

Who Chooses? Who Uses? Participation in a National School Voucher Program

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Among the most controversial issues in the heated public debate over school vouchers is the question of which families are most likely to leave the public sector and enroll their children in private schools if given the opportunity. Critics assert that the parents most likely to opt for vouchers will be those who are already most involved in their children's education—which, on average, will mean the parents of the most motivated and gifted students. They also argue that the introduction of a voucher system would increase the separation of students by race and social class, with minority and low-income students relegated to underfunded and increasingly neglected public schools. Proponents, on the other hand, contend that any “creaming” from the public school system that would occur as a result of most potential voucher systems would be

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relatively modest. Moreover, they suggest that vouchers would actually serve to reduce racial and socioeconomic segregation by diminishing the salience of parental income and residential location in determining which school a child attends.

INTRODUCTION

This chapter takes advantage of the recent establishment of the Children's Scholarship Fund (CSF), a privately funded national school voucher program targeted at low-income families, to address these issues with quality data. Specifically, we offer answers to two related questions: (1) which eligible families initially chose to apply for a scholarship to attend a private school (*who chooses?*), and (2) among those families who were offered a CSF scholarship, who actually used it to attend a private school (*who uses?*)? Together, the answers to these questions allow us to anticipate the short-term impact of the establishment of at least one possible voucher system on the relative compositions of the public and private sectors.

All school voucher proposals involve the distribution of government grants designed to help parents purchase education for their children in schools outside the public sector. However, the range of possible voucher alternatives is substantial. Because the specific design of a voucher system can affect its impact on students and society, any conclusions about the impacts of a particular program must be limited to those that share its essential characteristics.

In this regard, the privately funded CSF program is of interest, because its design is not essentially different from many that have been proposed and implemented as public policy. Most important, the program focuses exclusively on families with low-to-moderate incomes, with the value of the tuition discount offered to families scaled to reflect their relative financial need. In order to be eligible to receive a CSF scholarship, applicants needed to have at least one child

in grades K–8 and a total household income of less than 270 percent of the federally determined poverty line for a family of their size. The value of the scholarships applicants received was a function of their income level, household size, and the cost of tuition at the private school they selected: families with an annual household income below the federally established poverty line for a family of their size qualified for scholarships covering up to 75 percent of tuition at the private school of their choice. Families with incomes above this threshold were only eligible to receive awards equal to 50 percent of their tuition payments, and the maximum award for those families with incomes greater than 185 percent of the poverty line fell to just 25 percent of tuition. If a family won the lottery, each of their children in the appropriate grade range was offered a scholarship.

Families awarded CSF scholarships were able to use them to send their children to religious schools; in fact, over 92 percent of parents participating in the program reported that their child attended a private school with a religious affiliation.¹ Because the value of the scholarship was never allowed to exceed 75 percent of the full cost of tuition, and was often much less, parents were effectively forced to use their own funds to supplement their award. No upper limit was placed on the amount of money they could use for this purpose.

Many of these characteristics of the CSF correspond quite closely to those of local programs in Cleveland and Milwaukee, the two largest and longest-running government-funded voucher systems currently in existence in the United States. A proposal to create a similar program on a national scale was debated in the House of Representatives as recently as 1997.² Finally, Terry Moe's recent study of national public opinion regarding school vouchers suggests that Americans

¹P. E. Peterson and D. E. Campbell, "An Evaluation of the Children's Scholarship Fund." Working paper, Program on Education Policy and Governance, Harvard University, 2001.

²Helping Empower Low-Income Parents (HELP) Scholarship Amendments, H.R. 2746, 1997.

would be most likely to support a voucher program if it initially has each of the features outlined above.³ If a voucher system is to prove politically feasible, therefore, whether on a national, state, or local level, it is likely to closely resemble the CSF Fund program in its basic design.⁴

Apart from its similarity to proposals for publicly funded vouchers, other features of the CSF program make it well suited for empirical study. It is the largest voucher program in the United States, serving approximately 40,000 students, and it is national in scope, thereby increasing confidence that any findings concerning selection are not simply a reflection of the special characteristics of a particular locality. Moreover, because the number of eligible applicants far exceeded the number of available scholarships, recipients were selected by lottery, which means families were assigned randomly to test and control groups. Portions of our analysis take advantage of the random assignment of families to treatment and control conditions.

PREVIOUS RESEARCH

Existing research on the question of who would be most likely to use vouchers is relatively limited. Some scholars have inferred the extent of the impact of vouchers from data on current public and private school enrollments. This research has found that families with higher incomes and more education are more likely to send their children to a private

³T. M. Moe, *Schools, Vouchers, and the American Public* (Washington, D.C.: Brookings Institution Press, 2001), chap. 9.

⁴Moe's study also demonstrates that Americans favor imposing certain limited regulations on private schools with regard to curriculum, academic performance, and admissions policies. To the extent that the CSF places no additional restrictions on participating private schools apart from existing state regulations, it is somewhat out of step with national public opinion on this one issue. However, because such measures would likely serve to ameliorate any detrimental consequences a voucher system might have on educational segregation, a study of the CSF simply represents a particularly stringent test for vouchers.

school.⁵ The relative importance of these two factors, however, has been difficult to establish. These studies have also found that parents are more likely to go private when the perceived or actual performance of their local public schools is low, suggesting that they are motivated at least in part by academic quality.⁶ Religious commitment, too, appears to be an important factor in increasing the appeal of private schooling, although limitations in the data that are available have precluded comprehensive analysis of this issue. Still, it is quite clear that Catholic families are more likely to select private schools.⁷

The findings of this line of research regarding the extent to which considerations of race motivate private school enrollment have been less conclusive. Although blacks, Hispanics, and immigrants are substantially less likely to attend private schools than native-born whites, 70 percent of the variation can be accounted for by differences in parental income and education.⁸ The extent to which the remaining differences are due to a desire to attend ethnically heterogeneous schools has not been conclusively determined.

Although informative, studies of public and private school attendance are limited by the fact that their inferences are based on the observation of enrollment decisions made under current policies; specifically, they do not tell us much about what would happen if vouchers substantially reduced the cost of a private education. To obtain a better estimate of the likely consequences of a voucher system, Moe asked parents whether they would be interested in sending their child

⁵See: J. E. Long and E. F. Toma, "The Determinants of Private School Attendance, 1970–80," *Review of Economics and Statistics* 70 (1988): 351–57; R. J. Buddin and J. J. Cordes, "School Choice in California: Who Chooses Private Schools?" *Journal of Urban Economics* 44 (1998): 110–34; J. R. Betts and R. W. Fairlie, "Explaining Ethnic, Racial, and Immigrant Differences in Private School Attendance," *Journal of Urban Economics* 50 (2001): 26–51.

⁶R. H. Lankford and J. H. Wyckoff, "Primary and Secondary School Choice Among Public and Religious Alternatives," *Economics of Education Review* 11 (1992): 311–37; Buddin and Cordes.

⁷See Long and Toma; Buddin and Cordes.

⁸Betts and Fairlie.

to a private or a parochial school if they could afford it. His results suggest that the appeal of private education is actually strongest among parents who are of minority background, of low income, and dissatisfied with the academic quality of their child's current school. Among less advantaged families, it is those who are better educated who are most likely to say they would go private if they could afford it.⁹

Data from the CSF survey allow us to see whether parental responses to Moe's survey are consistent with those obtained when vouchers are actually made available. By looking at the CSF data, we can infer the effects of vouchers from parents' revealed preferences regarding their children's education, when a voucher lowers the cost to the family of private schooling. The data also provide information on the success of voucher applicants in obtaining access to a private school. As Moe acknowledges, there is a substantial difference between expressing an interest in private education and successfully enrolling in a private school. In short, the CSF data provide information not only on selection that may occur as the result of differences in parental assiduousness in pursuing a voucher opportunity, but also on selection that may occur as the result of the actions of private school administrators, who might discriminate against minority and poor families.

DATA COLLECTION PROCEDURES

To ascertain the potential effects of vouchers on the composition of public and private schools, we provide estimates of the characteristics of those who applied for school vouchers when they were made available and estimates of the characteristics of those who used a voucher when it was offered to them. To provide these estimates, we rely upon two sources of data. First, the Program on Education Policy and Governance at Harvard University (PEPG) conducted a telephone survey of 2,368 CSF applicants with children enrolled in

⁹Moe, chap. 5.

public school, in grades 1 through 8, randomly sampled from the universe of applicants whose eligibility had been confirmed.¹⁰ Applicants were surveyed in the summer following the first school year after CSF scholarships were awarded (June–August 2000). The sample was drawn to match the overall geographic distribution of CSF applicants. One parent in each family and those children in grades 4 and above were interviewed. Because the survey was specifically designed to gauge the experiences of those who switched from public to private schools, in addition to a battery of standard demographic questions, respondents were also asked about their attitudes toward their schools.

To make possible a comparison of the sample of applicants with a sample of the eligible population at large, PEPG administered a similar survey to a cross-section of families who meet the CSF program's eligibility criteria. These were defined as families with children in grades 1 through 8, who have low-to-moderate incomes (less than \$40,000), and live in cities with a population of 200,000 or more. When compared with the actual criteria used by the CSF, this definition is close but not exact. Inasmuch as families could have an annual household income of up to 270 percent of the federally defined poverty line and still qualify for a voucher, our definition sets a lower income bound, making the differences between applicants and the eligible population reported below appear larger than they may have been in reality. The same survey was also administered to a national probability sample of all households with children in grades 1 through 8.

¹⁰The survey was administered by Taylor Nelson Sofres Intersearch, a professional survey research firm. According to the guidelines of the American Association for Public Opinion Research, *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys* (Ann Arbor, Mich., 2000), the adjusted response rate is 46 percent. As detailed in AAPOR's guidelines, this response rate uses as its denominator an estimate of the percentage of eligible cases among the unknown cases. We generated that estimate by assuming that the percentage of ineligible households among those we interviewed is the same as the percentage among those we did not interview (43%).

These cross-sectional surveys were given to members of a panel assembled by Knowledge Networks, Inc., and administered over Web TV, a device that connects one's television to the Internet. In spite of the two different modes of survey administration, we are reasonably confident that data from the two sources can be compared. Knowledge Networks' panel is constructed using a probability sample of the U.S. population who are initially contacted by telephone, and data are weighted to account for nonresponse (either to the initial invitation to join the panel or the request to complete this particular survey). Moreover, comparisons of results from conventional RDD telephone and Knowledge Networks surveys show them to be substantively similar.¹¹

Our survey of CSF applicants means that we have extensive data on applicants to the largest operating voucher program, private or public, in the United States. Coupling this information with our cross-sectional survey of the eligible population enables us to compare the profile of applicant and nonapplicant families, and in that way to determine who chooses to apply for a school voucher. The survey administered to CSF applicants also allows us to assess the characteristics of those who use a voucher when it is offered. Recall that CSF awards its vouchers randomly, so we need not worry about systematic differences between families offered a voucher and those who did not receive an offer.¹² Therefore, simply restricting our analysis to the families in our sample who won the lottery allows us to identify the determinants of voucher take-up among those who applied for the program.

We should note that although the CSF is a national voucher program, it was not advertised uniformly across the United States. The program received invaluable national publicity when Oprah Winfrey mentioned it on her popular television

¹¹See R. P. Berrens, A. K. Bohura, et al., *The Advent of Internet Surveys for Political Research: A Comparison of Telephone and Internet Samples* (2001).

¹²See Peterson and Campbell.

show, but for the most part CSF program operators advertised through local channels. The extent to which the CSF was advertised more in one type of community than another is likely to affect the demographic profile of our applicant sample. For example, it is possible that African Americans applied more frequently in part because the voucher program was advertised more heavily in areas where African Americans lived. Similarly, Latinos may have been less likely to apply, because the voucher program did not advertise as heavily in those parts of the country (notably the West) where Latinos are concentrated. Research is under way to determine the extent to which CSF's advertising affected the composition of the applicant pool.

WHO CHOOSES TO APPLY FOR VOUCHERS? COMPARING APPLICANTS WITH THE ELIGIBLE POPULATION

Table 1 provides a straightforward comparison of the demographic characteristics of voucher applicants with a national sample of public school families who meet the voucher program's income eligibility requirements.¹³ When compared with the total population eligible for the program, voucher applicants appear modestly advantaged, indicating that the voucher program "skims" the more desirable families among the population eligible for vouchers. The skimming is quite modest, however, and may be due in part to the fact that our definition of the eligible population was somewhat more restrictive than the program's own guidelines.

Some differences were statistically insignificant or so small that they hardly justify the skimming metaphor. Twenty-three percent of the mothers of voucher applicants reported that they had a college degree, as compared with 20 percent of eligible public school families. Students applying for

¹³In the remainder of this chapter we identify the CSF program, its applicants, and its users, as simply the voucher program, voucher applicants, and voucher users.

TABLE 1
Demographic Background of Voucher Applicants
and Those in Eligible Population

	<i>Voucher Applicants</i>	<i>National Sample of Voucher-Eligible Public School Families</i>
Mother graduated from college	23%	20% ^b
Live in two-parent household	52%	46% ^c
Mother's age (average)	37.1	37.2
Mother born in U.S.A.	82%	83%
Lived in current residence ≥ 2 yrs.	81%	71% ^c
Black	49%	26% ^c
Hispanic	17%	25% ^c
Catholic	25%	28% ^b
Attend church at least 1/week	66%	38% ^c
Number	2303–2368	874–971

^aSignificant at 10%; ^bsignificant at 5%; ^csignificant at 1%.

Note: Data from national sample are weighted to ensure representativeness. Sample of applicants not offered a voucher.

voucher scholarships were also only slightly more likely than the eligible population to live with both parents. Nor were there any significant differences between the two groups in terms of the average age of the child's mother or the percentage of mothers who had been born in the United States. However, applicant families were 10 percentage points more likely than the eligible population as a whole to have lived in their current residence for two years.

The largest differences between these two groups of families involved their racial composition. Whereas 26 percent of the eligible population was African American, no less than 49 percent of voucher applicants were. By contrast, Betts and Fairlie found disproportionately low private school attendance rates among blacks; however, Moe found that minority families were particularly interested in moving their children

from public to private schools.¹⁴ When interpreting this result it is important to recall our earlier caveat that at this point we are unable to determine the extent to which the large proportion of blacks among CSF applicants is a function of CFS's marketing strategy. Nevertheless, it seems safe to conclude that the demand for vouchers among African Americans is larger than one would assume if one looked only at patterns of private school usage in the absence of an external subsidy.

Given the large network of relatively inexpensive Catholic private schools and the propensity of Catholic families to send their children to parochial schools, it is somewhat surprising that voucher applicants were actually slightly less likely to be Catholic than the eligible population. Nevertheless, religiously observant families were more likely to apply for a voucher than the less observant. Sixty-six percent of voucher applicants reported that they attend church at least once a week, a response given by only 38 percent of eligible public-school families.

Table 2 provides information on the level of parental involvement in school on the part of applicants, as compared with the eligible population.¹⁵ In some ways, applicants seem more involved with their public schools; in other ways, less so. On the one hand, voucher applicants report having attended more parent-teacher conferences during the past year than did the parents in the eligible population, and they

¹⁴See Betts and Fairlie; Moe.

¹⁵The sample size for applicants is smaller for the portions of the analysis that address parental involvement with school, parental satisfaction with school, and parental reports of public school characteristics, because relevant data on these issues were available only for that portion of the applicant sample who were not offered a voucher. Because our survey was administered one year after lottery winners received their vouchers, their answers would reflect their experiences after switching schools, not their experiences with their public schools at the time that they applied to CSF. Fifteen percent of the control-group families in our sample who did not receive a scholarship nevertheless enrolled their children in a private school and have also been excluded from the analysis. Although the latter exclusion involves a departure from the random assignment research design, including them in the analysis does not change any of the substantive results reported in Tables 2, 3, or 4. Because the families in the control group were randomly selected from the total set of applicants, these results may be generalized to the total population.

TABLE 2
Parental Involvement of Voucher Applicants and Those in Eligible Population

	<i>Voucher Applicants</i>	<i>National Sample of Voucher-Eligible Public-School Families</i>
PT conferences per year	3.1	2.5 ^c
Telephone conversations per year	2.4	2.7 ^c
Volunteered in school (4-point scale)	0.9	0.7 ^c
Talk to other parents (4-point scale)	1.9	1.9
Number	662–669	964–968

^cSignificant at 1%.

Note: Data from national sample are weighted to ensure representativeness. Sample of applicants not offered a voucher.

also report that they were more likely to volunteer in their child's school than did the other group of parents. On the other hand, applicants for the program spoke less frequently with their child's teacher by phone.¹⁶

One way of reconciling these findings is to distinguish between teacher-initiated involvement and parent-initiated involvement with the school. Taking advantage of parent-teacher conferences and volunteering at school may come at the initiative of parents, and our data suggest that parents who make the effort to participate in school life in this way are also the ones who apply for vouchers. Phone conversations with teachers, on the other hand, may originate at the school. Our results indicate that when a school does not communicate effectively with its families, they are more likely to apply for a voucher.

¹⁶Specific questions are: (1) "How many parent-teacher conferences did you or someone else attend for [child's name] this school year?" (2) "How many times did you or someone else speak with [child's name] principal or teacher on the telephone this school year?" (3) "About how many hours have you or someone else volunteered in [child's name] school this past month? Is it none, one to two hours, three to five hours, or six or more hours?" (4) "How often do you or someone else talk with families who have children at [child's name] school? Would you say very often, often, not very often, or never?"

The decision to apply for a voucher may be influenced by a student's academic ability or rate of progress in school. Our survey data do not have precise evidence on a student's academic ability such as might be gained from the administration of a nationally normed examination. However, parents were asked whether their child had ever been diagnosed as having a learning disability. As Table 3 indicates, there was no measurable difference between the percentage of students applying for the program and the eligible population who had been so diagnosed.

The survey responses of students in grades 4 through 8 provide further insight into the academic experiences of students in families who applied for a scholarship. As also can be seen in Table 3, students whose families applied for a voucher reported that they expected to stay in school longer than did students among the eligible population as a whole. However, a higher percentage of applicant students than those in the eligible population agreed that they would read better with more help. Students were also asked whether or not their schoolwork was difficult and if they were having trouble keeping up in school.¹⁷ When responses to the two items were combined into a standardized index of school difficulty, the comparison suggests that voucher applicants, on average, considered their schoolwork to be less challenging than the eligible population.¹⁸ In general, then, this pattern of results suggests that the families most likely to apply for a scholarship were those with students who are academically ambitious and frustrated with their progress.

¹⁷The specific questions are: (1) "How far in school do you intend to go: probably won't graduate from high school, will go to college but might not graduate, will graduate from college, will go to more school after college"; (2) "How strongly do you agree or disagree with the following statements? Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree?": Class work was hard to learn; I had trouble keeping up with the homework; I would read much better if I had more help.

¹⁸The index is additive, with the two measures simply summed. That total was then divided by its standard deviation, thus producing an index with a standard deviation of 1.

TABLE 3
 Student Academic Characteristics of Voucher
 Applicants and Those in Eligible Population

	<i>Voucher Applicants</i>	<i>National Sample of Voucher-Eligible Public School Families</i>
Parental Reports		
Student has been diagnosed with a learning disability	14%	13%
Number	692	943
Student Reports		
How far student will go in school (4-point scale)	4.1	3.8 ^c
Would read better with help (4-point scale)	2.6	2.4 ^b
Class work is hard (4-point scale)	2.1	2.3
Trouble keeping up (4-point scale)	2.1	2.2
Difficulty in school index (varies between 1 and 3)	2.1	2.6 ^c
Number	223–36	482–526

^bSignificant at 5%; ^csignificant at 1%.

Note: Data from national sample are weighted to ensure representativeness. Sample of applicants not offered a voucher.

The largest and most consistent differences between applicants for the voucher program and the eligible population appear in their level of satisfaction with the public schools their children were attending. As is evident in Table 4, the parents of voucher applicants were far less satisfied with their schools than were eligible nonapplicants, suggesting that voucher applicants were motivated largely by considerations of academic quality. Nor were these differences in satisfaction simply a function of gross disparities in the resources available in respondents' schools, at least as measured by class size. Voucher

applicants' classes were, on average, no larger than those of eligible nonapplicants. Interestingly, however, the public schools attended by applicants were approximately fifty students larger than the schools attended by students in the eligible sample.

Table 5 addresses the concern that significant numbers of parents would use vouchers to remove their children from schools that are attended by large numbers of minorities, thus increasing racial segregation. Each row reports the percentage of families whose children attend schools whose racial composition is at least 90 percent, first for blacks, then Hispanics, then whites. A little less than half of black CSF applicants attend schools that are 90 percent minority, compared with only 32 percent of blacks in the national cross-section. For Hispanics, both percentages were 23 percent. When the same

TABLE 4
Parental Satisfaction and School Characteristics of
Voucher Applicants and Those in Eligible Population

	<i>Voucher Applicants</i>	<i>National Sample of Voucher-Eligible Public School Families</i>
Percent "very satisfied" with:		
Academic quality	24%	38% ^c
Safety	22%	38% ^c
Location	32%	51% ^c
Discipline	22%	33% ^c
Teaching of values	26%	36% ^c
School Satisfaction Index	5.0	5.5 ^c
Parent's grade for school (4-point scale)	2.6	2.9 ^c
Class size (average)	24	24
School size (average)	500	450 ^c
Number	575–695	700–965

^cSignificant at 1%.

Note: Data from national sample are weighted to ensure representativeness. Sample of applicants not offered a voucher.

analysis is restricted to whites, no differences were observed in the percentage of applicants and CSF-eligibles attending schools that are 90 percent minority. Less than 10 percent of whites in both samples attended a school with this demographic profile. Therefore, rather than contributing to “white flight,” the CSF scholarship program appears to have substantially increased the educational options available to blacks attending predominantly minority schools.

WHO USES A SCHOLARSHIP WHEN OFFERED? MODELING VOUCHER TAKE-UP

To model the decision to use a voucher among those families who won the lottery and were thus offered a voucher, we constructed a dichotomous dependent variable that equals 1 if the family used the voucher and equals 0 if they did not. Our models include a number of factors that past research on vouchers and other targeted social benefits has suggested may

TABLE 5
Racial Composition of Schools Attended by
Voucher Applicants and Those in Eligible Population

	<i>Voucher Applicants</i>	<i>National Sample of Voucher-Eligible Public School Families</i>
	<i>(Percentage attending 90% or more minority school)</i>	<i>(Percentage attending 90% or more minority school)</i>
Blacks	47%	32% ^c
Number	359	205
Hispanics	23%	23%
Number	111	186
Whites	8%	8%
Number	146	446

^cSignificant at 1%.

Note: Data from national sample are weighted to ensure representativeness. Sample of applicants not offered a voucher.

influence voucher take-up. Note that questions pertaining to individual parents were asked in regard to the mother or female guardian in the home (except in the extremely rare situation where there was only a father or male guardian in the home, in which case questions were asked about him). This decision reflects the fact that research has shown that attributes of the mother are the better predictor of academic attainment.¹⁹ Although we use the term “mother” to simplify the discussion, such references should be taken to mean “mother or female guardian.”

Two variables were included indicating the level of educational attainment by the mother: whether or not she was a college graduate, and whether or not she had attended some college, both as distinct from having received no more than a high school diploma.²⁰ These variables provide information on the extent to which more educated parents are more likely to use a voucher, as well as on whether private schools give priority to children from better-educated families. In addition, a measure of the mother’s age is included in the model, with the expectation that younger mothers, particularly those who had children while in their teens, might be less able or less motivated to enter the private school market. Because past research has suggested that most immigrant groups are less likely to send their children to private schools,²¹ we add another variable indicating whether or not the mother was born in the United States. We also include a measure of the mother’s labor-force participation, since it has been suggested that “holding family income constant, a family will be less wealthy in real terms if both parents must work to earn that family income, since the family must forgo the mother’s household production.”²²

¹⁹C. Jencks, *Who Gets Ahead? The Determinants of Economic Success in America* (New York: Basic Books, 1979).

²⁰The small number of mothers reporting that they have a graduate degree were combined with those with a bachelor’s degree.

²¹See Betts and Fairlie.

²²Buddin and Cordes, p. 125.

We also include in the model a dichotomous variable indicating whether or not the student lives in a home with two parents, on the assumption that two-parent homes will have more resources to devote to seeking out and enrolling in a private school as well as to fulfilling any additional responsibilities that might come from having a child attend a school in the private sector. Yet another variable accounts for whether the family has lived in its current residence for two or more years. The longer a family lives in a community, the more likely they are to be informed about the full range of educational options available to them. Moreover, evidence from studies of other means-tested social benefits suggests that the families most likely to complete the administrative tasks associated with enrolling are those who expect to be eligible for an extended period of time.²³ Given that switching a child from public to private school constitutes a major commitment for the child and the family, more transient families might be less willing to make this investment.

Moe's research suggests that black families living in the north are more interested in moving their children to private schools than are other racial or ethnic groups, although the same is not true of Southern blacks.²⁴ Consequently, we include in the model a term for blacks in Southern states (defined as the states of the former Confederacy), and another for blacks residing in the North (more accurately but clumsily, the rest of the United States). Similarly, we account for whether the mother identifies as Hispanic.

Because an overwhelming percentage of private schools in the United States have a religious affiliation, the debate over school vouchers is often a thinly cloaked debate over what constitutes an appropriate—and constitutional—relationship between church and state. Given that Catholic parochial schools constitute a large proportion of the nation's private

²³B. P. McCall, "The Impact of Unemployment Benefit Levels on Reciprocity," *Journal of Business and Economic Statistics* 13 (1995): 189–98; R. M. Blank and P. Ruggles, "When Do Women Use Aid to Families with Dependent Children and Food Stamps?" *Journal of Human Resources* 31 (1996): 57–89.

²⁴Moe, chap. 5.

schools, the model also includes a term indicating whether the family is Catholic, as well as an interaction term between Catholic religious affiliation and frequency of church attendance. The interaction allows us to distinguish between nominal Catholics and those who are religiously observant. Schools founded by fundamentalist and evangelical Christians constitute a large, and the fastest growing, segment of the private school market, and so we include an indicator of whether the mother is a “born-again” Christian. For the same reasons, we also include a measure of the frequency with which the mother attends religious services. Because the assertion that one is a “born-again” Christian is itself a measure of religious orthodoxy, we would not expect its interaction with church attendance to be a significant factor, an expectation borne out in model specifications not shown here. For parsimony’s sake, we therefore do not include it here.

A common concern raised about school vouchers is that private schools will turn away students with learning disabilities, leaving these high-needs children as a larger proportion of the public school population.²⁵ We thus also include a variable indicating whether or not a family has a child with a learning disability.

We include measures of both the family’s income and the number of children in the family.²⁶ Research on higher education has shown that parental willingness to support financially their children’s education is strongly related to their household income and family size.²⁷ However, these two factors together also determine the value of the voucher offered by CSF, or what is effectively the discount they would receive on the price

²⁵L. F. Rothstein, “School Choice and Students with Disabilities,” in S. D. Sugarman and F. R. Kemerer, eds., *School Choice and Social Controversy* (Washington, D.C.: Brookings Institution Press, 1997), p. 357.

²⁶This income measure is different from the one used in the comparison between voucher applicants and a cross-section of the eligible population. Previously, we reported income as reported in our telephone survey, using a closed-choice survey question. Here we use applicants’ income as they reported it to CSF for verification.

²⁷L. C. Steelman and B. Powell, “Sponsoring the Next Generation: Parental Willingness to Pay for Higher Education,” *American Journal of Sociology* 96 (1991): 1505–29.

of private school tuition. If the CSF formula for determining a family's tuition discount is calibrated precisely to the family's ability to pay, then neither of these variables should have a statistically significant effect on take-up.

Finally, we also account for two factors describing the context of the communities in which applicants live. First, we have calculated the size of the private school market in a respondent's metropolitan area. While most of the discussion of "who uses" has centered on the characteristics of individuals, it seems plausible that the availability of private schools within one's community is also a major determinant of whether a family chooses to go private. Private school market share is operationalized as the percentage of elementary and secondary school students attending private school within a family's metropolitan statistical area (MSA), as reported in the 1990 U.S. Census. Second, we also include a measure of the racial composition of a family's local public schools, operationalized as the percentage of African American students in the elementary and secondary schools within a respondent's zip code. These data are again taken from the 1990 U.S. Census. We use zip code as the level of aggregation for this measure because it most closely reflects the racial composition of the public schools in a respondent's neighborhood. By including this measure, we are able to test whether vouchers facilitate racial segregation in the public schools. That is, do families use vouchers to flee predominantly African American schools?

Table 6 presents a simple comparison between users and decliners on all items included in the logistic model presented in Table 7, with an indication of whether the simple difference between the two groups is statistically significant. Voucher users are less likely to have attended "some college," but more likely to have graduated from college. A smaller percentage of mothers in families that opt to use a voucher work full time, while a higher proportion of these families have lived in their current residence for at least two years. There are also smaller percentages of Southern blacks and Hispanics among voucher users, and higher per-

centages of Catholics and frequent church attenders. The income of users is modestly higher than that of decliners, and their families are slightly smaller. Users have a slightly smaller private school market than decliners. Interestingly, users also have a lower percentage of African Americans in their local schools, contrary to the fear that vouchers are a means for families to flee predominantly minority schools.

Logistic regression is used as the estimator in the multivariate analysis, because the dependent variable is dichotomous.

TABLE 6
Characteristics of Voucher Users and Decliners

	<i>Decliners</i>	<i>Users</i>
Attended "some college"	43%	37% ^b
College graduate	23%	30% ^c
Mother's age	37	37
Mother born in U.S.A.	82%	85%
Mother works full time	60%	51% ^c
Two-parent household	53%	54%
Lived in current residence \geq 2 yrs.	79%	86% ^c
Black, Northern states	28%	26%
Black, Southern states	23%	13% ^c
Hispanic	17%	13% ^b
Catholic	24%	31% ^c
"Born-again" Christian	41%	39%
Attend religious services 1/week or more	65%	74% ^c
Child has learning disability	14%	12%
Family income	\$22,110	\$23,854 ^c
Number of children (average)	1.75	1.62 ^c
Private school share of market	12%	13% ^c
Local schools' racial composition (% black)	38%	33% ^c
Number	1,146–1,187	469–492

^bSignificant at 5%; ^csignificant at 1%.

Note: All figures are percentages unless otherwise indicated.

TABLE 7
Logistic Regression Results for Voucher Usage

	<i>Standard Model</i>		<i>Whites Only</i>	
Attended "some college"	-0.292 ^a	(0.152)	-0.038	(0.284)
College graduate	0.140	(0.167)	0.622 ^b	(0.309)
Mother's age	-0.020 ^b	(0.009)	-0.029	(0.018)
Mother born in U.S.A.	0.327	(0.206)	0.854	(0.692)
Mother works full time	-0.134	(0.133)	-0.185	(0.238)
Two-parent household	-0.353 ^b	(0.141)	-0.543 ^a	(0.278)
Lived in current residence ≥ 2 yrs.	0.473 ^c	(0.177)	0.870 ^c	(0.335)
Black, Northern states	-0.570 ^c	(0.194)		
Black, Southern states	-0.973 ^c	(0.221)		
Hispanic	-0.692 ^c	(0.234)		
Catholic	0.108	(0.270)	0.743 ^a	(0.433)
Catholic church attendance	0.626 ^b	(0.306)	0.264	(0.525)
"Born again" Christian	0.232	(0.160)	0.819 ^b	(0.323)
Church attendance	0.382 ^b	(0.178)	0.587 ^a	(0.349)
Child has learning disability	-0.368 ^a	(0.206)	-0.352	(0.341)
Family income	0.078	(0.054)	0.239 ^b	(0.100)
Number of children	-0.246 ^c	(0.079)	-0.109	(0.144)
Private school share of market	5.078 ^c	(1.485)	6.369 ^b	(2.839)
Local schools' racial composition	-0.093	(0.243)	0.119	(0.582)
Constant	-0.881 ^a	(0.496)	-2.682 ^b	(1.085)
Number	1,377		370	
Pseudo-R ²	.07		.11	
Naïve prediction	70.7		56.8	
% model correctly predicted	72.8		68.11	

^aSignificant at 10%; ^bsignificant at 5%; ^csignificant at 1%.

Note: Standard errors are given in parentheses.

Column 1 of Table 7 displays the results of a model with all the variables just described. Perhaps the first thing to note is that the model itself does a relatively poor job of explaining “who uses.” The model’s improvement over a naïve prediction is minimal, and the pseudo- R^2 is relatively low. We can thus conclude that the determinants of voucher usage are outside the numerous demographic variables included in this model.

Among the variables included in the model, there are a few surprises. Attending “some college” is actually a negative predictor of using a voucher (remember that this is relative to having a high school education or less), while having a college degree is not statistically significant. It does not appear, therefore, that, *ceteris paribus*, the pool of voucher users is more educated than decliners. This inference is confirmed by results from a model specification not shown in which the effects of mother’s educational attainment, as estimated by a single ordinal variable, are once again so small as to be statistically insignificant.

Mother’s age is a significant factor in determining who uses vouchers, but in the opposite direction from that predicted. Rather than younger mothers being less likely to use vouchers, they are more likely to do so. Families with a foreign-born mother are no less likely to use a voucher; families with a mother who works full time are neither more nor less likely. Surprisingly, families with two parents in the same household are less, not more, likely to take advantage of a voucher.

The measure of residential stability plays a relatively large role in predicting who uses. This means that the families who switch from public to private schools are more established in their communities than those who choose not to make use of a voucher. We hypothesize that this is because they are more aware of private school options for their children. It may also be because “putting down roots” in a neighborhood means that a family is more likely to be embedded in a religious community, many of which may sponsor private schools. Whatever the causal mechanism, it seems clear that under a voucher program, the most residentially mobile families are likely to

continue to use the public schools while those who are the least likely to have moved are the most likely to go private.

The coefficient on each of the variables identifying blacks is negative and large, the coefficient for Southern blacks being over twice as large as the one for Northern blacks. These results hold when simply living in the South is entered as a control variable as well. In other words, while African Americans were a disproportionately large percentage of the applicant population, they were less likely to use a voucher, when offered. The results may indicate that private schools are less likely to admit black applicants than white applicants. However, it is also possible that the high percentage of black applicants may indicate that, on average, there was less self-selection, and perhaps less precommitment to using the voucher, on the part of black applicants. If as a consequence the average black family among voucher applicants was less committed to using a voucher upon its offer than a white family, then the take-up rate among African Americans would be lower. One cannot be sure that such an interdependence exists, however, because Hispanics were both less likely to apply for the program than other ethnic groups and less likely to use a voucher when offered one.

Moving to measures of religious affiliation and commitment, simply having a Catholic religious affiliation is not a significant predictor of going private once we also include the interaction between Catholic and church attendance. The coefficient on the interaction term itself, however, is large. Evaluated together, these results suggest that it is not being nominally Catholic that increases a family's likelihood of switching from the public to private sector, but being a practicing Catholic. Similarly, simply identifying as a born-again Christian has no measurable effect on voucher take-up, although frequency of church attendance does. In sum, it appears as though religious families, particularly practicing Catholics, are more likely to use vouchers. For Catholics and non-Catholics alike, frequency of church attendance predicts voucher take-up; nominal religious identifications, however, are unimportant.

The coefficient for learning disability is negative and statistically significant at the 0.10 level. Therefore we can cautiously suggest that families with children who are learning disabled may be less likely to use a voucher.

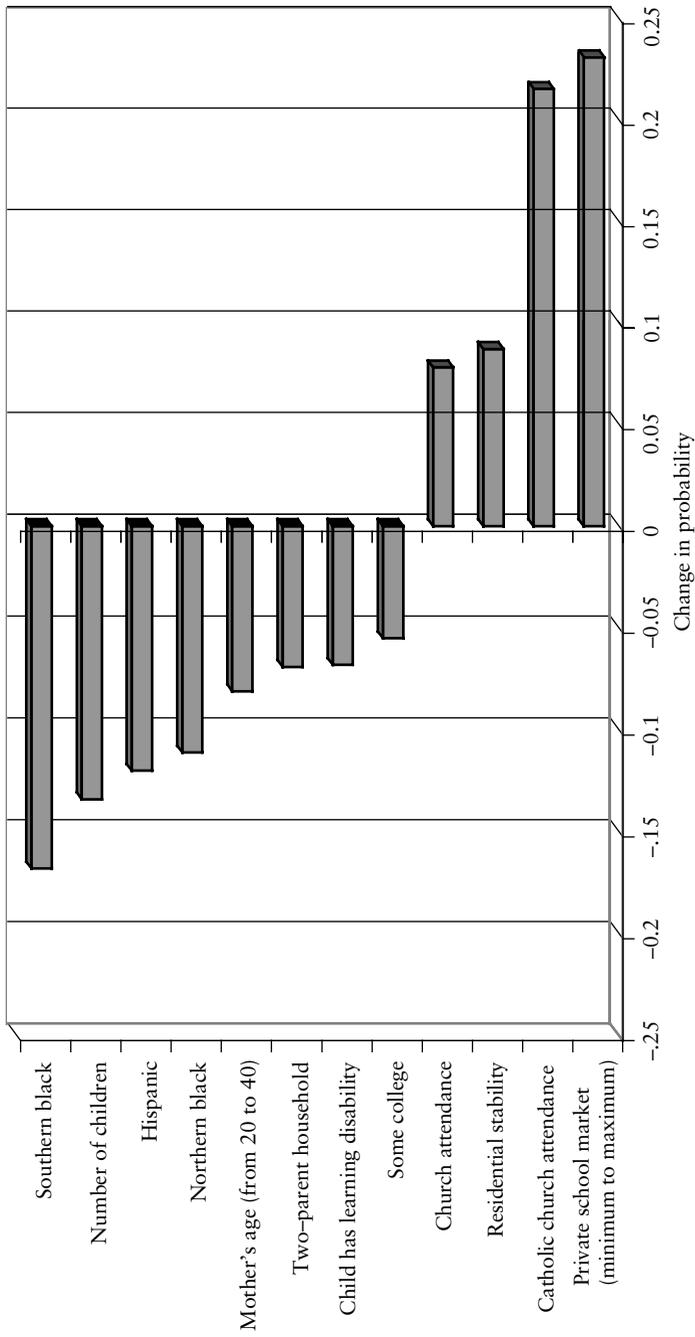
Income is not a statistically significant factor determining who uses vouchers, which is exactly what CSF program operators intended in their design of the program. However, the number of children in a family is negatively related to the decision to use a voucher. This is almost certainly due to the fact that even though CSF attempts to account for the number of children in a family when determining voucher amounts, more children nonetheless means that more tuition is due.

The size of the private school market is positive and highly significant, meaning that “who uses” is largely determined by where opportunities to enroll in private schools can be found. However, the measure of the local schools’ racial composition does not approach statistical significance, indicating that families in general are not more likely to use vouchers as a function of their local schools’ racial composition.

One might still object that this is not a full test of white flight hypothesis, because the relevant question is really whether *whites* consider the racial composition of their neighborhood’s public schools when deciding to use a voucher. Column 2 reports the results of the same model as in Column 1, but restricted to whites only. Again, we see that the coefficient for schools’ racial composition cannot be distinguished from 0. In sum, we can find no evidence that vouchers contribute to racial segregation.

Because the coefficients in Table 7 are from logistic regression models, the relative magnitude of their effects is not intuitively interpretable. In order to compare their substantive impact, Figure 1 displays the first differences of each variable as generated with Monte Carlo simulation.²⁸ With all other variables set to their means, we generate the change in the

²⁸M. Tomz, J. Wittenburg, et al., CLARIFY: Software for interpreting and presenting statistical results, Cambridge, Mass., 2001.



Change in probability of using a voucher, holding other variables constant at their means. Results generated from logistic regression coefficients reported in Table 7.

FIGURE 1. Comparison of the Impact of Different Variables on the Decision to Use a Voucher

predicted probability of using a voucher as each successive variable has its value vary from the minimum to the maximum.²⁹

This figure reveals that private school market share and the interaction between Catholic religious affiliation and church attendance have the largest substantive impacts of all the variables in the model. The increase in the probability of using a voucher rises by 0.23 from the MSA with the smallest private school market to the one with the largest. This effect is statistically indistinguishable from the Catholic church attendance interaction, which has an impact of 0.22 (varying the interaction term as well as Catholic and church attendance individually). Of the factors that decrease the likelihood of using a voucher, the one with the largest impact is being an African American in the South, which *ceteris paribus* results in a drop of 0.17 in the predicted probability of voucher take-up. In light of the concern over the fate of learning-disabled children under a school voucher system, note also that having a child with a learning disability has one of the smallest negative impacts in the model.

DO PRIVATE SCHOOLS SKIM THE CREAM OF THE CROP? WHY CHILDREN ARE NOT ADMITTED TO THE SCHOOL OF THEIR CHOICE

We have noted that the size of the private school market in a family's community is a significant predictor of whether a family goes private. In other words, the number of local private schools is an important factor in determining voucher take-up. However, there is another way that private school availability might affect this decision. Private schools can be as selective as they wish, and it could be that children have difficulty gaining admission to the private school of their choice because of poor academic performance. On the other

²⁹The only exception was for mother's age, which we do not allow to vary across the entire range because of a few extreme outliers; instead it varies from 20 to 40, a reasonable range.

hand, existing research on Catholic schools—the most common type of school attended by voucher recipients—has shown that they are generally not selective in their admissions, not even with regard to religion.³⁰

As Table 8 shows, 38 percent of the families who were offered a voucher but declined it reported that they did not gain admission to their preferred school. Although this is not necessarily the sole reason that they did not use the voucher, presumably it is a significant factor in deciding whether or not to enroll in a private school. Given that only a little more than a third of decliner parents say that their child was not admitted to their preferred school, it would appear that difficulty in gaining admission to a private

TABLE 8
Reasons Decliners Gave for Not Gaining
Admission to a Preferred School

<i>Percentage of Voucher Decliners Not Admitted to a Preferred School</i>	
	38.1%
Number	1,165
Cited as the reason child was not admitted to preferred school	
Could not afford	45%
“Child had to attend neighborhood school”	14%
No space available	10%
Transportation problems	8%
Moved away from school	3%
Admissions test	3%
Other reason	18%
Total	101%
Number	440

Note: Percentages do not add to 100 because of rounding.

³⁰A. S. Bryk, V. Lee, and P. Holland, *Catholic Schools and the Common Good* (Cambridge, Mass.: Harvard University Press, 1993).

school is not the primary factor in deciding whether or not to use a voucher.

Each parent who reported that her child did not gain admission to the family's school of choice was also asked to identify the reason why from a list we provided. In reading the results as displayed in Table 8, keep in mind that the percentages are of those parents whose child did not gain admission to the school they wanted. The percentages would be considerably smaller if we used all decliners, or all those offered a voucher, as the denominators. By far the most common explanation parents gave for not gaining admission to a preferred school is that they could not afford it; almost half (45 percent) mentioned this as the reason. As already noted, even with a voucher private school tuition can be too costly, especially for low-income families.

Contrary to the concern that private schools will accept only the most academically proficient students from the public schools, only 3 percent of these parents reported that their child was not admitted because of an admissions test. This is the same percentage whose children did not end up in their preferred school because the family moved. Fourteen percent chose the statement that "their child had to attend a neighborhood school," which was included on the list as a default explanation for those parents who do not have a clearly articulated reason why their child did not end up in a preferred school. Similarly, 18 percent said that there was another reason why their child was not admitted; clearly future research needs to explore further what these reasons might be because these two categories equal almost a third of parents whose children were not admitted to their first-choice school.

Ten percent said that there was no space at their preferred school—again a reminder that the supply of private schools is an important component in the capacity of families to take advantage of the offer of a voucher. Eight percent said that transportation problems were the reason, a surprisingly low percentage given that many private

schools do not provide students with transportation to and from school.

There are two forces shaping the contours of the private school population. One might be thought of as the demand for private education; it has been modeled here by examining characteristics of families who go private when offered a voucher. The other force is on the supply side: the availability of private schools. Based on our analysis, we conclude that in one respect supply matters greatly, and in another it matters little. As already noted, the overall size of the private school market in a metropolitan area is a critical factor in determining voucher take-up rate, yet the private schools to which voucher applicants wish to send their children do not appear to be terribly selective. At the very least, they do not seem to select only high-performing students.

To the extent that there is a single explanation for non-admission to a family's preferred school, it would appear to be the cost of attending a private school. However, even this reason is selected by only 45 percent of parents whose children are not in their first-choice school. As a percentage of all families offered a voucher, this means that only 12 percent could not afford their preferred school.³¹ And presumably even this percentage would grow smaller if the size of the vouchers were increased to more closely approximate the full cost of private school tuition.

CONCLUSION: ESTIMATING IMPACTS OF VOUCHERS ON PUBLIC AND PRIVATE SCHOOLS

The market simulations that Moe conducted led him to conclude that one of the most significant consequences of the implementation of a large-scale voucher system would be a dramatic overall reduction in the differences in social composition between the public and private sectors that

³¹That is, of all families who won the lottery, 12 percent reported that they could not afford their preferred school.

exist under current policies. As he puts it: “While we cannot know exactly how many parents will actually go private when given the choice, the direction of change is toward very substantial moderation of existing social biases and a considerable closing of the existing social gaps between public and private.”³² In particular, racial disparities between the two sectors would be reduced. Moe’s estimates are interesting, but they rely upon parents’ statements regarding their likely behavior under hypothetical conditions. His estimates, moreover, do not take into account any selection that may occur as a result of the decisions taken by private schools. In this final section, we combine information on CSF users with data from our national probability sample of all families with children in grades 1 through 8 in order to provide another estimate of the effects of a voucher program on the composition of the public and private educational sectors. For the most part, the estimates are similar to those reported by Moe.

Table 9 displays the estimated effects. In 2000, there was a considerable social gap between those attending public and those attending private schools. The differences are particularly large with respect to educational attainment. Over 47 percent of the mothers of students in the private sector report that they have graduated from college, as compared with only 32 percent of public school mothers. The mothers of private school students are also slightly older than their public school counterparts, and substantially more likely to have been born in the United States, to be Catholic, and to attend church at least once a week. Private school students are significantly less likely than their public school counterparts to be black or Hispanic or to have a learning disability. Surprisingly, the private school students in our sample were somewhat less likely than public school students to live in a two-parent household.

In virtually every respect, the entry of voucher users into the private sector would serve to reduce these biases, often

³²Moe, p. 164.

TABLE 9
Demographic Characteristics of Voucher
Users and the General Population

	<i>Voucher Users</i>	<i>National Sample of Private School Families</i>	<i>National Sample of Public School Families</i>
Mother graduated from college	30%	47% ^c	32%
Live in two-parent household	54%	57%	63% ^c
Mother born in U.S.A.	85%	93% ^c	87
Mother's age (average)	36.8	39.7 ^c	38.3 ^c
Lived in current residence \geq 2 yrs.	86%	79 ^b	78% ^c
Black	38%	8% ^c	14% ^c
Hispanic	13%	11%	15%
Catholic	31%	52% ^c	30%
Attend church at least 1/week	74%	62% ^c	36% ^c
Child has learning disability	12%	9%	11%
Number	486–492	260–298	1,716–1,779

^aSignificant at 10%; ^bsignificant at 5%; ^csignificant at 1%.

Note: Data from national sample are weighted to ensure representativeness.

dramatically. With regard to mother's education, for example, not only are voucher users less likely to have a college degree than students currently in private schools, they also have lower levels of educational attainment than public school mothers. The same pattern holds for the percentage of mothers born in the United States, mother's age, and the percentage of students with learning disabilities. A voucher program similar to the CSF program would also reduce the extent to which the private sector overrepresents students from Catholic families.

The impact of a voucher system focused on low-to-moderate income families and publicized in a manner similar to that of the CSF would be particularly striking in the case of racial disparities in private school attendance. Although blacks represent only 8 percent of the students in our sample currently attending private schools, and 14 percent of the public school students, they make up over 38 percent of voucher users. And although the proportion of Hispanics among voucher users is smaller than among public school families nationally, it is still greater than the proportion currently in private schools. Therefore, in spite of the fact that blacks and Hispanics who received vouchers were less likely than white recipients to use them, there is no reason to dispute Moe's claim that "under reasonable assumptions about which parents are most likely to switch sides, the new private sector winds up being more ethnically diverse than the public sector does."³³ Given the fact that private schools in general, and Catholic schools in particular, have been shown to be particularly effective in educating urban minorities, these results are clearly encouraging.³⁴

With respect to at least two of the items included in our survey, however, a voucher system with the characteristics of the CSF program might be expected to increase the size of the differences between the public and private sectors. These exceptions underscore once again the importance of religious commitment and residential stability in determining who uses vouchers. Nearly three-quarters of the mothers of students using these vouchers reported that they attend church at least once a week, a percentage even higher than the 62 percent of the mothers of students currently enrolled in private schools. Meanwhile, over 85 percent of voucher users reported that they had lived in their current residence

³³Ibid.

³⁴D. Neal, "The Effects of Catholic Secondary Schooling on Educational Attainment," *Journal of Labor Economics* 15 (1997): 98–123; D. N. Figlio and J. A. Stone, "Are Private Schools Really Better?" *Research in Labor Economics* 18 (1999): 115–40.

for more than two years, a response given by 79 percent of current private school parents and 78 percent of those currently attending public schools.

Therefore, with the notable exceptions of religious attendance and residential stability, the entry of voucher families into the private school market would serve to diminish the gap in the social composition of the public and private educational sectors. The effect might be even more substantial if the take-up rate for vouchers could be increased, by increasing either the value of the tuition discount or the amount of information available to low-income parents about private school alternatives. It might also be assumed that the take-up rate would increase naturally over time as more private schools enter the educational market.

Although the CSF is the largest school voucher program in the country and closely resembles proposals made both by policy analysts and by legislators, it is obviously not the same as a large-scale, publicly funded voucher initiative. One must therefore be careful in using our conclusions about the CSF to make generalizations about how school vouchers would work in practice. A publicly funded program would probably be larger in scope and differently advertised to the eligible population. But with that caveat in mind, to the extent that such a program had eligibility requirements resembling those for the CSF and was thus targeted at low-to-moderate income families, our results may speak to the concern that vouchers will “cream” the best students out of the public schools. A one-sentence summary cannot do justice to all our findings, but the evidence suggests that there is little reason to believe that vouchers will simply serve the socially advantaged.