

52. Results for three and four years after application were jointly estimated by averaging scores for students who were tested in both years and by using the single score available for each of the remaining students. Dummy variables were included for those who had only third-year or fourth-year scores.

53. The background characteristics of students who are included in the intention-to-treat category are virtually identical to those who actually enrolled, as reported in table 13-2.

FOURTEEN

Lessons from the Cleveland Scholarship Program

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DOES SCHOOL CHOICE WORK? If so, who benefits? Choice critics say private schools do not appear to serve students' academic needs any better than public schools. They further argue that the few detectable benefits of school choice accrue mainly to students who need the least assistance. Parents who are already involved with their children's education will capitalize on choice. What is more, private schools are disinclined to accept students with special needs. And after choice students gain admission to private schools, the argument goes, the weakest will be weeded out.

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The Cleveland Scholarship and Tutoring Program (CSTP), which began in the fall of 1996, provides new evidence that sheds light on these issues.¹ CSTP is the first program in the country to offer state-funded scholarships that can be redeemed at both secular and parochial schools. During the 1996-97 school year 1,996 scholarship recipients attended fifty-five private schools in kindergarten through grade three. For the 1997-98 school year CSTP offered scholarships to 3,000 students from kindergarten through fourth grade.

At the time the data reported in this chapter were collected, CSTP had been in place for only one year. Consequently, the data do not speak to the long-term effects vouchers will have on student test scores, how many and what kinds of schools will emerge in response to new demand, or whether vouchers will stimulate reform within the Cleveland public schools. But it is not too soon to begin to evaluate important aspects of the program. In the summer of 1997 Harvard's Program on Education Policy and Governance (PEPG) commissioned a survey of 2,020 voucher applicants in order to find out who participated in the program, who did not, and how satisfied the parents of both groups were with the schools their children attended. PEPG also analyzed the test scores of students attending two new choice schools. The evidence collected has important implications for the contemporary school choice debate.

We present five main findings. First, parents reported that their decisions to apply for scholarships were largely motivated by academic concerns. Second, a relatively small proportion of nonrecipients claimed that inability to secure admission to preferred private schools was an important reason for their decisions not to participate in the program. Third, parents of scholarship recipients who previously attended public schools were much more satisfied with every aspect of their choice schools than applicants who did not receive scholarships, but attended public schools instead. Fourth, choice schools did well at retaining students in the program, both within the school year and from one school year to the next. Fifth, preliminary test score results in mathematics and reading show moderate gains for students attending two new schools set up in response to the establishment of the scholarship program (the Hope schools). Overall, third graders in choice schools seem to be acquiring more language skills and learning more science.

Origins of the Program

In March 1995 the Ohio General Assembly appropriated funds expected to be sufficient to provide 1,500 scholarships worth as much as \$2,250 each. Scholarship recipients were to be chosen by lottery. Each scholarship covered

up to 90 percent of a school's tuition, with the balance to come from the child's family or another private source. The maximum amount provided was little more than a third the per-pupil cost of Cleveland public schools, which in 1997 was \$6,507.² This simple comparison of costs, however, omits the additional costs of transportation, special education, and any additional aid to choice schools from public or private sources.

The legislation establishing CSTP allowed as many as 50 percent of all scholarships to be used by students already in private schools. The Ohio Department of Education, however, reduced the figure to 25 percent. Of the 6,244 applications received in the fall of 1995 by CSTP, 29 percent or 1,780 came from students already attending private schools. In January 1996 CSTP awarded 375 scholarships to these applicants. As of April 3, 1997, CSTP had awarded 21 percent (427 of 1,996) of the scholarships to students previously matriculated in private schools. CSTP granted the remaining 79 percent of the scholarships to students who had previously been attending public schools or who were beginning kindergarten.³

In two respects the Ohio Department of Education gave preference to poor families. First, students from low-income families received larger scholarships. Students from families whose incomes were below 200 percent of the poverty line received 90 percent of their schools' tuition, up to \$2,250, whereas students coming from families whose incomes were at or above 200 percent of the poverty line were eligible to receive \$1,875 or 75 percent of their schools' tuition, whichever was less. Second, low-income students had a better chance of winning the initial lottery. The first lottery, held in January 1996, was limited to those applicants (58 percent of the sample) whose families' incomes were below the poverty line. And because this lottery received considerable attention from the local press, low-income families were more likely to find out that they had won scholarships.

Many of those offered scholarships did not accept them, either because the CSTP office could not reach them or because they did not come to the CSTP office to verify their incomes or, if they did, were found to be ineligible. By the summer of 1996 CSTP also discovered that tuition at Cleveland private schools was less than originally estimated, making it possible to increase the number of scholarship recipients to nearly 2,000. To accommodate more applicants the Ohio Department of Education then relaxed the rules, making eligible any family with an income below 200 percent of the poverty line. But by the time of the second, less visible, lottery CSTP was in the midst of a court challenge, making it unclear whether the program would actually begin in the fall of 1996. Also, CSTP reported that it was becoming increasingly difficult to locate applicants (due to changes of

telephone numbers and addresses). As a result, the acceptance rate declined sharply, and CSTP claimed it eventually offered scholarships to all low-income applicants it was able to contact.⁴

CSTP planning and administration were seriously hampered by a lawsuit brought by the Ohio Federation of Teachers (an affiliate of the American Federation of Teachers) and other interest groups and individuals. The court case dragged on into August 1996, and it was not until two weeks before the beginning of the school year that the lower court ruled in favor of CSTP.⁵ In addition, private schools reported difficulties obtaining student records from the Cleveland public schools. What is more, CSTP did not convince the Cleveland public schools to arrange transportation until well into the school year, making it necessary to shuttle many scholarship students by taxi. In short, the program began with enough uncertainty and confusion that parental satisfaction could not be taken for granted.

Data Collection

During the summer of 1997 Harvard University's Program on Education Policy and Governance conducted a telephone survey of 2,020 CSTP applicants and analyzed available test score data. PEPG interviewed 1,014 scholarship recipients and 1,006 applicants who did not enroll in the program. The 2,020 interviews required 3,437 telephone attempts. As shown in table 14-1, only 5 percent of the attempts resulted in refusals to participate in the survey; other interviews were not completed because no contact could be made, usually because a respondent was no longer at the telephone number provided PEPG by CSTP.

The survey completion rate for the households of scholarship recipients (74.1 percent) was higher than for those who applied but did not receive scholarships (48.6 percent). Therefore, the survey better represents scholarship recipients than nonrecipients. As can be seen in table 14-2, the incomes and ethnicities of recipients new to choice schools who responded to the survey (column 3) did not differ significantly from the incomes and ethnicities of all such recipients (column 4), though they came from slightly smaller families. As compared to the universe of nonrecipients (column 8), however, the nonrecipients responding to the survey (column 7) had higher family incomes and were more likely to be white and come from smaller families. If these demographic characteristics are positively correlated with parental satisfaction, the effects reported below underestimate CSTP's actual programmatic impact.

Table 14-1. Breakdown of Survey Response Rates

Response	Scholarship recipients			
	Yes		No	Total
	Previous public school	Previous private school		
(1)	(2)	(3)	(4)	
Frequencies				
Interviewed	726	288	1,006	2,020
Could not contact ^a	240	69	933	1,242
Refused to be interviewed	37	8	130	175
Total contacts attempted	1,003	365	2,069	3,437
As a percentage of contacts attempted				
Interviewed	72.4	78.9	48.6	58.8
Could not contact	23.9	18.9	45.1	36.1
Refused to be interviewed	3.7	2.2	6.3	5.1
Total	100.0	100.0	100.0	100.0

CSTP was not set up as a randomized experiment. Although a lottery was initially used to determine scholarship recipients, CSTP eventually attempted to give scholarships to all low-income applicants. As a result, those receiving scholarships may have been the applicants CSTP could easily reach and who were willing to have their incomes verified.

The demographic characteristics of recipients new to choice schools and nonrecipients remaining in the public schools were nonetheless quite similar, perhaps because CSTP initially used a lottery to award scholarships. When demographic differences can be observed, the scholarship recipients are the more disadvantaged group. Though the two groups may also have unobserved characteristics that distinguish them, if such differences are correlated with demographic differences the comparisons are likely to be biased against finding positive programmatic effects.

Background Characteristics of Applicants

Many of those critical of school choice fear that disadvantaged families will be excluded from either the program itself or from the private schools to which they apply. In the words of a recent Twentieth Century Fund report, if school choice "becomes a strategy to . . . restrict lower-income

Table 14-2. Examining the Possibility of Response Bias, Grades K-3

Characteristic	All applicants		Choice (previous public) ^a		Choice (previous private) ^b		No scholarship	
	Survey	Universe	Survey	Universe	Survey	Universe	Survey	Universe
Average income (dollars)	(1) 16,279***	(2) 14,754	(3) 12,533 ^c	(4) 12,045	(5) 11,923**	(6) 10,698	(7) 20,748***	(8) 16,251
Average family size	3.77**	4.03	3.77**	3.89	3.83***	3.97	3.92***	4.09
Ethnicity (percent)								
African American	59.5*	62.8	68.6	68.8	49.3	48.7	55.9***	62.4
White	31.7*	27.4	23.8	22.0	38.2	37.3	35.8***	28.1
Hispanic	3.9*	5.0	3.0	3.5	6.9	7.3	3.5*	5.2
Multiracial	3.5	3.2	3.5	3.8	3.8	4.4	3.3	2.9
Other	1.3	1.6	1.1	1.9	1.7	2.0	1.3	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	1,896	6,050	719	1,493	288	496	887	4,548

* Differences between adjacent columns are statistically significant at .05 level.

** Differences between adjacent columns are statistically significant at .01 level.

*** Differences between adjacent columns are statistically significant at .001 level.

a. Those individuals who received a scholarship and previously attended a public school, including kindergartners.

b. All individuals who received a scholarship and previously attended a private school, including kindergartners.

c. See note 8.

students of color to an inferior education, then the divisions between rich and poor in this country, and the attendant social problems, will only increase."⁶ But a Heritage Foundation report counters that "school choice programs benefit minority inner-city students the most."⁷ The parental survey described in this chapter permits an evaluation of these rival claims.

Survey results indicate that it is possible for choice programs to award scholarships to low-income recipients. Table 14-3 shows that the average family income of scholarship recipients new to choice schools (column 1) was less than that of nonrecipients in public schools (column 2). Similarly, the average family income of scholarship recipients from private schools (column 3) was less than that of nonrecipients attending private schools (column 4).⁸ All of these differences are statistically significant.

In other respects, recipients new to choice schools resembled nonrecipients in public schools. Differences in terms of their mothers' education, their mother's employment, their family size, their family living arrangements, their residential mobility, and their religious affiliations were not statistically significant. These findings generally do not change when we isolate kindergartners.⁹

Educational differences were somewhat more pronounced. Scholarship recipients new to choice schools were less likely to have received special education than were nonrecipients in public schools (10.7 percent as compared to 17.6 percent). But recipients were also less likely to have been in classes for gifted students (7.7 percent compared to 18.3 percent).¹⁰ It does appear, though, that some students who had special education needs or who had been suspended for disciplinary reasons had difficulty obtaining placement in private schools. Of the respondents who said they could not obtain admission in desired private schools, 25 percent said their children had been receiving special services related to disabilities or learning problems, and 12 percent said their children had been suspended for disciplinary reasons. In the conclusion to this chapter we discuss the policy implications of these findings.

Reasons for Seeking Choice School

School choice advocates say they wish to empower parents by giving them a choice among schools. But some critics have suggested that families, especially low-income families, do not choose schools on the basis of school quality. The Carnegie Foundation for the Advancement of Teaching has claimed that "when parents do select another school, academic con-

Table 14-3. Demographic Comparisons among All CSTP Applicants, Grades K-3^a

Demographic characteristics	Percent			
	Scholarship recipient, previous public school (1)	Nonrecipient, attending public school ^b (2)	Scholarship recipient, previous private school (3)	Nonrecipient, attending private school ^c (4)
Income (dollars)				
0-10,999	29.8	23.0	25.0	4.3
11,000-24,999	40.6	22.2	43.2	14.9
25,000-39,999	20.2	23.7	22.4	28.4
40,000-49,999	5.4	12.7	4.2	16.6
More than 50,000	3.9	11.0	5.1	24.8
Total	100.0	100.0	100.0	100.0
Average income (dollars) ^d	20,091 ^{***T}	25,545	21,099 ^{###}	39,108
Mother's education				
Some high school or below	8.6	13.9	6.6	4.9
High school graduate (or GED)	30.6	29.4	29.3	26.0
Some college	49.9	43.5	50.4	44.3
College graduate and above	10.9	13.3	13.6	19.2
Total	100.0	100.0	100.0	100.0
Average education ^e	3.6 ^T	3.6	3.7 ^{###}	3.9
Mother's employment status				
Full-time	49.2	51.6	49.4	56.4
Part-time	20.9	17.1	20.7	21.9
Looking for work	12.4	15.6	10.8	4.5
Not looking	17.5	15.6	19.1	17.2
Total	100.0	100.0	100.0	100.0
Average employment ^f	3.0	3.1	3.0 ^{###}	3.2
Family size				
2	17.4	17.4	17.6	12.9
3	29.7	28.2	32.4	23.7
4	29.5	24.8	23.0	34.4
5	13.2	16.4	13.3	17.5
6+	10.2	13.2	13.7	11.5
Total	100.0	100.0	100.0	100.0
Average size	3.8	3.9	3.8 [#]	4.0

Table 14-3 (continued)

Demographic characteristics	Scholarship			
	Scholarship recipient, previous public school (1)	Nonrecipient, attending public school ^b (2)	recipient, previous private school (3)	Nonrecipient, attending private school ^c (4)
Living arrangement				
Mother and father	37.0	36.6	37.5 ^{###}	67.2
Only mother	57.1	54.8	54.7 ^{###}	29.2
Only father	1.3	1.2	0.8	1.5
Grandparent	3.2	3.8	3.9 ^{###}	0.4
Other	1.3 [*]	3.4	2.7	1.7
Total	100.0	100.0	100.0	100.0
Mobility (time at current residence)				
0-1 year	8.2 [*]	5.9	7.5 [#]	4.2
1-2 years	16.4 [*]	13.4	13.8 ^{###}	6.1
2+ years	75.4	78.8	78.7 ^{###}	88.7
Total	100.0	100.0	100.0	100.0
Ethnicity				
African American	66.8 ^{*TTT}	76.1	48.4 ^{###}	35.1
White	25.0 ^{TTT}	15.5	37.9 ^{###}	56.7
Hispanic	3.2 ^{TTT}	3.2	7.4 ^{###}	4.0
Multiracial	3.8	3.8	4.3	3.0
Other	1.2	1.4	2.0	1.3
Total	100.0	100.0	100.0	100.0
Religious affiliation				
Baptist	40.4 ^{TTT}	43.0	29.4 ^{###}	22.1
Other Protestant	13.8	17.4	12.6	15.7
Catholic	24.8 ^{***TTT}	13.4	43.1 [#]	49.8
Other religion	13.2 ^{TTT}	14.3	5.9	7.2
No religion	7.9	10.2	9.0 ^{###}	4.8
Total	100.0	100.0	100.0	100.0
N	533	416	236	426

a. Values of *n* signify the smallest number of cases represented by a group among the selected items; consequently, one cannot infer the value of certain frequencies by taking the product of a percentage and the value of *n*. Of those students who did not receive scholarships and attended public schools in 1996-97, 7.4 percent had attended private schools the year before. Data on ethnicity and family size were compiled from CSTP office records. All kindergarteners who were scholarship recipients are included in column one.

b. Of those students who did not receive scholarships and attended public schools in 1996-97, 28.4 percent had attended public schools the year before.

c. Of those students who did not receive scholarships and attended private schools in 1996-97, 7.4 percent had attended private schools the year before.

cerns often are not central to the decision."¹¹ A Twentieth Century Fund report claims that low-income parents are not "natural 'consumers' of education. . . . [Indeed], few parents of any social class appear willing to acquire the information necessary to make active and informed educational choices."¹² Similarly, the American Federation of Teachers (AFT) report on the Cleveland program suggests that parents sought scholarships not because of "failing public schools," but "for religious reasons or because they already had [another child] attending the same school."¹³

Not much support for such criticisms can be found in the parent survey (see table 14-4). Asked why they applied for scholarships, 85 percent of parents new to choice schools said they wanted to improve the academic quality of their children's education.¹⁴ Second in importance was the greater safety to be found at choice schools, a reason given by 79 percent of the recipients. Location was ranked third. Contrary to AFT's suggestion, religion was ranked fourth, said to be very important by just 37 percent of recipients. Finally, friends were said to be very important by fewer than 20 percent of the scholarship recipients. Nonrecipients who remained in public schools ranked the reasons in the same order, but did not give them the same degree of importance.¹⁵

Reasons for Nonparticipation

Nonrecipients were asked their reasons for not participating in the program. According to CSTP officials, the office made strong efforts to reach all applicants, so nonrecipients may have had substantive reasons for not

Table 14-3 (notes continued)

- d. When calculating average income, responses of "over \$50,000" were set at \$60,000.
 e. This index is scaled from 1 to 6, where 1 signifies less than high school, 2 some high school, 3 high school graduate (including GED), 4 some college, 5 college graduate, and 6 more than college.
 f. This index is scaled from 1 to 4, where 1 signifies not looking for work, 2 looking for work, 3 part-time employment, and 4 full-time employment.
 * Differences between columns 1 and 2 are statistically significant at .05 level.
 ** Differences between columns 1 and 2 are statistically significant at .01 level.
 *** Differences between columns 1 and 2 are statistically significant at .001 level.
 # Differences between columns 3 and 4 are statistically significant at the .05 level.
 ## Differences between columns 3 and 4 are statistically significant at .01 level.
 ### Differences between columns 3 and 4 are statistically significant at .001 level.
 T Differences between columns 1 and 3 are statistically significant at .05 level.
 TT Differences between columns 1 and 3 are statistically significant at .01 level.
 TTT Differences between columns 1 and 3 are statistically significant at .001 level.

Table 14-4. *Reasons for Applying for Scholarships, Grades K-3^a*

Important consideration in decision to apply	Scholarship recipient, previous public school	Nonrecipient, attending public school	Scholarship recipient, previous private school	Nonrecipient, attending private school
	(1)	(2)	(3)	(4)
Improved academic quality	2.85**	2.69	2.79###	2.56
Greater safety	2.78***	2.55	2.75###	2.51
Location	2.47	2.44	2.52###	2.33
Religion	2.12***,TTT	1.80	2.40##	2.27
Friends	1.63 ^T	1.62	1.70	1.68
N	597	459	255	415

a. Average scores. Indexes scored from 1 to 3; averages reported: 1 signifies not important, 2 important, and 3 very important. Also, see notes to table 14-3.

accepting scholarships. The recent evaluation of CSTP by the American Federation of Teachers explained nonparticipation this way:

It is clear that the [CSTP] Office made repeated efforts to make vouchers available to low-income public school families. However, some families who had originally applied for a voucher never followed up, as evidenced by the fact that families representing 34 percent of public school students in the voucher lottery did not visit the Office and verify their income. More significantly, many families who did verify their income and thus wanted vouchers could not find an available seat in a private school, at least not in the private school of their "choice." . . . About half of public school students who wanted vouchers most likely could not find an open seat in the private school or schools of their "choice."¹⁶

Why did many people apparently offered scholarships by CSTP turn them down? The most important reason, from the parents' point of view, was inadequate communication between CSTP and the applicants. As shown in table 14-5, 44 percent of the nonrecipients whose children remained in public schools said they were never offered scholarships. This figure is

Table 14-5. *Reasons for Not Participating in CSTP, Grades K-3^a*

<i>Reason for not participating</i>	<i>Percent responding "important"</i>
<i>Did you receive a scholarship this year?</i>	
Believed not offered a scholarship ^b	44.1
<i>How important was each of the following in your decision not to participate in the scholarship program?</i>	
Transportation	36.5
Offered admission to desired public school	35.3
Financial reasons	31.2
Refused admission to private school	21.1
Moved from area	13.1
<i>N</i>	460

a. Possible responses to survey question were dichotomous. Also, see notes to table 14.3.

b. These results combine answers to two questions. Those who believed they were not offered scholarships were not asked the second question. Consequently, although individual respondents who believed they were offered scholarships could claim that multiple reasons influenced their decision not to accept a scholarship, those who believed they were not offered scholarships in the first place could indicate only the one reason.

probably much larger. We estimate that a clear majority of those our survey team could not contact were also not reached by CSTP.

Low-income families are highly mobile and often depend on friends and relatives for telephone and mail services. They can be extremely difficult to reach. Even when contacted, many families may not have understood that in order to receive scholarships they had to verify their incomes. Moreover, Ohio Department of Education rules, which first limited eligibility to applicants with incomes below the poverty line, may have discouraged many of those above the poverty line from giving the program further consideration, despite the fact that eligibility requirements were subsequently relaxed. Families with incomes above 200 percent of the poverty line were not eligible until November 1997, two months after the school year had begun.

Possible communication problems, compounded by the uncertainty caused by court challenges and the small staff charged with conducting the lotteries, made it less than surprising that half or more of the nonrecipients thought that they had not won scholarships. More surprising is the fact that

nearly 2,000 applicants did receive scholarships and were placed in choice schools within a short period of time—under difficult and continuously changing circumstances.

We asked the remaining 56 percent of nonrecipients their reasons for not accepting scholarships. Three reasons were mentioned with roughly equal frequency: transportation, financial considerations, and the offer of admission to desired public schools (see table 14-5). Apparently the initial difficulties in setting up travel arrangements may have affected parental decisionmaking. In mentioning financial considerations, parents may have been referring to the fact that they needed to supplement the scholarships with tuition payments (10–25 percent of the cost) or to eligibility requirements, which initially limited scholarships to those below the poverty line. The third major reason, said to be important by over a third of the nonrecipients in public schools, was their success in gaining admission to desired public schools. Observers reported that the Cleveland public schools responded to the scholarship program by giving applicants access to the city's magnet schools or enrichment programs. If so, this suggests that CSTP increased the choices of CSTP applicants within the Cleveland public schools.

The fourth most important reason for nonparticipation, given by the parents of 21 percent of those remaining in public schools, was the inability to secure admission to their desired private schools. Many private schools were already oversubscribed. Also, the choice program was being set up in a context seriously complicated by the court suit filed by the Ohio Federation of Teachers, creating a great deal of uncertainty. As we have already seen, scholarship recipients also were more likely to have special education needs than their counterparts in public schools. For any of these reasons, it is entirely possible that some private schools might have been reluctant to accept a large number of scholarship recipients from public schools.

Parental Satisfaction

Many economists think that customer satisfaction is the best measure of a product's quality. According to this criterion there is little doubt that Cleveland's choice schools outperformed the city's public schools. Recipients from public schools were much more satisfied with every single

Table 14-6. *Parent Satisfaction with School Their Child Is Attending, Grades K-3^a*

Characteristic	Scholarship recipient, previous public school	Nonrecipient, attending public school	Scholarship recipient, previous private school	Nonrecipient, attending private school
	(1)	(2)	(3)	(4)
Academic quality	3.56 ^{***,T}	3.06	3.64 [#]	3.57
Safety	3.51 ^{***,TT}	3.02	3.66 [#]	3.58
Discipline	3.49 ^{***,TT}	2.91	3.59 ^{##}	3.49
Teaching of moral values	3.66 ^{***}	3.02	3.69	3.68
Private attention to child	3.42 ^{***}	2.80	3.42	3.36
Parent involvement	3.44 ^{***}	3.03	3.47	3.44
Class size	3.37 ^{***}	2.75	3.35 ^{##}	3.23
Facility	3.38 ^{***,T}	2.85	3.47 ^{###}	3.30
N	592	483	254	465

a. Average scores. Indices scored from 1 to 4; averages reported. 1 signifies very dissatisfied; 2 dissatisfied; 3 satisfied; and 4 very satisfied. Also, see notes to table 14-3.

^{*} Compares columns 1 and 2.

[#] Compares columns 3 and 4.

^T Compares columns 1 and 3.

aspect of their children's choice schools. The results shown in table 14-6 may be substantively understood in the following way: Two-thirds of parents new to choice schools (column 1) reported being very satisfied with the academic quality of their children's school, as compared to fewer than 30 percent of parents with children in public schools (column 2). Nearly 60 percent were very satisfied with school safety, as compared to just over a quarter of nonrecipients with children in public schools. With respect to discipline, 55 percent of recipients from public schools, but only 23 percent of nonrecipients in public schools, were very satisfied. The differences in satisfaction rates were equally large when parents were asked about the school's private attention to the child, parent involvement, class size, and school facility. The most extreme differences in satisfaction pertained to teaching moral values: Seventy-one percent of the recipients with children

in public schools were very satisfied, as compared to only 25 percent of the nonrecipients with children in public schools.

It also is worth inquiring whether scholarship families in public schools were as satisfied as those who had already been enrolled in private schools. The AFT, in its report on the program, suggests that scholarship recipients from private schools were given important advantages. In the words of the report, "Voucher students who had previously been enrolled in private schools held a 'monopoly' on placements in the established private schools. In contrast, almost half of the voucher students who moved from public to private schools were enrolled in four schools with little or no educational and financial track record."¹⁷

There is some evidence from the survey in support of the AFT suggestion that scholarship recipients in public schools had less satisfying educational experiences than those who had already been in private schools. However, the differences between the two groups, in most cases, are modest. For example, 67 percent of recipients with children in private schools (table 14-6, column 3) said they were very satisfied with the academic quality of the schools, compared to 63 percent of those with children in public schools (table 14-6, column 1). For school discipline the figures were 62 percent and 55 percent, respectively. The biggest difference concerned school safety, with 69 percent as compared to 59 percent reporting they were very satisfied. But despite these small differences, the overall pattern is quite the opposite to that suggested by the AFT report: Choice parents, whether or not they were new to choice schools, expressed much higher levels of satisfaction with their children's schools than did families with children still in public schools.

What factors contributed to the differences between choice-school and public school parents? To answer this question we employ multivariate regression analysis. We build a composite measure of school satisfaction, which is simply the sum of the responses given for each category, rescaled from zero to 100 to facilitate interpretation.¹⁸ We then regress this summary satisfaction measure on each child's educational characteristics, the type of school attended, and demographic characteristics. In table 14-7 we examine the determinants of satisfaction for all applicants; in table 14-8 we consider scholarship recipients; in table 14-9 we focus on nonrecipients. In each table model 1 controls for the most significant demographic factors; model 2 includes the full range of demographic factors. The baseline of the regression in table 14-7 against which other categories are compared consists of those individuals who actively chose to attend public schools. These

Table 14-7. *Explanations of Scholarship Applicants' Satisfaction with Their Own Schools, Grades K-3^a*

Determinant	Parental satisfaction ^b	
	Model 1	Model 2
Educational experiences		
Involuntarily in public school	-6.7***	-6.6***
Type of school ^c		
Private (no scholarship)	15.5***	15.0***
Established parochial school (scholarship)	16.0***	15.9***
New parochial school (scholarship)	0.5	0.3
Established secular school (scholarship)	15.7***	16.1***
New secular school (scholarship)	6.5***	6.6***
Demographics		
Special needs	-2.6**	-2.7**
Minority	-3.3**	-3.0***
Income	0.2	0.2
Kindergarten	2.8**	2.4**
Family size	...	0.4
Mother's education	...	0.7
Mother's employment status	...	-0.6
Residential mobility	...	0.2
Constant	69.4***	66.9***
Adjusted R ²	0.24	0.23
N	1,586	1,585

* significant at .05 level.

** significant at .01 level.

*** significant at .001 level.

a. Unstandardized coefficients from ordinary least squares regressions

b. Index of satisfaction, summarizing eight dimensions listed in table 14-3. See text for description.

c. The baseline group includes those individuals who were offered scholarships, but refused them, and claimed that being refused admission to desired private schools was not an important reason for choosing to attend public school.

individuals knew they were offered scholarships and refused them, and they claimed that being refused admission to preferred private schools was not an important reason for making decisions to attend public schools.

The results reported in table 14-7 are quite striking. The most prominent finding is that parents with students attending established private schools were as much as 16 percentage points more satisfied than parents whose children voluntarily decided to remain in public schools.¹⁹ The findings indicate much higher satisfaction with established choice schools; they do

Table 14-8. *Explanations of Scholarship Recipients' Satisfaction with Their Own Schools, Grades K-3^a*

Determinant	Parental satisfaction	
	Model 1	Model 2
Educational experiences		
Previous public school	-0.3	-0.5
Religious compatibility	-0.4	-0.2
Type of school ^b		
Established parochial school	15.0***	15.0***
Established secular school	14.9***	15.4***
New secular school	5.6**	5.9***
Demographics		
Special needs	-3.0*	-3.0*
Minority	-4.2**	-3.5**
Income	-0.1	-1.8
Kindergarten	2.3	2.3
Family size	...	0.7
Mother's education	...	0.5
Mother's employment status	...	-0.4
Residential mobility	...	0.1
Constant	76.3***	73.3***
Adjusted R ²	0.17	0.17
N	770	755

* Significant at .05 level.

** Significant at .01 level.

*** Significant at .001 level.

a. Unstandardized coefficients from ordinary least squares regressions.

b. The baseline group includes two parochial schools with a high number of new scholarship students.

not just tap the dissatisfaction felt by a small subset of public school parents who could not get their children into the program.

The level of satisfaction varies with the type of school scholarship recipients attended. As shown in table 14-8, parents whose scholarship students attended established parochial schools (which consisted mostly of Catholic schools) and established secular school (largely Montessori schools) were the most satisfied, the next most satisfied group of parents are those whose children attended those with children in new secular schools (the Hope schools), and the least satisfied of choice parents are those whose children attended new parochial schools (two religious schools that admitted a large number of scholarship students). The fact that the coefficient for new parochial schools in table 14-7 is indistinguishable from zero

suggests that the satisfaction levels of parents who voluntarily sent their children to public schools and scholarship parents in the newly established parochial schools were essentially the same.

The parents of children who involuntarily ended up in public schools were approximately 7 percentage points less satisfied with the public schools than those of students who actively chose to attend public school. Children who involuntarily attended public schools include nonrecipients who either did not know they were offered scholarships or claimed that rejection by desired private schools was an important reason for not taking advantage of the scholarships.

Parents with special needs children were three percentage points less satisfied with their children's schools. This attribute is statistically significant when we examine the universe of applicants and not just scholarship recipients (tables 14-7 and 14-8), but not when we examine nonrecipients (table 14-9). The differences between the satisfaction rates of special needs recipients and nonrecipients, however, are not statistically significant. Nonetheless, there is some evidence that choice programs need to give additional attention to ensuring adequate services for this population.

Racial differences with respect to parental satisfaction between recipients and nonrecipients are somewhat more pronounced. Minority scholarship recipients, the vast majority of whom were African American, expressed, on average, about 3 percentage points less satisfaction with their schools than white parents (table 14-8); among nonrecipients no such differences can be detected (table 14-9). Differences between recipients and nonrecipients are statistically significant. It is possible that some minorities may have had a more difficult time either gaining admission to desired private schools or integrating into the schools once there.

With respect to income, a reverse effect can be detected. As shown in tables 14-8 and 14-9, income affected the satisfaction levels of only nonrecipients. Among nonrecipients, parents with incomes of more than \$50,000 were about 6 percentage points more satisfied with their children's schools than parents with incomes of less than \$10,000. The size of the coefficient appears small because the variable is coded from zero to 10.²⁰ No such differences are recorded among scholarship recipients. This finding suggests that voucher programs attenuate the influence of income, presumably by affording choice to all children.

Interestingly, religious compatibility seems to have had little or no effect on the satisfaction of scholarship recipients (table 14-8). It made no difference whether a student attended a parochial school that was of the same religion as his or her family. This finding includes families with no religious

Table 14-9. *Explanations of Nonrecipients' Satisfaction with Their Own School, Grades K-3^a*

Determinant	Parental satisfaction	
	Model 1	Model 2
Educational experiences		
Prior public school	1.9	1.4
Involuntarily in public school	-3.8**	-3.6**
Type of school ^b		
Private school	19.1***	18.3***
Demographics		
Special needs	-1.5	-1.4
Minority	-0.8	-0.3
Income	0.5	0.6*
Kindergarten	3.4*	3.1
Family size	...	0.1
Mother's education	...	0.3
Mother's employment status	...	-0.8
Residential mobility	...	0.0
Constant	57.3***	56.0***
Adjusted R ²	0.20	0.20
N	813	736

* Significant at .05 level.

** Significant at .01 level.

*** Significant at .001 level.

a. Standardized coefficients from ordinary least squares regressions

b. The baseline group consists of those individuals who were offered scholarships but refused them and claimed that being refused admission to desired public schools was not an important reason for choosing to attend public schools.

affiliation, suggesting that children of many different religious backgrounds can have positive educational experiences, regardless of whether they attend compatible secular or parochial schools.

In summary, four principal findings are evident. First, scholarship recipients were far more satisfied with their children's schools than were nonrecipients with children in public schools. Second, parental satisfaction is especially high in well-established private schools. Third, among scholarship recipients minorities seemed less satisfied with their children's schools, but these differences are not statistically significant among nonrecipients. Finally, although the satisfaction of low-income parents with children in public schools nonrecipients is less (even when controlling for other demographics), no such relationship between income and satisfaction is apparent among parents with students in choice schools.

School Mobility Rates

Most educators think that, all things being equal, it is better that a student stay in the same school, especially during a single school year. Most of the time education works better when it is not subject to disruption. One evaluation of the Milwaukee choice experiment argued that "attrition" from the program was its "most troubling aspect."²¹ Daniel McGroarty, in contrast, has argued that the students in Milwaukee's school choice program were less mobile than students in the city's public schools. Moreover, high rates of school mobility are to be expected given the high residential mobility rates that occur among low-income families in inner-city neighborhoods.²² According to the U. S. census the annual residential mobility rate among female-headed central city households with children between the ages of six and seventeen is 30 percent for African Americans and 35 percent for Latinos.

The Cleveland choice schools seem to have done well at retaining their students. Only 7 percent of all scholarship families reported that their children did not attend the same schools for the entire year. Among recipients from public schools the figure was 10 percent. In Milwaukee's public elementary schools nearly 20 percent left even before the end of the school year in June.²³ By the following fall nearly 40 percent of the students changed schools.

As shown in column 1 of table 14-10, the most important reason recipients new to choice schools gave for changing schools midyear was admission to preferred private schools. Very likely, many of these changes were due to the fact that the CSTP program was delayed by the legal suit, so that some recipients did not receive their scholarships until after the school year had begun. If so, this cause of school mobility should decline over time. Another 1 percent of the students changed schools because they had been admitted to preferred public schools; perhaps the Cleveland public schools had given these students opportunities to attend magnet schools. Another 0.8 percent moved during the course of the year. And 0.8 percent changed schools for transportation reasons, perhaps a sign that the initial transport problems of the CSTP program posed difficulties for some parents.

Parents were also asked whether they planned on sending their children to the same schools the next year. Eighty-one percent of scholarship recipients from public schools gave positive responses, as did 88 percent of the recipients whose children already had been attending private schools (table 14-11). If the actual choices were consistent with these plans, the mobility rate in Cleveland from one year to the next was approximately the

Table 14-10. *School Mobility Rates of Scholarship Students, Grades K-3*
Percent

<i>Whether child attended same school entire year</i>	<i>Previous public school</i>	<i>Previous private school</i>	<i>Total</i>
Yes	91.0***	99.2	93.7
No (stated reason)			
Admitted to preferred private school	3.3*	0.0	2.3
Quality of schools	1.3	0.4	1.1
Admitted to preferred public school	1.0	0.0	0.7
Moved	0.8	0.0	0.6
Transportation difficulties	0.8	0.4	0.7
Administration	0.3	0.0	0.2
Disability/behavior problems	0.3	0.0	0.2
School closure/change	0.3	0.0	0.2
Financial reasons	0.2	0.0	0.1
Expulsion	0.2	0.0	0.1
Other	0.3	0.0	0.2
Total	100.0	100.0	100.0
N	600	256	856

* Compares columns 1 and 2. Also, see notes to table 14-3.

same as in Milwaukee's state-funded elementary choice program, which was about half the mobility rate in Milwaukee public schools.

Choice critics have suggested that private schools may routinely expel or not readmit students for a second year if they are not keeping pace with their peers. Defenders of school choice say that private schools use this discretion sparingly. To provide empirical information on this point, we asked why families planned on changing schools. As shown in table 14-11, fewer than half of 1 percent of recipients from public schools said their children could not be readmitted to their private schools. In other words, while admission refusals are not unknown, neither have they been practiced to any significant degree.

Parents instead gave a wide range of other reasons for planning to move their children to other schools in the fall of 1997. Six percent gave quite practical reasons, such as the families' moving from the area or their children's changing grade levels (necessitating a school change). Another 1.5 percent found other private schools they preferred, and 0.5 percent found preferable public schools. Either transportation difficulties or finan-

Table 14-11. *Matriculation Plans of Scholarship Students, Grades K-3*
Percent

<i>Whether child plans to attend same school next year</i>	<i>Previous public school</i>	<i>Previous private school</i>	<i>Total</i>
Yes	80.5 ^a	87.7	82.8
No (stated reason)			
Quality of school	5.7*	2.1	4.5
Change of student's grade level	3.5*	0.4	2.5
Move from area	2.0	1.3	1.8
Prefer different private school	1.6	2.1	1.8
Transportation difficulties	1.4*	0.0	1.0
Cost	1.0	2.1	1.4
Disappointed with program	0.8	0.9	0.8
School or program closing down	0.8	0.8	0.8
Lack special education resources	0.4	0.0	0.3
Prefer different public school	0.4	0.0	0.3
Refused readmission/expulsion	0.4	0.4	0.4
Other	1.8	2.1	1.9
Total	100.0	100.0	100.0
N	507	244	751

^a Tests on significance compares columns 1 and 2. Also, see notes to table 14-3.

cial costs posed an obstacle for another 2.4 percent. But 6.5 percent of all recipients from public schools planned on leaving because they were not satisfied with the quality of the schools or were disappointed in the way in which the CSTP program operated. For a small but still important fraction of scholarship recipients, CSTP was not a success, at least in its first year.

To examine reasons for school mobility more closely, we ran a probit model where the dependent variable was scored 1 if the child either changed school during the school year, changed over the summer, or both, and zero otherwise. All non-demographic variables were coded from zero to 1 to facilitate comparisons. After controlling for demographic and school characteristics, parental satisfaction proved to be far and away the most important factor affecting a scholarship recipient's decision to stay at a school. The more satisfied parents were with their children's school, the more likely they were to remain at the same school. Choice critics may see this as a sign of program failure, because not all families' expectations were

Table 14-12. *Explanations of Retention of Scholarship Recipients, Grades K-3^a*

<i>Determinant</i>	<i>Retention rate^b</i>		
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
Educational experiences			
Satisfaction	2.88***	2.24***	...
Prior public school	-0.17	-0.13	-0.14
Religious compatibility	-0.02	0.06	-0.02
Type of school^c			
Established parochial school (scholarship)	0.46***	0.36*	0.84***
Established secular school (scholarship)	-1.01***	-0.74***	-0.46*
New secular school (scholarship)	-0.05	0.02	0.15
Demographics			
Special needs	0.11	0.09	-0.02
Minority	-0.22	-0.16	-0.29*
Income	-0.00	0.02	-0.00
Kindergarten	-0.07	-0.10	-0.06
Family size	-0.06	-0.07	-0.06
Residential mobility	-0.11	-0.09	-0.06
Mother's education	...	-0.09	-0.07
Mother's employment status	...	0.04	0.08
Single parent household	...	-0.07	-0.09
Constant	-1.05**	-0.62	0.99*
Degrees of freedom	753	737	763
Chi-square goodness of fit	785	899	776
N	766	753	778

* Significant at .05 level.

** Significant at .01 level.

*** Significant at .001 level.

a. Regression coefficients from a probit model.

b. Mobility is a dummy variable, scored 1 if the respondent changed school during the school year or planned to change school at the end of the school year.

c. The baseline group consists of students at two parochial schools, both of which were established in the early 1990s, with high numbers of new scholarship students.

fulfilled. However, school choice supporters may interpret this as evidence that choice allows parents to make a move when things do not seem to be working out.

Table 14-12 also corroborates some of the parental satisfaction findings. Students attending established parochial schools are significantly less likely to change schools, presumably because of the high parental satisfaction recorded for these schools; this inference is supported by the fact that as one

moves from models 1 and 2 (which include the satisfaction measure) to model 3 (which does not), the size of the established-school coefficient doubles.²⁴

Students who attended established secular schools were more likely to change schools. The reason for this, however, has little to do with parental satisfaction. Rather, this category largely includes students in Montessori schools, which usually terminate at kindergarten. The students who attended these schools were more likely to leave at the end of the year, not because they were less satisfied, but because these schools could no longer accommodate them. The high correlation between established secular school and kindergarten explains why the latter variable does not come up statistically significant in any of the three models.

Test Scores

Much doubt has been cast on the newly established secular schools. The AFT expressed concern that the Hope schools were "voucher-dependent" and had little or no "educational track record."²⁵ And parents of children at the Hope schools were only 6 percentage points more satisfied than those of children who voluntarily remained in public schools. An analysis of test scores from the Hope schools addresses the concerns raised by the AFT, and insofar as the satisfaction of parents with children at more established private schools was greater, provides conservative evidence about the performance of choice schools on the whole.

Three additional factors make this analysis particularly interesting. First, the Hope schools were the only schools formed in response to the adoption of CSTP. They therefore provide information on schools that develop in response to the introduction of a parental choice program. Second, the Hope schools announced that they would accept all students who applied for admission. Many of the poorest and most educationally disadvantaged students went to the Hope schools, making an examination of test scores from those schools a hard test case for the program as a whole. If gains are achieved schools, they are probably being achieved under better circumstances in other choice schools. And third, enrollment at the Hope schools constitutes approximately 15 percent of the total enrollment in the Cleveland scholarship program and approximately 25 percent of students who previously attended public schools.

Standardized test scores from Hope Academy and Hope Ohio City were made available to PEPG during the summer and fall of 1997. We examined scores from the California Achievement Test (CAT) for all students tested

Table 14-13. *Test Score Changes*^a

<i>Grade and subject</i>	<i>Fall 1996</i>	<i>Fall 1997</i>	<i>Change</i>
Grades 1-3			
Math total	31.0 (97)	39.6 (97)	8.6*
Math concepts	30.2 (97)	37.3 (97)	7.1*
Language	38.1 (97)	37.8 (97)	-0.3
Reading	31.3 (95)	37.0 (95)	5.7*
Grades K-3			
Math concepts	34.0 (156)	36.8 (156)	2.8
Reading	30.5 (154)	36.6 (154)	5.1*

* Significant at .05 level.

a. Average national percentile rankings from the California Achievement Test are reported. Sample sizes are in parentheses. All students who attended Hope Central and Hope Ohio City when tests were administered were tested, including special needs students. This comparison includes all students who took both tests. The math total and the language tests were not administered to students when they were in kindergarten. Note that students in grades 1-3 are a subset of those in grades K-3; they are not mutually exclusive.

in both the fall of 1996 and fall of 1997.²⁶ The Hope schools' staffs reported that they tested all students in attendance, including those students identified as having special needs.

The scores of Hope school students show moderate gains in reading and math. Ninety-seven students in grades one to three were tested in the fall of 1996 and tested again in the fall of 1997. These students scored, on average, 8.6 percentile points higher on their math total tests and 5.7 points higher on their reading tests after one year in the Hope schools (see the top section of table 14-13, which indicates students' 1997-98 grade levels). An analysis that includes kindergarten students, who took only parts of the standardized test due to their age, shows that their reading scores gained 5.1 percentile points whereas their math concepts scores improved 2.8 points (see the bottom section of table 14-13). All of these gains, except those for math concepts, are statistically significant. Our previous analysis of test scores showed significant gains from fall to spring of the 1996-97 school year.²⁷ Contrary to doubts raised by the AFT, table 14-13 shows that these gains did not disappear over the summer.

Of the students who took the fall 1996 test, almost 90 percent were retested in the spring of 1997, making it very unlikely that these increases were caused by attrition of underperforming students. By the fall of 1997, however, only a little more than 50 percent of those tested a year earlier were retested. This greater attrition over the summer was probably exaggerated by several factors.²⁸ First, the continued operation of the Hope schools was jeopardized by an adverse appellate court ruling that threatened to end the program. Second, one of the two Hope schools changed location over the summer, possibly inconveniencing some parents. And third, the Hope schools serve extremely low-income families who normally experience high mobility.

To ensure that the test score gains from fall to fall were not simply a function of attrition, we compared the 1996 test scores of Hope school students who were tested again in the fall of 1997 with those who were not. If the gains shown from fall to fall were caused by high-performing students' returning and lower-performing students' leaving, we would expect the earlier scores of the returning students to be significantly higher than those of nonreturning students. This is not the case. As shown in the top section of table 14-14, there are no differences significant at the .05 level between the fall 1996 scores of the students who were retested a year later and those who were not. The bottom section of table 14-14 shows that the only significant difference between the spring 1997 scores of returning and nonreturning students favors the latter group. It does not appear that reported test gains are generated by differences between those who did and did not return to the Hope schools over the summer of 1997.

The gains achieved by Hope school students should be contrasted against the decline of 1 to 2 points that is typical of inner-city students. According to the office overseeing desegregation in Cleveland, Cleveland public school reading scores declined, on average, by 1 to 2 percentile points between both the first and second grades and between the second and third grades in the years 1994-95 to 1995-96. PEPG and other researchers have found a similar pattern in the Milwaukee choice experiment.²⁹ The decline in percentile rankings can be attributed to the fact that inner-city students learn at a slower rate than the national average and therefore, as they grow older, they fall further behind. The reverse effect observed at the Hope schools suggests that these students are learning at a faster rate, allowing them to close the gap with others nationwide.

In March 1998 the Indiana University School of Education released its evaluation of the Cleveland Scholarship Program.³⁰ The evaluation finds no

Table 14-14. *Missing Case Analysis*^a
Percent

<i>Test date and subject^b</i>	<i>Students with no fall 1997 scores</i>	<i>Students with fall 1997 scores</i>	<i>Significance of difference</i>
Fall 1996 tests	(1)	(2)	
Math total	23.5 (70)	31.0 (97)	0.12
Math concepts	28.0 (131)	34.0 (156)	0.06
Language	39.5 (70)	37.7 (98)	0.67
Reading	26.2 (131)	30.4 (156)	0.10
Spring 1997 tests			
Math total	27.6 (49)	31.0 (97)	0.49
Math concepts	30.3 (97)	34.0 (156)	0.29
Language	46.8 (49)	37.7 (98)	0.05
Reading	28.9 (97)	30.4 (156)	0.59

a. Sample sizes are in parentheses. Column 1 includes those students who took tests in either the fall of 1996 (the first set) or in the spring of 1996 (the second set); column 2 includes students who took tests in both the fall of 1996 and the fall of 1997 (the first set) or in the fall of 1996 and the spring of 1997 (the second set). Also, see notes to table 14-13.

b. Results for Hope school students who also took fall 1997 tests versus students with no fall 1997 tests.

effect of the first year of the scholarship program on student test scores. However, the evaluation suffers from the following limitations:³¹

1. The study analyzed only third-grade test scores; no information is available for students in kindergarten, first or second grades.

2. To control for student achievement prior to the beginning of the scholarship program, the evaluation relies upon implausible second-grade scores obtained from tests administered by the Cleveland Public Schools (CPS). These scores suggest that groups of students from central-city, low-income, largely one-parent families were performing in second grade, on average, at approximately the national average, obtaining 51.6 on the

vocabulary test and 47.0 on the test of reading comprehension. Yet one year later, the same group of students obtained, on average, scores in reading of 39.6 and language, 37.7. If the second-grade test scores are accurate, then students lost somewhere between 7 to 14 NCE points (equivalent to a decline of approximately 12 to 23 national percentile points) over a one year period.³² This is an extraordinary decline far beyond the most pessimistic portraits painted about American education.

The second-grade test scores also had implausibly weak correlations with such family background characteristics as income and ethnicity. The more credible third grade test scores, collected by the evaluation team, had higher correlations with these variables.³³

If the implausible second-grade scores are removed from the analysis, scholarship students score significantly higher than the comparison group in all subjects. Of course, it is ordinarily better for prior test scores to be included in an analysis of programmatic effects, but it is hardly self-evident that an analysis is improved by the inclusion of problematic ones. If poor-performing public schools are especially likely to teach to a test, and if scholarship applicants disproportionately come from such schools, then the inclusion of such tests as control variables will lead to an under-estimation of programmatic effects.

3. Scholarship students were compared with the third-grade classmates of public-school students who had received tutoring grants.³⁴ To see whether this comparison group came from typical Cleveland schools, we examined twenty-four measures of school characteristics, including student/teacher ratios, student attendance rates, and many other factors.³⁵ Using an analytical technique known as meta-analysis, we were able to determine whether the combined characteristics of the public schools attended by the students in the comparison group differed significantly from those of the typical Cleveland public school. When all twenty-four measures are considered together, the comparison group of students attended schools that were .14 standard deviations more advantaged than the typical public school. The odds that we would find advantages this large by chance are less than 1 in 20. In other words, the schools attended by the comparison group of students had a more advantageous learning environment than the one available to students in the typical Cleveland public school.

4. The evaluation does not include results from the Hope schools, even though, in the third grade alone, Hope-school students constituted 25 percent of all the choice students coming from public schools for whom test score information was available. The evaluation team states that it excluded

test results from the Hope schools from its analysis on the grounds that the California Achievement Test administered by the Hope schools differed from that taken by other students. While this difference does require statistical adjustment of scores, the maker of the test has provided a straightforward formula for making the adjustment.³⁶

The evaluation team also excluded Hope test scores on the grounds that portions of the tests were administered on successive days, not all at one time. Yet CTB-McGraw-Hill says that its tests may be administered either all at once or on successive days without significantly altering the results.³⁷

5. The statistical analysis chosen by the evaluation team—analysis of residuals of a regression equation (also known as sequential regression or step-wise least squares regression)—has been mathematically proven to underestimate positive effects of interventions.³⁸

Since the data from this evaluation have been made available, it is possible to address two of the deficiencies of the original evaluation by: 1) incorporating the Hope school test results into the analysis; 2) using more appropriate statistical techniques; and 3) reporting results that both include and exclude the implausible second-grade test scores from the analysis.

When the implausible second-grade test scores are removed from the regression analysis (but all the family background characteristics are included), choice-school effects are positive in all subject domains.³⁹ Scholarship students scored 4.1 NCE points higher in language, 4.5 points higher in science, 2.5 points higher in reading, 2.5 points higher in social studies, and 0.6 points higher in math. Two of the results are statistically significant at the .05 level and two at the .01 level.

Even when the questionable second-grade test scores are included in the analysis, results remain positive in all domains except for math. However, their magnitude is not as great. The results of an ordinary least squares regression analysis that includes the second-grade test scores are reported in table 14-15. Although the effects in reading, math, and social studies are insignificant, modest, positive choice-school effects are still observed in two subject areas: language skills (2.4 points) and science (2.7 points).

The findings from this secondary analysis of the Indiana University evaluation can hardly be definitive, because the results depend upon a data set suffering from deficiencies mentioned in points one to three above. But even data biased against finding positive choice-school effects reveal positive choice-school effects in two subject domains.

Table 14-15. Effect of Scholarship Program on Third-Grade Test Scores: A Reanalysis of Data from the Indiana University Evaluation^a

Determinant	Language	Science	Reading	Math	Social Studies
School effects					
Choice school	2.37 ^b	2.70 [*]	0.38	-0.92	0.63
2nd grade test controls					
Vocabulary score	0.17 ^{***}	0.18 ^{***}	0.20 ^{***}	0.14 ^{***}	0.18 ^{***}
Comprehension score	0.31 ^{***}	0.27 ^{***}	0.34 ^{***}	0.32 ^{***}	
			0.24 ^{***}		
Demographic controls					
Caucasian	4.52 ^{**}	5.12 ^{**}	3.55 [*]	6.30 ^{***}	5.04 ^{***}
Female	1.31	-1.01	1.34	0.36	0.60
Lives with mother only	-1.33	1.97	1.31	1.97	1.31
On free lunch program	-3.91 ^{**}	-4.99 ^{**}	-3.98 ^{**}	-6.71 ^{***}	-6.79 ^{***}
R ²	0.41	0.35	0.45	0.29	0.45
N	574	574	574	574	574

a. One-tailed significance test.

b. Unstandardized coefficients reported.

* Significant at .05 level.

** Significant at .01 level.

*** Significant at .001 level.

It is also worth noting that the choice-school effects in Cleveland are of a modest order of magnitude comparable to those observed in Milwaukee after one year (as reported in the previous essay). As the authors of the Milwaukee essay pointed out, school choice is not a magic bullet. One cannot expect to observe more than modest learning gains in the first year of attendance at a choice school. It takes time for children to adjust to a new setting and take advantage of whatever opportunities a school can provide. It will be of interest to learn whether the effects in Cleveland, modest though they are in the first year, will cumulate over time, as happened in Milwaukee.

Conclusions

CSTP has been in operation for only one year, a period not long enough to allow researchers to evaluate an educational program fully. Test score results need to be monitored over several years before definitive results can be obtained. Also, CSTP was not set up as a randomized experiment that would enable investigators to compare participants with a control group of essentially similar parents and students. Therefore, the results from the parent survey reported in this chapter compare groups that may differ in respects that cannot be detected.

Despite these limitations, the quality of the data is sufficient to allow us to draw some preliminary conclusions. The parent survey included the responses of more than 70 percent of scholarship recipients the survey team attempted to reach, totaling 1,014, which was more than half of all recipients. The demographic characteristics of the sample of recipients are not significantly different from those of the universe from which they were drawn. The survey team was less successful in reaching nonrecipients, contacting 49 percent. The nonrecipients surveyed were from more advantaged backgrounds than those of the universe from which they were drawn; however, this simply biases the findings against the parental satisfaction results that were obtained. It is likely that even stronger results would have appeared had the response rate been higher.

Though the comparison groups were not created by a randomized experiment, neither did their background characteristics differ in important respects. Whenever demographic differences do appear, it is the scholarship recipients from public schools who are usually the more disadvantaged group. Kindergarten students are an exception to this generalization, but similar findings appear whether or not kindergartners are included in the analysis.

The results of the parent survey indicate that the educational opportunities afforded by CSTP have won a strong endorsement from those participating in the program. A majority of scholarship parents were very satisfied with nearly every aspect of the schools their children attended. The levels of satisfaction with the choice schools were much higher than the levels of satisfaction with the Cleveland public schools. This enthusiasm seems justified. Test scores in math and reading rose in the two schools newly established in response to CSTP, with which parents were less satisfied than with more established choice schools, and gains were made in third grade in the choice program as a whole.

Parents listed academic quality as the most important reason for their participation in CSTP, suggesting that educational objectives are paramount in their choice of schools. However, a fifth of the nonrecipients said one reason they did not participate was their inability to find desired private schools. And families whose children had special education needs found it more difficult to obtain desired private school placements; parents of special needs students were also less satisfied with their schools.⁴⁰ School choice plans clearly need to provide participating schools with the funds and incentives to deliver the necessary services to students with special needs. School mobility rates among CSTP schools were lower than those in central city public schools. Only a tiny fraction, less than half of 1 percent, of the parents new to choice schools reported that their children had been expelled from their private schools or refused admission for a second year.

The findings coming out of the Cleveland Scholarship Program further clarify a number of the claims and assumptions surrounding the spirited contemporary debate about school choice. Though CSTP encountered some difficulties establishing itself in its initial year, in good part because of the uncertainty surrounding a legal suit, both test score and parental survey data provide strong support for future choice initiatives. The data, however, suggest that special funding arrangements and further programming are necessary if students with disabilities and other special needs are to participate fully in school choice programs.

As similar programs proliferate in other cities, we will learn more about the ways in which school choice affects the education of inner-city children. In the fall of 1997, for example, roughly 1,200 New York students accepted scholarships to attend the private schools of their choice. This particular program has the added advantage of being set up as a randomized experiment, and therefore it will provide important data on who participates in choice programs and how choice influences the educational experiences of scholarship recipients as compared to nonrecipients. Hopefully, the debate over school choice will increasingly hinge on the examination of evidence,

and less on ideology, allowing policy makers the opportunity to consider carefully the promise choice may offer in promoting educational reform for the inner-city residents who need it most.

Notes

1. We focus on the scholarship component of the program.
2. "The Equity Gap," *Cleveland Plain Dealer*, March 25, 1957, p. A9.
3. Paul T. Hill and Stephen P. Klein, "Toward an Evaluation Design for the Cleveland Scholarship Program," paper prepared for Ohio Department of Education, November 1996. Undoubtedly, some of the kindergarten students would have attended private schools even if they had not received scholarships.
4. However, 44 percent of the nonrecipients contacted in our survey thought that they had never been awarded scholarships.
5. The Ohio Federation of Teachers appealed the case, and in the spring of 1997 the appellate court ruled CSTP unconstitutional because it violated both the federal establishment of religion clause and an Ohio state constitutional requirement that general laws be equitably applied across the entire state. In July 1997 the Ohio State Supreme Court accepted the case for review and permitted CSTP to continue contingent on its decision on the merits.
6. Carol Ascher, Norm Fruchter, and Robert Berne, *Hard Lessons: Public Schools and Privatization* (New York: Twentieth Century Fund Press, 1996), p. 111.
7. Nina H. Shokraii and John S. Barry, "Two Cheers for the S. 1: The Safe and Affordable Schools Act of 1997," *The Heritage Foundation Issue Bulletin*, no. 232, p. 5.
8. The discussion in the text relies solely on data collected from the parent survey; these data differ significantly from the data collected by the CSTP office. According to the survey data the average family income for recipients from public schools was \$20,091. According to official CSTP records taken from application forms submitted eighteen months earlier, the family income reported by this same group was \$12,253. We do not think the explanation of the discrepancy is a remarkable increase in parents' earning power. More likely, respondents had incentives to give downwardly biased estimates of their incomes when reporting to an official government agency allocating benefits based on income; respondents may have had incentives to report upwardly biased estimates of their incomes when talking anonymously to survey researchers. Although all estimates of the income of a population are subject to error, the problem can be minimized by always making comparisons within a specific data set in which the same bias, whether upward or downward, is likely to exist across groups. We follow this procedure throughout this chapter.
9. See Jay Greene, William Howell, and Paul Peterson, "An Evaluation of the Cleveland Scholarship Program," Occasional Paper, Harvard University's Program on Education Policy and Governance, 1997.
10. These data are available in tables 1.2 and 1.3 of Greene, Howell, and Peterson, "An Evaluation of the Cleveland Scholarship Program."
11. Carnegie Foundation for the Advancement of Teaching, *School Choice: A Special Report* (Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching, 1992), p. 13.
12. Ascher, Fruchter, and Berne, *Hard Lessons*, pp. 40-41.
13. Dan Murphy, F. Howard Nelson and Bella Rosenberg, 1997. "The Cleveland Voucher Program: Who Chooses? Who Gets Chosen? Who Pays?" A report by the American Federation of Teachers. p. 10.

14. See tables 1.4 and 1.5 in Greene, Howell, and Peterson, "An Evaluation of the Cleveland Scholarship Program."

15. What accounts for this difference? Two possibilities present themselves. On the one hand, nonrecipients might have appeared less enthusiastic about their original reasons for applying as post hoc rationalizations for not having taken advantage of the scholarships. Alternatively, one might hypothesize that the intensity of parents' reasons for seeking choice schools was an important factor in determining who actually received scholarships. Preliminary evidence suggests that the former is true. The responses of those whose children involuntarily were placed in public schools (either because they did not know they received scholarships, or because they claimed that being denied admission to preferred private schools was an important reason for refusing the scholarships) were largely indistinguishable from those of nonrecipients who actively chose to send their children to public schools. This suggests that the strength of parents' intentions did not have much impact on which applicants received scholarships.

16. Murphy, Nelson and Rosenberg, "The Cleveland Voucher Program," pp. 9–10.

17. Murphy, Nelson and Rosenberg, "The Cleveland Voucher Program," p. ii.

18. The zero order correlation among satisfaction categories ranges from .45 to .68.

19. These differences are large. The parents of students attending established parochial schools, for example, were four-tenths of a standard deviation more satisfied with the schools than those whose children voluntarily remained in public schools.

20. Differences with respect to satisfaction of the richest and poorest applicants is simply ten times the unstandardized regression coefficient.

21. John F. Witte, "Who Benefits from the Milwaukee Choice Program?" in Bruce Fuller, Richard Elmore and Gary Orfield, eds., *Who Chooses? Who Loses? Culture, Institutions and the Unequal Effects of School Choice* (New York: Teachers College Press, 1996), p. 133; see also Ascher, Fruchter, and Berne, *Hard Lessons*, p. 71.

22. Daniel McGroarty, "School Choice Slandered," *Public Interest*, Fall 1994, pp. 94–111.

23. Data on the mobility rates among students in low-income elementary schools in grades two through five are provided by John F. Witte, Andrea B. Bailey, and Christopher A. Thorn in "Second Year Report: Milwaukee Parental Choice Program," Department of Political Science and the Robert M. La Follette Institute of Public Affairs, University of Wisconsin-Madison, December, 1992, pp 19–20.

24. Note also that when moving from models 1 and 2 to model 3 the constant switches signs, again to compensate for the variance accounted for by parental satisfaction.

25. Murphy, Nelson and Rosenberg, "The Cleveland Voucher Program," p. ii.

26. The white paper "What Really Matters in American Education," put out by the Department of Education on September 23, 1997, makes a number of erroneous statements concerning our analyses of test scores. First, it says that we do not "control for the family background or prior achievement of the voucher students." This is not correct. By examining gains in achievement from the beginning to the end of the first year of exactly the same students in choice schools, we automatically take into account family background and prior achievement. Second, the white paper states, without documentation, that the Hope school test scores are based on an "old, invalid form of the California Achievement Test (CAT)." This is also incorrect. Officials at the company that makes the CAT, McGraw-Hill-CTB, confirm that the CAT 5, the version of the test taken by students in the Hope schools, continues to be sold and graded by the company in the belief that the results are valid. We do not know of any study that has shown their belief to be incorrect. Third, the white paper claims that our reporting of the scores "lumps together results for students in grades K through 3, suggesting that differences among grades are being masked." The scores reported in table 14-13, however, are generally

consistent across grade levels—with the exception of first grade students, who experienced a significant drop in language scores (see Greene, Howell and Peterson, "An Evaluation of the Cleveland Scholarship Program").

27. Greene, Howell, and Peterson, "An Evaluation of the Cleveland Scholarship Program."

28. We assume that the vast majority of students who were tested in 1996 but not in 1997 left the Hope schools over the summer. It is possible, nonetheless, that a fraction of these students did attend the Hope schools in 1997 but were not present on the day of testing.

29. The Cleveland public school test score decline is documented in "Cleveland City School District, Building Profiles, Data for 1995–96 School Year. Three-year Baseline Data, Elementary Schools," Assessment and Information Services, September 1996. For the comparable decline among Milwaukee students, see Jay P. Greene, Paul E. Peterson, and Jiangtao Du, "Effectiveness of School Choice: The Milwaukee Experiment," Occasional Paper 97–1, Harvard University, Program on Education Policy and Governance, March 1997; and Cecilia Elena Rouse, "Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program," *Quarterly Journal of Economics*, forthcoming, figures 1 and 2.

30. Kim K. Metcalf, William J. Boone, Frances K. Stage, Todd L. Chilton, Patty Muller, and Polly Tait, "A Comparative Evaluation of the Cleveland Scholarship and Tutoring Grant Program: Year One: 1996–97," School of Education, Smith Research Center, Indiana University, March 1998.

31. The evaluation has other limitations as well. See Paul E. Peterson and Jay P. Greene, "Assessing the Cleveland Scholarship Program: A Guide to the Indiana University School of Education Evaluation," Occasional Paper, Harvard University, Program on Education Policy and Governance, March 1998.

32. This is only an approximate number. One cannot state an exact equivalence without knowing precisely where on the distribution of scores the comparison is being made.

33. When second grade test scores are regressed on all available family background characteristics, the R^2 for the vocabulary test is .044 and for reading comprehension, it is .056. When third grade test scores are regressed on the same family background characteristics, the R^2 for language is .079; for reading, it is .067; for math, .084; for science, .063; and for social science .098.

34. The evaluation was originally designed to test the effectiveness of a tutoring program; those receiving tutoring grants were to be compared to their classmates. This aspect of the evaluation has not been reported.

35. The twenty-four characteristics were as follows: attendance rate, percentage of bilingual students, scores on ten different tests, percentage of students not promoted from one year to the next, percentage female, number of school disturbance incidents reported, the mobility rate in and out of the school, the percentage of students eligible for free lunch, the percentage white, the percentage of students bused to the school, the percentage of the teaching staff that was white, the percentage of the students coming from single-parent families, the number of suspensions from the school, the student-teacher ratio, and the size of the school's enrollment. A characteristic was assumed to have a positive effect on a student's learning environment if it had a positive association with test scores.

36. The conversion tables are available from CTB-McGraw-Hill, the maker of both tests.

37. We are grateful to Professor Alex Molnar, University of Wisconsin-Milwaukee, for pointing out this feature of the test at a meeting of the Advisory Committee to the

Ohio Department of Education on the Indiana University evaluation on April 7, 1998. His observation was subsequently confirmed by CTB-McGraw-Hill.

38. Gary King, "How Not to Lie with Statistics: Avoiding Common Mistakes in Quantitative Political Science," *American Journal of Political Science* 30 (August 1986), pp. 665-86; Arthur S. Goldberg, "Stepwise Least Squares: Residual Analysis and Specification Error," *Journal of the American Statistical Association* 56 (December 1961), pp. 998-1000; Arthur S. Goldberger and D. B. Jochems, "Note on Stepwise Least Squares," *Journal of the American Statistical Association* (March 1961), pp. 105-110; Christopher H. Achen, "On the Bias in Stepwise Least Squares," unpublished manuscript, 1978.

39. Using tables provided by CTB-McGraw-Hill we converted test scores from the metric of the California Achievement Test metric to that of the Terra Nova. We use an ordinary least squares regression technique, including the treatment effect as a dummy variable, in an equation that includes all available co-variables.

Our analysis uses a one-tail test of significance, as recommended for this study by the statistical adviser to the Ohio Department of Education. See "Cleveland School Voucher Power Analysis: Determining the Value of Obtaining Fourth-Grade Standardized Test Scores to Measure Differences in Achievement between Participants and Public School Students," February 17, 1998.

A second estimation compared the scores of the third-grade choice-school students (included in the Indiana evaluation) with a matching group of public-school students (drawn from the Indiana evaluation comparison group) who had a similar propensity to test at a particular level. The two groups of students are matched on all characteristics, including second-grade test scores. These estimations confirm those reported in Table 14-15. Choice-school effects in language were 2.79; science, 2.89; reading, 1.95; math, -0.64; and social studies, 1.35. Because the matching design reduced the number of observations, the confidence levels for the choice school effects in language and science were .07 and .06. The point estimates indicate slightly stronger choice-school effects than the point estimates reported in table 14-14.

Jennifer Hill, a graduate student in the Department of Statistics, Harvard University, performed the propensity-score estimation; Donald Rubin provided helpful guidance and assistance. The technique is explained in Paul R. Rosenbaum and Donald B. Rubin, "Constructing a Control Group Using Multivariate Matched Sampling Methods that Incorporate the Propensity Score," *The American Statistician* 39, no. 1 (1985), pp. 33-38; Donald B. Rubin, "Estimation from Nonrandomized Treatment Comparisons Using Subclassification on Propensity Scores," Paper presented at the German Cancer Research Center, Heidelberg, Germany, April 10, 1997; this paper is a modification and expansion of an article in *Annals of Internal Medicine* 127, no. 8 (1997), pp. 757-63.

40. Though, as we noted previously, parents of special needs children who attended private schools were not significantly less satisfied with their schools than parents of special needs children who attended public schools.

Part Five

CONSTITUTIONAL ISSUES