. Vol. 869. Santa Monica, CA: Rand Corporation.