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Evaluation of the DC Opportunity Scholarship Program: First Year Report on Participation

April 2005

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EXECUTIVE SUMMARY

The District of Columbia School Choice Incentive Act of 2003 was passed by Congress in January 2004. The Act provided funds for District of Columbia Public Schools (DCPS) improvement activities and charter school facility acquisitions. Most notably, the statute established what is now called the DC Opportunity Scholarship Program—the first federal government initiative to provide K-12 education scholarships, or vouchers, to families to send their children to private schools of choice.

The DC Opportunity Scholarship Program has the following programmatic elements:

- To be eligible, students entering grades K-12 must reside in the District and have a family income at or below 185 percent of the federal poverty line.

- Participating students will receive scholarships of up to $7,500 to cover the costs of tuition, school fees, and transportation to a participating private school of choice.

- Scholarships are renewable for up to 5 years (as funds are appropriated), as long as students remain eligible for the program and remain in good academic standing at the private schools they are attending.

- If there are more eligible applicants than available scholarships or open slots in private schools, applicants are to be awarded scholarships and admission to private schools random selection, for example by lottery.

- Private schools participating in the program must be located in the District, and agree to program requirements regarding nondiscrimination in admissions, fiscal accountability, and cooperation with the evaluation.

The Act requires that this 5-year scholarship program be rigorously evaluated by an independent research team, using the "strongest possible research design for determining the effectiveness" of the program and addressing a specific set of student comparisons and topics (Section 309). The evaluation thus has several components: (1) an impact analysis, comparing outcomes of eligible applicants (students and their parents) from public schools randomly assigned to receive or not receive a scholarship through a lottery, and (2) a performance reporting analysis, comparing all students participating in the scholarship program to students in the same grades in DCPS. All participating students includes those randomly assigned scholarships and those who received scholarships automatically, those who were attending public schools and those attending private schools when they entered the scholarship program. Because DCPS students who did not apply to the scholarship program are likely to be quite different from those who applied and are participating, the impact analysis will be the source of the reliable, causal evidence on program effectiveness called for in the legislation.

This document is the first of a series of annual reports from the evaluation team, as mandated by Congress. Because the initial cohort of program participants—those who applied in spring 2004 to receive scholarships for the 2004-05 school year—just recently matriculated at their new schools, no impact information is available at this time. Instead, the report describes the purposes and design of the scholarship program, the first-year implementation activities that generated 1,848 eligible applicants and 58 participating private schools, the process of awarding scholarships to 1,366 student applicants, and the characteristics of both applicants and scholarship users. The report provides an important foundation for the later examination of program impacts.

Program Implementation in 2004: Recruitment and Applications (Chapter 2)

The Washington Scholarship Fund (WSF) was awarded a grant by the U.S. Department of Education (ED) Office of Innovation and Improvement, in partnership with the DC Mayor's Office, to implement the program, starting in March 2004. Despite the challenges stemming from the late start of the program, the implementers recruited 58 schools to participate in the program in some capacity in 2004-05 and obtained applications from 1,848 students deemed eligible for the program.

Participating Schools

The 58 private schools participating in the program during its inaugural year represent 53 percent of all private schools in the District (Table ES-1). All but four of the schools made new slots in their schools available to scholarship winners. Four schools were willing to enroll scholarship students only if they had been accepted to the school for the 2004-05 school year prior to the launch of the scholarship program.

Table ES-1. Number of DC Private Schools Participating in the DC Opportunity Scholarship Program: 2004-05

Private Schools	Number of Schools	Percent
In the District of Columbia	109	100
Participating in the program in some capacity	58	53
Set aside slots for DC Opportunity Scholarship Program participants	54	50
Agreed to accept scholarships only for eligible students already admitted	4	4

NOTE: Detail may not sum to totals because of rounding.

SOURCE: "School Directory, D.C. K-12 Scholarship Program, 2004-05 School Year," Washington Scholarship Fund, June 2004.

The characteristics of the private schools that chose to participate in the program the first year include the following:

- Mostly religiously affiliated: about 51 percent are affiliated with the Roman Catholic Church, another 21 percent are affiliated with various non-Catholic religions, and approximately 28 percent are independent private schools.

- Long established in the area: more than three-quarters of the schools have been in existence since 1983 and the most recently established participating private school opened in 2002.

- Already serve a high proportion of students of color: on average, 82 percent of students in participating private schools are from minority racial/ethnic groups, compared to 95 percent for DCPS schools.

- On average, have lower school size and student-teacher ratios than do DCPS schools.

- Mostly (about 70 percent) charge tuitions that are under the $7,500 maximum provided through the federal scholarship program.

- More likely to be religiously affiliated and serve higher proportions of students of color than are private schools that chose not to participate in the program the first year. Nonparticipating schools also tend to charge higher tuitions and have smaller class sizes than do private schools that are currently involved in the program.

Participating Families and Students

The program implementer – WSF – conducted most of the outreach to and recruitment of families between March and May 2004. Perhaps as many as 40,000 DC children were eligible for the scholarship program, based on data from the U.S. Census (Table ES-2). Inquiries about the program were made on behalf of almost 6,000 students, and nearly 2,700 applications were submitted during the recruitment period. A total of 1,848 applicants (69 percent of those who applied) provided all of the required documents and were deemed eligible for the program. Seventy-two percent of those eligible applicants were attending public school during 2003-04, whereas 28 percent were already attending private schools but met the eligibility requirements in the statute.

Table ES-2. Number and Percentage of Participants, by Application Status: Spring 2004

Measure	Eligible Base	Inquiries	Applicants	Eligible Applicants	Public Eligible Applicants	Private Eligible Applicants
Number of students	40,507	5,863	2,692	1,848	1,330	518
% of base	100	14	7	5	NA	NA
% of inquiries		100	46	32	NA	NA
% of applicants			100	69	NA	NA
% of eligibles				100	72	28

NOTE: Because the eligible base, inquiries, and applicants included an unknown combination of public and private school students, it would not be appropriate to express the number of public or private eligibles as a percentage of those bases.

SOURCE: Figure for the "Eligible Base" is based on data from the U.S. Census, population of the District of Columbia age 5 to 17 under 185 percent of the federal poverty line in 2000. The exact number for 2004 is likely to differ somewhat from this 2000 figure. Figure for "Inquiries" provided by Fight For Children. Figures for "Applicants" and "Eligible Applicants" were drawn from the applicant database, with eligibility determined by Private School Aid Service (PSAS). Numbers of applicants from public or private schools were determined by cross-matching the name of the school each child was attending against a list of public and private schools in DC compiled from the DCPS web site and the NCES Common Core of Data.

Scholarship and Placement Lotteries and Initial Use of Scholarships Awarded (Chapter 3)

The program statute requires that scholarship recipients be randomly selected (e.g., by lottery), if the program or specific schools are "oversubscribed"—that is, have more demand for them than can be accommodated. The law also details congressional priorities to guide the award of scholarships and scarce seats to eligible applicants: (1) students attending a public school designated as in need of

improvement (SINI) under the No Child Left Behind Act at the time of application to the program, and (2) families that lack the resources to take advantage of the educational choices available to them.

A total of 79 eligible applicants (4 percent) were from one of the 15 SINI-designated schools in spring 2004 and were, therefore, given the highest priority in the lotteries.[1] An additional 1,251 eligible applicants (68 percent) were attending non-SINI public schools and were assigned the second-highest priority in the lotteries. The 518 eligible applicants (28 percent) from private schools were given the lowest priority, because they were considered to meet neither of the congressional priorities. These priority groups were used both to award scholarships and, later, to place scholarship recipients in the participating private schools of their choice.

The Scholarship Lottery

The first lottery was to distribute scholarships to eligible applicants. For public school applicants, each student's probability of obtaining a scholarship was dependent not only on his or her membership in a priority group but also on the availability of new private school seats at various grade levels. The new seats in participating private schools were highly concentrated in the K-5 elementary grades, meaning there were more available seats in those grades than there were eligible applicants (Figure ES-1).   Thus, in the lottery, K-5 students would receive scholarships automatically.   The middle school grades (6-8) were modestly

Figure ES -1
Eligible Public School Applicants and Available Private School Slots, by Grade-Level Band: Spring 2004 and Fall 2004

oversubscribed, and the high school grades (9-12) were severely oversubscribed. Only in those grades was there random assignment as part of the lottery. Since eligible private school applicants already held slots in their private schools, they were not constrained by slot availability in the same way as public school applicants.

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[1] While there were 79 applicants from the 15 schools designated as SINI in 2003, in advance of the first year lottery in May 2004, DCPS designated an additional 73 schools as in need of improvement in August 2004, two months after the scholarship lottery (See http://silicon.k12.dc.us/NCLB/index.asp, accessed February 15, 2004). A total of 535 program applicants came from 2003-designated or 2004-designated SINI schools, representing 29 percent of all program applicants this first year. Of these students, 433 (81 percent) were awarded scholarships. Twice as many Opportunity Scholarships were awarded to students applying from 2003- or 2004-designated SINI schools than were awarded to students applying from private schools.

Accounting for both the statutory priorities and the slot constraints within the grade-level bands, scholarship award probabilities were assigned to the various groups of eligible applicants and a custom-designed computer program awarded scholarships to students within each group (Figure ES-2). A total of 1,366 scholarships were awarded in June 2004, including the following:

- All 79 applicants from SINI-designated schools.[2]

- All 772 non-SINI public school applicants in K to 5.

Figure ES-2
Scholarship Probability, by Type of Applicant and Grade-Level Band: Spring 2004

- 255 (76 percent) of the non-SINI public school applicants in grades 6 to 8 and 44 (28 percent) of them in grades 9 to 12.

- A total of 216 (43 percent) of applicants already attending private schools, with probabilities considerably lower (55 percent for those in grades K to 5, 42 percent for grades 6 to 8, and 17 percent for grades 9 to 12) than public school applicants in all three grade bands.
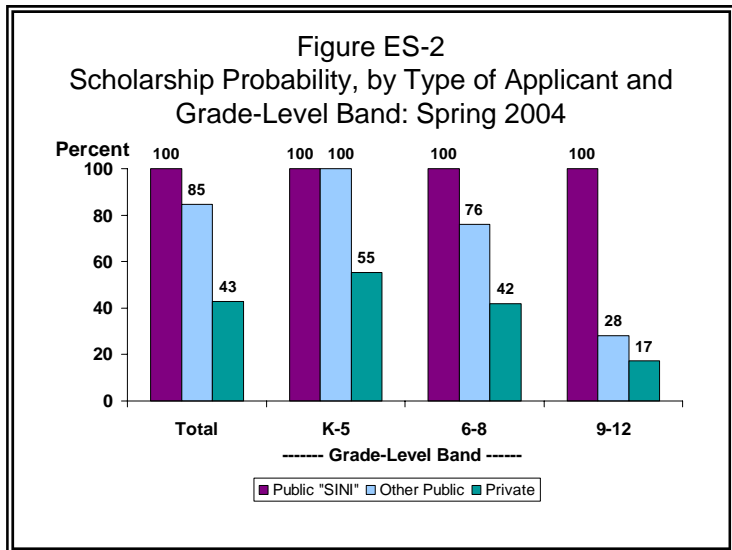
In sum, the scholarship lottery produced two groups of students for purposes of meeting statutory requirements for the DC Choice Opportunity Scholarship program evaluation. The 1,366 scholarship recipients will be the subject of annual performance reporting and comparison to DCPS nonapplicants. The 492 public school applicants who were entering grades subject to random assignment (grades 6-12) will contribute to the annual impact analysis: these include 299 students assigned to the treatment group (and also included in the performance reporting sample) and 193 students assigned to the control group. The 289 private school applicants who were not awarded scholarships belong to neither group. Since they previously attended and presumably will continue to attend private school using resources outside of the scholarship program, following these students after baseline would not contribute meaningfully to the evaluation. To conserve resources, this group of initial applicants will not be part of the evaluation going forward.

However, the impact sample in the first year of the program is not, on its own, large enough for the evaluation to reliably draw conclusions about any differences in achievement outcomes that might be expected from an intervention of this kind.[3] Instead, the treatment and control groups from the first year

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[2] Because they represented such a small share of the overall applicant pool the first year and there was little possibility of separately analyzing impacts for this subgroup, all SINI applicants were awarded a scholarship. However, with more SINI schools identified for the next year, it is likely that a much higher number of students in this priority group will apply to the program in the future. Therefore, in succeeding years the group will be given highest priority but be part of the random assignment process that will enable that important category of students to be included in the rigorous impact evaluation.

[3] Evaluation sample size needs are calculated using statistical power analysis. It is an important part of evaluation design and demonstrates how well the design will be able to distinguish real impacts from chance differences between groups. The analysis takes into consideration such factors as the size of the impact expected, the proportion of students anticipated to be assigned to the treatment and control groups, and the likely attrition from the study's data collection. The power analysis conducted for the DC Opportunity Scholarship Program suggests a target of 1,240 randomly assigned students, with slightly more than 800 students assigned to the treatment group and slightly more than 400 assigned to the control group, so long as the test score impacts in the outcomes in future years are at least moderately large (Appendix A).

lottery will be combined with those from the lottery for second year applicants, expected in April 2005, to provide a sufficient sample for the rigorous evaluation of program impacts.

Placement Lottery and Follow Up

After being notified of their scholarship offer, families were required to meet with officials at participating private schools and obtain conditional acceptance to the schools that they wanted their children to attend. Parents then submitted school preference forms to indicate and rank the top four private schools of their choice. These forms were used to place students, through a combination of a custom-designed computer placement lottery and followup case-by-case placements by WSF. There were a total of 1,366 scholarship winners:

- A total of 1,040 were successfully placed, with the overwhelming majority of students placed in their most-preferred school.

- The remaining 326 scholarship recipients did not complete the school search process and, therefore, could not be assigned a placement in a participating private school.

Of the 1,040 who were placed, 1,027 had matriculated at their preferred private school by September 10, 2004. This represents an overall initial scholarship usage rate of 75 percent. The usage rate for the impact sample's treatment group is lower—62 percent—because that group excludes students in grades K-5 and those who were already attending private schools when they applied to the program, subgroups that have significantly higher rates of scholarship use than do public school students in the middle and high school grades.

Characteristics of Program Applicants (Chapter 4)

In determining and interpreting program effectiveness later on, it is important to know how well the program is targeted to the disadvantaged families who are the focus of the program and, beyond that, what types of families and students apply, win scholarships in the lottery, and choose to use them to enroll in a private school. It is also useful to identify the extent to which public and private schools in the District are experiencing a significant loss or gain of students due to the first year of program implementation, because that information provides the foundation for our later examination of the impact of the program on DC schools.

Public School Applicants Compared to Similar Public School Students in DC

There are several reasons to examine the eligible public school applicants to the DC Opportunity Scholarship Program in relation to other DCPS students. Most clearly, the comparison provides a context for considering the kinds of students who might be attracted to the program in future years in the District or to a similar program in other locations. The income eligibility criteria for the program—family income within 185 percent of the federal poverty line—matches up quite closely with eligibility for the federal free or reduced-price lunch (FRL) program. Using this income indicator to compare public school program applicants to similarly low-income DCPS nonapplicants, we find some differences and similarities (Table ES–3):

Table ES-3. Characteristics of DC Public School Free or Reduced-Price Lunch Program Students, Program Applicants Versus Nonapplicants: Spring 2004

Characteristic	Applicants[1]	DCPS Sample	Difference
Baseline Test Scores[2]			
Average Reading Percentile	40.2	36.4	3.9**
Percent missing	*25*	*26*	
Average Mathematics Percentile	46.7	43.0	3.7**
Percent missing	*25*	*24*	
Percent in Special Education	17	15	1
Percent missing	*24*	*22*	
Percent, by Race			
African American	93	88	5**
Hispanic	6	10	-5**
Other race[3]	2	2	0
Percent missing	*0*	*0*	
Percent, by Gender			
Female	51	51	0
Percent missing	*0*	*0*	
Percent Participating in Free/Reduced-price Lunch Program	100	100	0
Percent missing	*0*	*0*	
Sample size	894	44,740	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] The sample size of 894 for the applicant group compared here differs from the total sample of 1343 public school applicants for two reasons. First, only 1,077 (80 percent) of the public school applicants could be identified conclusively in the DCPS accountability testing database, the only source of comparable data for both applicants and nonapplicants from DCPS. Most missing observations were in pre-K, first, or second grade, where accountability testing is optional. An additional 183 public school applicants in the accountability database were not enrolled in the free or reduced-price lunch (FRL) program.   Because it is most analytically sound to compare similarly disadvantaged groups of applicants and DCPS nonapplicants, we included in this comparison only those students who had test scores in the database and who were confirmed eligible for FRL. To examine whether there was any substantial bias in our analysis, we compared the demographic characteristics of students who were tested by DCPS with those who were not tested, both within and across the applicant and nonapplicants samples, using a *t* test for difference of means to identify statistically significant differences. The testers did not differ significantly from the nontesters on any characteristic, except for grade, since testing is mandatory only in grades 3 and higher. Therefore, we are confident that tester/nontester bias does not affect the comparisons that we make here.

[2] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.

[3] "Other race" includes students who were identified as white, Asian, American Indian, or Alaska Native.

NOTE: Detail may not sum to totals because of rounding. Applicant sample includes all eligible applicants identified in the DCPS data base that were participating in the free- and reduced-price lunch program.

SOURCE: Accountability testing database for DC public and charter schools, DCPS Office of Communications and Public Information.

- Program applicants scored somewhat higher on reading and mathematics accountability tests than the nonapplicants.

- Applicants were more likely than nonapplicants to be African American and less likely to be Hispanic.

- The two groups were similar regarding special education enrollment, gender, and enrollment in the FRL program (the latter by design).

Similar patterns are evident when we use a subset of the applicants—just the program participants—to compare to economically disadvantaged DCPS students in the same grades, as the program statute requires for performance reporting.[4]

Applicants in the Impact and Non-Impact Samples

While it is important to examine who applies to the DC Opportunity Scholarship Program, for the evaluation it is equally critical to assure that the applicants who will be the focus of the impact analysis—the applicants who were randomly assigned to treatment and control groups randomly assigned to treatment by the lottery—are similar prior to the beginning of the program. It is on this similarity between the groups, not only in characteristics easily measured but also in those not observed, that the scientific benefits of the randomized control trial (RCT) approach rests. We find no statistically significant differences between the two groups on any major educational or family background measures, confirming that the assignment lottery was conducted appropriately.

It is also useful to review how the characteristics of the impact sample differ from the characteristics of students who applied but will not be included in the analysis of program effectiveness (the "non-impact sample" of applicants). The existence of many significant differences between the impact and non-impact samples limits extrapolation of the results of the impact analysis to characterize overall program impact. There are a few differences between the two groups. Compared to their non-impact sample counterparts, members of the impact sample: (1) scored higher in reading in grades 9 through 12, (2) are more likely to have a learning disability, and (3) are less likely to be of Hispanic ethnicity.

Applicants by Type of Previous School

The schools students previously attended may be associated with students' educational or background characteristics, their parents' attitudes, and ultimately the extent to which the program is effective for students seeking scholarships. Eligible applicants to the program came from four different types of schools. Four percent came from SINI-designated public schools, 54 percent from non-SINI regular public schools, 14 percent from public charter schools, and 28 percent from various private schools. The most important differences among the applicants include the following:

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[4] The sample size of 894 for the applicant group compared here differs from the total sample of 1343 public school applicants for two reasons. First, only 1,077 (80 percent) of the public school applicants could be identified conclusively in the DCPS accountability testing database. Most missing observations were in pre-K, first, or second grade, where accountability testing is optional. An additional 183 public school applicants in the accountability database were not enrolled in the free or reduced-price lunch program. To keep the comparison balanced, they were excluded from the applicant group for purposes of this analysis.

- Among high school applicants, SINI public applicants scored lower in reading, whereas non-SINI public applicants scored higher.[5]

- The average family income of all applicants was $18,742, with SINI and non-SINI public applicants reporting somewhat lower incomes and private school applicants reporting somewhat higher incomes.

- The mothers of applicants reported an average of almost 13 years of formal education. The mothers of non-SINI public applicants reported slightly lower levels of education, and the mothers of private school applicants slightly higher levels.

Applicant Response Rates Among Public and Private Schools

A central question in the debate surrounding school choice—and one of the topics the statute requires the evaluation to address—is whether a scholarship program has an impact on the larger public and private school systems. Such "systemic effects" could take place if significant percentages of students in the public school system or in specific schools apply for, receive, and use scholarships to transfer to private schools. With regard to the public schools, the DC Opportunity Scholarship Program could have either positive or negative effects. One theoretical argument suggests that scholarship programs will divert funding and the most motivated students from public schools to private schools, leaving the public school system with fewer resources with which to educate the remaining student population. Another theory is that schools behave in a manner similar to firms and will respond to competition by becoming more efficient. In the case of schools, it is the risk of losing students and subsequently funding that may provide an impetus for public schools to provide better services and produce better student outcomes. Private schools in jurisdictions with greater school choice may face similar incentives to improve or expand in order to retain as many of their current students and attract more.

To provide the basis for a later analysis of the effects of the DC Opportunity Scholarship Program on schools, we first need to describe the extent to which public schools have so far been affected by program applications and scholarship users—a possible predictor of the level of competitive pressure the public schools may experience. The school-level scholarship application and use rates this first year suggest that relatively few public schools have experienced a significant loss of students as a result of the scholarship program (Table ES-4):

- Over one-quarter of the public schools in the District experienced no student losses due to the program.

- Another 56 percent of DCPS schools had program-related transfers out that totaled less than 2 percent of their student populations.

- Seventeen percent of District schools lost about 2 to 4 percent of their students.

- Finally, 2 percent of the public schools in the District experienced more significant student transfers of over 4 percent under the program.

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[5] Test scores were not available for the private school applicants.

**Table ES-4.   Public School-Level Scholarship Application and Usage Rates:
Spring 2004 and Fall 2004**

Percent of Student Body	Applied for the Program		Used a Scholarship	
	Number of Schools	Percent of Schools	Number of Schools	Percent of Schools
0	25	13	51	26
0.1 – 1.0	47	24	63	32
1.1 – 2.0	56	28	47	24
2.1 – 3.0	38	19	21	11
3.1 – 4.0	12	6	12	6
4.1 –	19	11	3	2
Total	197	100	197	100

NOTE: Detail may not sum to totals because of rounding.

SOURCES: Application and usage numbers by school generated from the Applicant Database and Washington Scholarship Fund (WSF) Placement Database. Enrollment figures for DCPS are from the 2002-03 school year and were obtained from Membership in the District of Columbia Public Schools by School and Grade, October 7, 2003, available on the DCPS web site, www.k12.dc.us/dcps/data/enrollment/membership-Oct.703_official_.pdf. Enrollment figures for DC public charter schools chartered by the District Board of Education are from the 2002-03 school year and were obtained from the Common Core of Data, National Center for Education Statistics. Enrollment figures for the DC public charter schools chartered by the DC Public Charter School Board are from the 2003-04 school year and were obtained from the Board's web site at www.dcpubliccharter.com.

In contrast, a similar analysis of the participating private schools suggests that students using DC Opportunity Scholarships make up a significant share of their enrollments. In more than one-quarter of those private schools, nearly 20 percent of their students are using Opportunity Scholarships; in another 37 percent, scholarship students make up between 5 and 20 percent of their student populations in 2004-05.

1. INTRODUCTION

The District of Columbia School Choice Incentive Act of 2003 was passed by Congress in January 2004. The Act provided funds for District of Columbia Public School (DCPS) improvement activities and charter school facility acquisitions. Most notably, the statute established what is now called the DC Opportunity Scholarship Program—the first federal government initiative to provide K-12 education scholarships, or vouchers, to families to send their children to private schools of choice.

The statute requires that this 5-year scholarship program be rigorously evaluated by an independent research team. This document is the first of a series of annual reports from that team, as mandated by Congress. The report describes the purposes and design of the scholarship program, the first-year implementation activities that generated 1,848 eligible applicants and 58 participating private schools, the process of randomly awarding scholarships to 1,366 student applicants, and the characteristics of both applicants and scholarship users. The report provides an important foundation for the later examination of program impacts.

1.1   District of Columbia School Choice Incentive Act of 2003

In January 2004, the U.S. Congress passed the DC School Choice Incentive Act of 2003, Title III of Division C of the Consolidated Appropriations Act, 2004, P.L. 108-199. The statute established a new, 5-year school choice program for low-income residents of Washington, DC. The key elements of the program include the following:

- To be eligible, students entering grades K-12 must reside in the District and have a family income at or below 185 percent of the federal poverty line.

- Participating students will receive scholarships of up to $7,500 to cover the costs of tuition, school fees, and transportation to a participating private school of choice.

- Scholarships are renewable for up to 5 years (as funds are appropriated), as long as students remain eligible for the program and remain in good academic standing at the private schools they are attending.

- If there are more eligible applicants than available scholarships or open slots in private schools, applicants are to be awarded scholarships and admission to private schools by random selection (e.g., by a lottery).

- Private schools participating in the program must be located in Washington, DC, and agree to program requirements regarding nondiscrimination in admissions, fiscal accountability, and cooperation with the evaluation.

Certain groups of students have priority in obtaining access to the program: (1) those coming from public schools identified as in need of improvement (SINI) under the federal Elementary and Secondary Education Act and (2) those whose families lack the financial resources to take advantage of available educational options.

The law also charged the U.S. Secretary of Education and the Mayor of the District of Columbia with selecting both a program implementer and an independent evaluator of the program. The Secretary

designated the Office of Innovation and Improvement (OII) within the U.S. Department of Education (ED) as the lead agency for funding and monitoring the implementation of the program, and the Institute of Education Sciences (IES) to take the lead in funding and monitoring the independent evaluation. Under current appropriation levels—about $13 million annually—the program is likely to support 1,800 to 2,000 scholarships, depending on the tuition levels of the selected private schools.

1.2   Congressionally Mandated Evaluation

Section 309 of the Act describes the requirements for an independent evaluation of the DC Opportunity Scholarship Program. The Secretary of Education is to ensure the following:

- "The evaluation is conducted using the strongest possible research design for determining the effectiveness" of the school choice program;

- The results of the evaluation regarding the impact of the program on the participating students and nonparticipating students and schools in the District are disseminated widely.

Early on, IES determined that the foundation of the DC Opportunity Scholarship Program evaluation would be a randomized controlled trial (RCT), comparing outcomes of eligible applicants (students and their parents) randomly assigned to receive or not receive a scholarship.[6] This decision was based on the mandate to use rigorous evaluation methods, the expectation that there would be more applicants than funds and private school spaces available, and the requirement to use random selection to determine who receives a scholarship. In addition, the law clearly specified that such a comparison in outcomes be made.[7] This component represents the **impact analysis** and will provide evidence on the effectiveness of the program.[8]

The law also called for the evaluation to track program progress in other ways. For example, the evaluation must compare students participating in the scholarship program to students in the same grades in the DC Public Schools. However, DCPS students who did not apply to the scholarship program are likely to be quite different from those who applied and are participating—in ways we can observe and ways we cannot. Comparing outcomes between participants and nonapplicants is, therefore, not a reliable measure of program effects. Instead, this type of **performance reporting** will be combined with other data collection and analysis that examines the context in which the program is operating.

In spring 2004, IES initiated a competitive bidding process to select an initial technical advising team as well as an entity to design and implement the 5-year impact evaluation of the program. The technical

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[6] RCTs are commonly referred to as the "gold standard" for evaluating educational interventions; when mere chance determines which eligible applicants receive access to school choice, the students who apply but are not admitted comprise an ideal "control group" for comparison with the school choice "treatment group." Both groups of participants are equally motivated to obtain new educational options, and nothing except a random draw distinguishes those who receive the opportunity from those who do not. Therefore, any differences in the two groups in subsequent years can be attributed to the impact of the program. In contrast, the results of school choice studies that are not based on RCTs must be interpreted and used more cautiously, because comparisons between the applicants and a group of students who chose not to apply will likely reflect not only the impact of the program but also differences between the groups in motivation and other unmeasured characteristics. See below for more detail on the RCT analysis approach.

[7] See 309 (a)(4)(A)(ii).

[8] The RCT approach was also used by researchers conducting impact evaluations of the New York City, Dayton, Ohio, and Washington, DC, private scholarship programs.

advising contract was competed quickly, so that a group of experts would be in place to advise ED and the program operator regarding the baseline data collection and the lotteries that are essential to both the effective launch of the program and the subsequent impact evaluation. In March 2004, the technical advising contract was awarded to a research consortium led by Westat and including Georgetown University and Chesapeake Research Associates. Later, in July 2004, the competition for the 5-year impact evaluation contract concluded with an award to the Westat-Georgetown-Chesapeake team.

Research Questions

Based on guidance in the statute, the research team plans to conduct a comprehensive and rigorous RCT evaluation of the impact of the scholarship program on participating students and families. Specifically, the impact analysis will address the following research questions:

1. ***What is the impact of the program on student academic achievement?*** The law places high priority on examining whether the program—the availability and offer of scholarships—improves the academic achievement of eligible students. This question can be addressed most rigorously by comparing the academic achievement of student applicants randomly assigned by a lottery to receive and not receive scholarships.

2. ***What is the impact of attending private versus public schools?*** Because some students offered scholarships will choose not to use them, the research team will use accepted statistical methods to examine the effects for students who take the scholarship offer and successfully enroll in a private school.

3. ***What is the impact of the program on other student measures?*** The law calls for examining other indicators of student and school success, including persistence, retention, graduation, and, if possible, college enrollment. In addition, the legislation requires the evaluation to assess the school safety of students who receive the scholarships relative to those who did not receive scholarships.

4. ***What effect does the program have on student and parent satisfaction with the educational options available in the District and with children's actual school experiences?*** A key desired outcome of scholarship programs is an increase in both the school choices possible and parents' and students' satisfaction with the choices they have made. These issues will be examined by comparing the satisfaction and reasons for applying to the DC Opportunity Scholarship Program among applicants assigned by lottery to receive scholarships and those assigned to not receive scholarships.

The evaluation will also address other issues posed in the law through program performance analysis:

5. ***How well are scholarship recipients performing relative to students in DCPS?*** As noted earlier, the law asks for a comparison of the academic achievement of students who participate in the program with the achievement of their grade level counterparts in the DCPS.[9]

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[9] Because answering this question requires analysts to deviate from the random assignment design, and the testing conditions for scholarship students and DCPS students will differ, inferences from the results of this specific comparison will be drawn with caution.

6. ***To what extent is the program influencing public schools and expanding choice options for parents in Washington, DC?*** Scholarship programs have been hypothesized to affect not only the students who receive the scholarships but also the broader population of public schools and students. Theory suggests that these broader outcomes could occur if a significant number of students move from public to private schools. The public schools might experience a reduction in per student funding that affects their offerings, a change in average student performance, or they may respond to the competition for students by changing curricula, adopting new themes or missions, and modifying existing policies and practices to make the public schools more attractive to students with schooling options. Choice programs might also affect the larger population of private schools, beyond those in which the programs' participants are currently enrolled; if choice programs are successful, additional private schools may choose to participate, new schools may be established to meet enrollment demand, or existing schools might expand capacity.

Data Collection

To answer these questions, the evaluation will draw on different types of data—some available from DCPS, some collected for the purposes of this study. These data will include preprogram (baseline) measures of family background and student achievement. The baseline measures allow us to verify that students randomly assigned to the scholarship and nonscholarship groups were, in fact, similar before the program; the measures also enable us to create subgroups of students whose impacts we might want to examine separately, such as students with low prior achievement. Additional data collected will include annual "in program" measures (e.g., parents' satisfaction with their children's school, students' academic achievement), which will serve as outcomes for the rigorous evaluation of program impacts (see Table 1-1)

Impact Analysis

It is well known that the independent effects of school choice on student outcomes are difficult to estimate. Perhaps the most significant difficulty faced by researchers is selection bias─the self-selection of families to even seek out a new school choice for their child, and the mutual student/school decision process that selects students into different types of schools. Because this bias is generally a result of unmeasurable factors, most researchers have preferred the use of an RCT to a dependence on non-experimental (nonrandomized) statistical methods. Since the DC Opportunity Scholarship Program provides for the random distribution of scholarships through a lottery, we will, therefore, use RCT methods to estimate most program impacts.[10]

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[10] For this report, which is descriptive, as well as for the later impact analysis reports, we will use several tests for calculating statistical significance, or the level of confidence that evaluators have that a difference between groups did not occur merely by chance. For most of the comparisons that we make, we use the "Student's t test." The t test is commonly used when the factor being considered, such as test scores, tends to be distributed on a normal, bell-shaped curve. Unlike some significance tests, the t test incorporates information about the distribution of values in both comparison groups, and not just the overall population, and thus is a more precise measure of statistical significance than the Z test, for example (see Russell A. Langley, *Practical Statistics Simply Explained* (New York: Dover, 1970), 160-165. When we compare the characteristics of one specific group to another specific group, the application of the t test is conventional and straightforward. When we compare the characteristics of one specific group with several other specific groups, as in the comparisons of applicants from various types of schools in Chapter 4, we apply the t test to calculate the significance of the difference between the average score for the group in question and the average score for all of the other groups combined. When the characteristic in question is not normally distributed─such as gender, which is an either/or and not a more-or-less─we use the "chi-squared" test of statistical significance.

Table 1-1.   Data Sources

Data Source	Description
Student assessments	• Baseline, or preprogram measures of student achievement for public school applicants will come primarily from the SAT-9 standardized assessment administered by DCPS as part of their spring testing program.[1] • Each spring after the baseline year, the study will administer the SAT-9 to all students who were offered scholarships as well as all members of the control group who did not receive a scholarship • DCPS test score data will be obtained for all public school students in those years, to compare with the students participating in the program.
Parent surveys	• Surveys of parents (of all applicants) will be conducted in all 4 years of impact evaluation data collection. • Topics will include reasons for applying, satisfaction with school choices, and perceptions of school safety, educational climate, and offerings.
Student surveys	• Each year after baseline, surveys will be conducted with all applicants who are in grades four and higher. • Topics will include students' satisfaction with their schools, perceptions of safety, and other characteristics of their school program and environment.
Principal surveys	• Surveys will be conducted each year of principals of all 109 private schools in DC and principals of all of the 160 regular public and charter schools in DCPS. • Topics will include school organization, safety, climate, principals' awareness of and response to the DC Opportunity Scholarship Program, and, for private school principals, why they are/are not participating.

[1]   Baseline achievement will be collected only for applicants from public schools because, as described in the Impact Analysis Sample section, applicants who were already attending private schools will not be included in the impact analysis. For public school applicants who did not participate in regular DCPS testing in the year they applied to the program (e.g., particularly children below grade 3), the study will administer the equivalent DCPS assessment to these students in the fall after application. All other data will be collected for all applicants, both from public and private schools.

Impact Analysis Sample

The RCT approach rests on random assignment or, in the case of the DC Opportunity Scholarship Program evaluation, a lottery to create two statistically equivalent groups of students from among program applicants: (1) a "treatment" group that receives a scholarship, and (2) a "control" group that does not receive a scholarship. Because the two groups are generated from the same pool of applicants, they are equally likely to be motivated to participate in the program and to reap any benefits from it. And as long as the pool of applicants is sufficiently large, the random assignment of students into treatment and control groups should produce groups that are similar in other characteristics, both those we can observe and measure (e.g., family income, prior academic achievement) and those we cannot (e.g., motivation to succeed). The random assignment assures that all observed and unobserved characteristics are equally represented in both groups.

However, according to the statute, the random assignment that is the means to create the treatment and control groups can only be used to help allocate scholarships under particular circumstances. Finally, it may not be appropriate to include some student applicants in the impact evaluation, even if they participate in the lottery. As a result of all of these conditions, the impact analysis sample will perform the following:

- Exclude applicants who are already attending private schools. The statute contained no provision to exclude from the program students who were currently enrolled in private schools but otherwise eligible to participate. [11] A substantial number of private school students did apply to the program, as described in Chapters 2 and 3. However, because those students intended to use the DC Opportunity Scholarship to *continue* to attend private schools, measuring the difference in outcomes between private school applicants who did and did not receive a scholarship through the lottery would likely only answer the question of whether a different type or amount of scholarship funds affect student outcomes. While that question is of some policy interest, it is not the main focus of the evaluation as specified in the legislation. Therefore, applicants currently enrolled in private schools will not be part of the impact analysis sample.

- Include only public school applicants in grades where there are more applications than there are available private school slots. A lottery is a fair and efficient way of distributing scholarships when there are too many applicants, but the law specifies that random selection be used only when the program or particular grades are oversubscribed.

- Exclude public school students who automatically receive a scholarship. It is possible that even if many students apply to participate in the program, there may not be oversubscription (i.e., more demand than slots) in some grade levels. In those grade levels, all applicants will receive scholarships and there will be no control group.

Thus, the impact evaluation of the DC Opportunity Scholarship Program depends on the extent to which large numbers of eligible DC families with public school students apply to the program. The treatment and control groups must be of a sufficient size to allow us to detect and measure any difference in outcomes between the two groups (the "impact") with statistical certainty. A procedure called "power analysis" is used to determine the sample sizes necessary to enable the study to answer the central research questions and to measure program effects that are large enough to be both meaningful in students' lives and relevant to policy debates about the efficacy of school choice interventions. The power calculations conducted for the evaluation suggest that a total of at least 1,240 public school applicants must be randomly assigned, with over 800 assigned to the treatment (scholarship groups) and over 400 assigned to the control (non-scholarship) group in order for the impact analysis to be able to detect moderately large test score effects (see Appendix A for more detail).

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[11] Some of these applicants from private schools were already relying on scholarship funds in order to attend those schools. However, the scholarships they were receiving may have been less generous than those available under the federal DC Opportunity Scholarship Program.

General Statistical Approach: Estimating the Impact of the Offer of a Scholarship

Given appropriately sized treatment and control groups, the strategy for analyzing impacts is well established. To motivate the discussion of how we identify the effect of the scholarship program on test scores, it is useful to begin with a simple representation of the selection problem as a missing data problem, using the potential outcomes approach. This approach defines causal effects in terms of *potential outcomes* or *counterfactuals*. Conceptually, the causal effect of treatment—the scholarship—is defined as the difference between the "outcome for individuals assigned to the *treatment* group" and the "outcome for the *treatment* group if it had not received the treatment," or:

(E.1) "$E(Y_i| X_i, T_i =1)$" - "$E(Y_i |X_i, T_i =0)$"

In the case of scholarships, the treatment effect—the effect of the scholarships on academic achievement—would be defined as the difference between "test scores for program students" and "test scores for program students if they had not received a scholarship." The fundamental problem is that a student is never observed simultaneously in both states of the world. What is observed is a student in the treatment group ($T_i =1$) or in the control group ($T_i =0$). The outcome in the absence of treatment, $E(Y_i |X_i, T_i =0)$, is then the counterfactual—what would have occurred to those students receiving the scholarships if they had not received them.

If students receiving scholarships were identical to other students in both observable and unobservable characteristics, the counterfactual could be generated directly from an appropriately selected comparison group. Valid comparison groups are rarely found in practice, however. The random assignment of students into the program generates the counterfactual from the control group—eligible applicants who did not receive a scholarship.[12] If correctly implemented, random assignment yields statistically equivalent groups and allows estimation of the program impact through differences in mean outcomes between the two groups.

Consistent with this approach is the following basic analytic model of the effects of school choice scholarships on outcomes. Consider first the outcome equation for the test score of student i in year t. It is reasonable to assume that test scores (Y_{it}) are determined as follows:

(E.2) $Y_{it} = \alpha + \tau T_{it} + X_i \gamma + \varepsilon_{it}$ if t>k (period after program takes effect)

Equation (E.2) estimates the effect of the *offer* of a scholarship on student outcomes. Under this model, commonly referred to as the "Intent to Treat" (ITT) estimation, all students who were randomly assigned by virtue of the lottery are included in the analysis, regardless of whether a member of the treatment group uses the scholarship to attend a private school. In E.2, T_{it} is equal to one if the student *has the opportunity to participate* in the scholarship program (i.e., the award rather than the actual use of the scholarship) and equal to zero otherwise. X_i is a vector of student characteristics (measured at baseline) known to influence future academic achievement, such as prior test scores, mother's level of education, family income, etc. In this model, τ represents the effect of scholarships on test scores for students in the program, conditional on X_i. With a properly designed RCT, using a concise and judiciously chosen set of

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[12] See the following studies, which all use the same data from an evaluation of a New York City privately funded scholarship program: William G. Howell, Patrick J. Wolf, David E. Campbell, and Paul E. Peterson, "School Vouchers and Academic Performance: Results from Three Randomized Field Trials," *Journal of Policy Analysis and Management* 21 (2000): 2; John Barnard, Constantine E. Frangakis, Jennifer L. Hill, and Donald B. Rubin, "Principal Stratification Approach to Broken Randomized Experiments: A Case Study of School Choice Vouchers in New York City," *Journal of the American Statistical Association* 98 (2003): 462; Alan B. Krueger and Pei Zhu, *Another Look at the New York City School Voucher Experiment,* Working Paper Series, Education Research, (Princeton, NJ: Princeton University, March 2003).

statistical controls for characteristics that predict future achievement should improve the precision of the estimated impact.[13] That treatment effect, τ, should be identical to the difference in mean outcomes between the treatment and the control groups.

Since the initial applicants were randomized within certain relevant subgroups, as described in Chapter 3, we will analyze program impacts using a randomized block design. We are interested in how academic achievement (Y) is affected by the assignment into the scholarship program within each block (B) or group of size n. The impacts are then estimated as:

(E.3) $Y_{ikt} = \mu + \tau\, T_{ikt} + \sum_{j=2}^{b} \rho_j\, B_{ik} + X_{ik}\, \gamma + \varepsilon_{ik,t}$

where

> $i = 1,\ldots,n$ observations and $k=1,\ldots,b$ blocks(defined by grade and priority status);
> Y_{ji} is the outcome for student i in block j, at time t;
> μ is the overall mean outcome (e.g., test score);
> τ is the treatment (scholarship program) effect;
> ρ_j is the jth block effect;
> T_{it} is assignment into the scholarship program;
> B_{ji} is the block assignment;
> X_{ji} represents observable characteristics, measured at baseline; and
> ε_{ij} is the random error; independent, $N(0,\sigma_\varepsilon^2)$.

This analytical framework follows naturally from the group randomization and is easily implemented and interpreted. Y can be measured in several different dimensions, including test scores, school satisfaction, parental satisfaction, grade completion, including where appropriate, high school graduation, etc. μ is average outcome for all program members, ρ_j is the average block effect, and τ is the effect of scholarships on academic achievement.[14]

Estimating the Impact of the Use of Scholarships

Even with a properly implemented RCT, we may expect that not all applicants placed by random assignment into the treatment (scholarship offer) group will actually use the scholarship at a private school. That is, some scholarship recipients may choose not to use their scholarship and instead attend a public school. This type of non-participation or underutilization of treatment services has been observed across all RCT settings, including medical trials, job training and health insurance experiments, as well as in previous school scholarship RCTs such as the one of the Milwaukee Parental Choice Program.

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[13] For a spirited debate about the use of this technique in the context of school choice research, see William G. Howell and Paul E. Peterson, "Uses of Theory in Randomized Field Trials: Lessons from School Voucher Research on Disaggregation, Missing Data, and the Generalization of Findings," *American Behavioral Scientist* 47 (Jan. 2004): 634-657; Krueger and Zhu, *"Another Look,"* 658-698; Paul E. Peterson and William G. Howell, "Efficiency, Bias, and Classification Schemes: A Response to Krueger, A.B. and Zhu, P., 'Another Look at the New York City School Voucher Experiment,'" Working Paper Series, Education Research (Princeton, NJ: Princeton University, March 2003), 699-717; Alan B. Kruger and Pei Zhu, "Inefficiency, Subsample Selection Bias, and Nonrobustness: A Response to Peterson, P.E. and Howell, W.G., 'Another Look at the New York City School Voucher Experiment,'" Working Paper Series, Education Research (Princeton, NJ: Princeton University, March 2003): 718-728; Paul E. Peterson and William G. Howell, "Voucher Research Controversy: New Looks at the New York City Evaluation," *Education Next* 4 (Spring 2004): 73-78.

[14] Depending on the extent to which the randomly assigned applicants are clustered in their schools, some adjustments to the standard error estimates may be necessary.

Policymakers are typically interested in the effect of scholarship *use* on student achievement, in addition to the offer of the scholarship. To estimate the impact, we will use a model commonly referred to as the "Impact of the Treated" (IOT), which statistically estimates the impact of actual scholarship use. Instrumental variable analysis provides us with a well-established method to generate an unbiased estimate of the scholarship impact on the treated from the ITT estimator.[15]

Performance Reporting Analysis

To fulfill the requirements specified in the law, we will compare the outcomes of *all* participating students with the outcomes of similar DCPS students who did not apply to the program.

Performance Reporting Sample

The group of student applicants that will be examined as part of performance reporting differs from the impact analysis sample in several important ways. The impact analysis sample includes all public school applicants who were randomly assigned to receive or not receive a scholarship as part of the lottery (i.e., students in grade bands for which there were more applicants than there were private school slots available). In contrast, the performance reporting sample performs the following:

- Excludes students who did not receive a scholarship as part of the lottery (the control group).

- Includes students who both received a scholarship automatically and those who received one through the lottery (treatment group)

- Includes scholarship recipients who were already attending private schools at the time of application.

- Will focus on students who chose to use their scholarship; while the law does not define what it means to "participate," performance reporting in the evaluation's later reports will examine the differences between students who were given the *option* of participating (i.e., received a scholarship) and those who exercised that option (i.e., who used the scholarship to attend a private school). Both groups will be compared to DCPS students in the same grades who did not apply to the DC Opportunity Scholarship Program.

Statistical Approach

The performance reporting comparisons will focus on student achievement, both as specified in the statute and because that is the only measure that will be similar for DCPS students and those participating in private schools through the DC Opportunity Scholarship program.[16] In order to ensure comparability in student assessment, the evaluation will make every effort to administer the same test to program

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[15] For an extended discussion of the use of this technique under such circumstances, see William G. Howell and Paul E. Peterson, with Patrick J. Wolf and David E. Campbell, *The Education Gap: Vouchers and Urban Schools* (Washington, DC: Brookings Institution Press, 2002): 49-51.

[16] That is, there are no readily available measures of student safety or parent satisfaction for students in DCPS that are comparable to those being collected from program participants.

participants that is used by DCPS. DCPS will provide the evaluation team with test score and background data on public school students.

The analysis will be conducted by comparing the mean test scores of program participants and DCPS nonapplicants, testing for the statistical significance of the difference. To create the most relevant group of DCPS students for comparison, we will draw from the DCPS database the group of non-applicant students who qualify for the program (i.e., eligible for free/reduced-price lunch), stratified by grade level to match our scholarship performance reporting sample. We will present these comparative results as descriptive findings, since the absence of random-assignment to the scholarship or public school conditions would render any causal claims highly speculative.

Reports

The law requires the Secretary to submit to the Congress annual reports resulting from the independent evaluation by December 1 each year and a final report not more than a year after the 5-year program ends. These reports should provide the Congress, other policymakers, the research community, and the public at large with important new information about what happens to students, families, schools, and communities when educational options are expanded for urban low-income families through public policy.

1.3   Organization of This Report

This report is the first in the series of required evaluation reports to Congress. While the focus of the evaluation is on examining the effectiveness of the program, no impact information is available at this point because the initial cohort of program participants—those who applied in spring 2004 to receive scholarships for the 2004-05 school year—just recently matriculated at their new schools. Instead, this report examines the extent of student and school interest in the program and the characteristics of those participating.

- Chapter 2 describes the recruitment and application activities that resulted in the submission of 2,692 initial applications for the program, of which 1,848 were deemed eligible. It also describes the characteristics of the group of 58 private schools in the District that agreed to participate in the first year of the program.

- Chapter 3 presents information about the lotteries that determined which eligible applicants would receive scholarships and which scholarship students would be assigned seats when individual schools were oversubscribed.

- Chapter 4 describes the characteristics of program applicants, including their average test scores, family background, parental involvement in their education, type of school they attended previously, and parental assessments of their previous school. It also presents initial data regarding the extent to which DC schools are exposed to greater competition for students as a result of program implementation.

2. PROGRAM IMPLEMENTATION IN 2004: RECRUITMENT AND APPLICATIONS

Any evaluation, particularly a randomized control trial (RCT), must take into consideration the number and flow of program applicants and participating institutions. In the case of the DC Opportunity Scholarship Program evaluation, the design was predicated on attracting a sufficient number of applicants to be able to create two sizable and randomly assigned groups of students whose outcomes could be compared: (1) eligible applicants who receive scholarships to attend participating private schools as part of the lottery and (2) eligible applicants who do not receive scholarships by virtue of the lottery.

The recruitment and application period for the program began at the end of March 2004, immediately after a partnership led by the Washington Scholarship Fund (WSF) was selected to implement the DC Opportunity Scholarship Program, and continued throughout the spring and early summer of 2004. The process produced agreements from 58 private schools in the District to participate in the federal program during the first year and applications from 2,692 students seeking scholarships, of whom 1,848 were eligible. This chapter describes in more detail the activities and results of these efforts to recruit schools and students to participate in the program.

2.1 Schools

An initial task of the WSF-led implementation team was to recruit DC private schools to participate in the program during the first year. The team directly contacted each of the 109 private schools in the District and also worked closely with umbrella organizations that represent groups of schools, such as the Catholic Archdiocese of Washington, the Council for American Private Education, and the Association of Christian Schools International. The team also hosted an information session for private school officials in April. Several representatives of independent private schools at that meeting said that their admissions process for 2004-05 had already concluded and their schools were fully enrolled. However, some of them expressed an interest in participating in the program anyway, and others suggested that they would participate in the future if the application and admissions schedule could be moved to earlier in the school year.

Figure 2-1
DC Private School Participation in the Program: 2004-05

Schools Participating by Accepting Scholarships Only for Pre-admitted Students 4%

Schools Participating by Creating Slots for DC Choice 50%

Schools Not Participating 47%

Note: Percents may not aedd to 100 due to rounding.

Despite the challenges stemming from the late start of the program, the implementers recruited 58 DC private schools to participate in the program in 2004-05, comprising just over one-half of the private schools in the District (Figure 2-1 and Table 2-1).[17]

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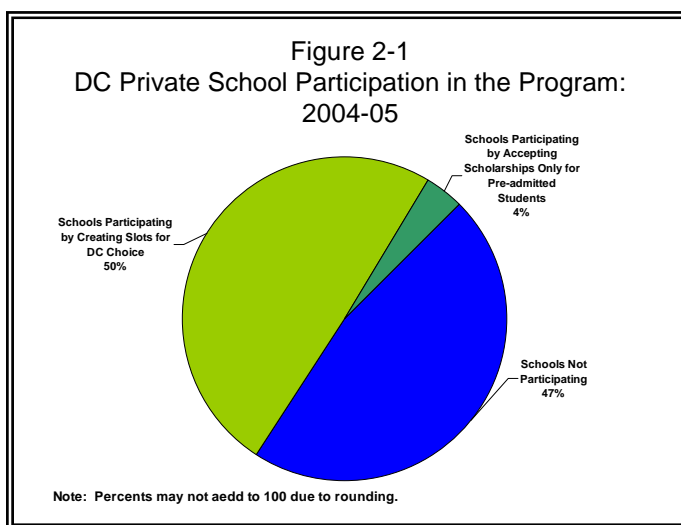
[17] To participate in the program, schools are required to sign a formal letter of agreement that requires them to (1) submit an independent financial and management audit to WSF annually to document financial stability, (2) provide a Certificate of Occupancy, (3) document that the school is operating lawfully in the District and is in compliance with DC health, safety, and fire codes, and (4) agree to abide by all applicable nondiscrimination laws.

Table 2-1.   Number of DC Private Schools Participating in the DC Opportunity Scholarship Program: 2004-05

Private Schools	Number of Schools	Percent
In the District of Columbia	109	100
Participating in the program in some capacity	58	53
Set aside slots for DC Opportunity Scholarship Program participants	54	50
Agreed to accept scholarships only for eligible students already admitted	4	4

NOTE: Detail may not sum to totals because of rounding.

SOURCE: "School Directory, D.C. K-12 Scholarship Program, 2004-05 School Year," Washington Scholarship Fund, June 2004.

Fifty-four of the 58 schools made new slots available to scholarship students; the remaining four schools had already closed their admissions and were only willing to accept new students awarded Opportunity Scholarships who already had been accepted to those schools during their regular admissions period. This small subgroup of scholarship winners that we describe as private school "pre-admits" were attending public schools in 2003-04 but obtained acceptance to a private school independent of and prior to the launch of the scholarship program. Some data were obtained regarding 53 of the 58 participating schools.[18]

Religious Affiliation, Location, and Students Served by Participating Schools

The private schools that chose to participate in the DC Opportunity Scholarship Program in the first year are a diverse group but have some similar characteristics. Most are religiously affiliated and have been long established in the area. About half (27 of the 52 schools that reported their affiliation, or 51 percent) are affiliated with the Catholic Church; 11 (21 percent) are affiliated with a non-Catholic religion; and 15 (28 percent) are independent nonsectarian schools. More than three-quarters of the schools were established before 1983, with a large share of them founded before 1955. The most recently established private school to participate in the program opened in 2002.

The private schools that are participating in the DC Opportunity Scholarship Program are located in every ward of the District. The highest concentration of participating schools, nearly one-quarter of them, are in Ward 4. The remaining participating schools are almost evenly distributed throughout the other seven wards of the city.[19]

Most of the participating private schools already are serving a high proportion of students of color (Table 2-2). On average among the schools, 82 percent of their students in the current year are African American, Latino, Asian, or Native American, compared to 95 percent average minority populations in regular DCPS schools. Sixty percent of the participating private schools have student bodies that are

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[18] WSF surveyed the participating schools about their characteristics and offerings in order to provide applicants and scholarship winners with information they could use in seeking a school placement. Five schools did not respond to the survey.

[19] The ward location of one participating school that provided data was not available.

entirely from minority racial/ethnic groups, but a few schools serve fewer than 10 percent of students from those groups.

Table 2-2.   Enrollment, Race/Ethnicity, and Student-Teacher Ratio of Students Served by Participating Private Schools Compared with Regular DCPS Schools: 2003-04

Characteristic	Average	Highest	Lowest	Valid N[1]
Enrollment (number of students)				
Private schools	206**	1,056	12	52
DCPS schools[2]	414	1,442	127	139
Percentage of students from racial/ ethnic minority groups				
Private schools	82**	100	8	52
DCPS schools	95	100	29	139
Average student-teacher ratio[3]				
Private schools	11:1**	20:1	5:1	47
DCPS schools	14:1	21:1	7:1	133

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] "Valid N" refers to the number of schools for which information on a particular characteristic was available.

[2] The comparison group of regular DCPS schools excludes public charter schools, alternative schools, and learning centers.

[3] Whenever ranges were given for student-teacher ratio, the midpoint of the range was selected.

SOURCES: Data on participating private schools drawn from "School Directory, D.C. K-12 Scholarship Program, 2004-05 School Year," Washington Scholarship Fund, June 2004, supplemented by the National Center for Education Statistics, Common Core of Data. Data on DCPS drawn from the web sites of the District of Columbia government and DCPS.

When it comes to the size of overall enrollments or of individual classes, there are substantial differences across schools, although most of these stem from the different grade levels served. Nearly half of the participating private schools enroll students in either kindergarten through eighth grade or pre-K through eighth grade, with the other half enrolling various combinations of elementary-, middle-, and high-school-aged students. It is, therefore, no surprise that enrollments range from 1,000 in a relatively large high school to only 12 students in a very small school. The average enrollment of the participating private schools is about half the average enrollment of regular DCPS schools. The average ratio of students to teachers in the participating private schools is somewhat smaller than the average for DCPS schools. Five of the participating private schools (less than 10 percent) serve students of only one gender.

Although there is no data source that allows a systematic examination of the extent to which the participating private schools are representative of the entire population of private schools in the District, analysis of web sites suggests that there may be some differences. Schools not currently participating in the program appear to have slightly higher enrollments than the participating schools, probably because more nonparticipating schools serve students in the high school grades. Compared to participating schools, nonparticipating schools seem to enroll a substantially smaller share of minorities, have smaller student-teacher ratios, and are much less likely to be religiously affiliated. However, these comparisons

should be interpreted with caution, because data were available from only 39 of the 51 nonparticipating schools and were obtained from difference sources and school years.

Programs and Services Available at Participating Schools

The participating private schools offer many but not all of the services and activities that are commonly available in public schools (Table 2-3). An overwhelming majority of participating schools offer computers, art, a library, tutoring, after-school care, music, and before-school care as part of their educational programs. Nearly three-quarters of the participating schools include religious instruction and/or worship as part of their school program, and a similar proportion require that applicants complete an exam to determine grade placement for enrollment. Nearly 12 percent require applicants to pass an entrance exam in order to be deemed admissible to their school. Only 60 percent have a gym and less than half have a school cafeteria. Gifted and talented programs are available in about 16 percent of the participating private schools.

**Table 2-3.   Services, Programs, and Policies Available at Participating
                    Schools: 2003-04**

Characteristic or Service	Number of Schools	Percent	Valid N[1]
Computers available to students	49	96	51
Art	46	92	50
Tutoring	45	88	51
After care	45	87	52
Music	40	85	47
Before care	40	77	52
Placement exam	37	76	49
Library	39	75	52
Religious instruction/worship	37	73	51
After-school sports	34	67	51
Gym	31	60	52
Cafeteria	24	47	51
Gifted program	8	16	51
Entrance exam	6	12	52

[1] "Valid N" refers to the number of schools that provided information on a particular characteristic.

SOURCE: "School Directory, D.C. K-12 Scholarship Program, 2004-05 School Year," Washington
                  Scholarship Fund, June 2004.

Participating schools were asked whether they accept and how they accommodate students with diagnosed learning disabilities. Private schools are not required to admit students with learning disabilities if this would present an undue burden on the schools (according to the standards in the Americans with Disabilities Act), unless the private schools receive federal funds (other than those under the DC Opportunity Scholarship Program). However, many of the participating schools do admit such students. Seventeen of the schools (32 percent) responded that they do not accept students with learning disabilities. Twenty-two schools (42 percent) reported that they accept such students and fully include

them in the educational environment of the school. An additional eight schools (15 percent) said that they accept and provide special services for students with limited or mild learning disabilities, and five participating private schools (9 percent) expressed a willingness to accept students with moderate to severe learning disabilities.

It should be noted that the District has a sizable "private placement" program for special education students with needs that cannot be served effectively in a DCPS school. The program currently pays the full tuition to send 2,595 DC students to specialized private schools or public schools outside of the District for educational services specified in student individualized educational plans (IEPs), at an average tuition cost of $27,575 per student.[20] At least eight private schools in the District receive private placements of special education students from DCPS.[21] None of the eight schools decided to participate in the DC Opportunity Scholarship Program this year, perhaps because the scholarship ceiling is below the amount that they typically spend to educate students with significant disabilities.

Table 2-4. Average Tuitions Charged by Participating and Nonparticipating Private Schools: 2004-05

Average Tuition[1]	Participating Schools		Nonparticipating Schools	
	Number of Schools	Percent	Number of Schools	Percent
Above $7,500	15	30	21	84
7,500 or less	35	70	4[2]	16
Total	**50**	**100**	**25**	**100**

[1] For schools that charge a range of tuitions, the midpoint of the range was selected. Tuition rates were unavailable for 8 of the participating private schools and 26 of the nonparticipating private schools.

[2] Three schools charged no tuition either because of foundation support or because the school serves groups such as DC-placed special education students funded by the government.

NOTE: Detail may not sum to totals because of rounding.

SOURCES: Data on participating private schools drawn from "School Directory, D.C. K-12 Scholarship Program, 2004-05 School Year," Washington Scholarship Fund, June 2004. Data on nonparticipating private schools were obtained from school web sites.

Finally, a majority (70 percent) of the private schools that chose to participate in the DC Opportunity Scholarship Program the first year charge tuitions that are under the $7,500 maximum amount provided through the federal scholarship (Table 2-4). Most ask families to pay annual per student tuitions at or below $5,500. Although 30 percent of the participating schools typically charge tuitions above the scholarship ceiling, with a couple of exceptions, they agreed to accept a $7,500 scholarship as full

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[20] "Proposed FY2005 Budget, Office of the Mayor, Washington, DC," www.dc.gov/mayor/budget/proposed/index2.shtm/ (accessed November 11, 2004); "Establishing a Baseline: A Report on the State of Education in the District of Columbia," draft report of the DC State Education Office, June 2004, http://seo.dc.gov/seo/frames.asp?doc=/seo/lib/seo/SER/ State_of_Education_rpt04.pdfandgroup=1507/ (accessed November 11, 2004).

[21] DC School Search web site, www.dcschoolsearch.dc.gov/schools/report_results.asp?report_id=14/ (accessed November 11, 2004).

compensation for enrolling scholarship students, at least for the 2004-05 school year.[22] Nonparticipating private schools appear to charge higher tuitions than the participating schools, however, this conclusion is based on data for a subset of nonparticipating private schools.

2.2   Families and Students

At the same time it was recruiting schools to participate in the DC Opportunity Scholarship Program, WSF also was recruiting families and students. Given appropriations of approximately $13 million the first year, WSF estimated that approximately 1,800 students could be supported with scholarships. The technical advising team hoped for 1,250-1,600 eligible public school applicants in oversubscribed grades to generate the conditions for a statistically well-powered experimental impact analysis in future years (see Appendix A).

Although *outreach* to families in the District began even before WSF was officially designated as the program implementer, major efforts were initiated at the end of March when the organization and its partners were awarded a 5-year program management grant. These activities included the following:[23]

- Mailing personalized letters to all families that inquired about the program;

- Mailing notices to officials at Head Start and after-school centers, the leaders of DC faith-based organizations, and officials of various other organizations that serve low-income DC residents such as the Greater Washington Urban League;

- Making personalized phone calls to all families that inquired about the new program or that had previously applied to WSF's or other privately funded scholarship program; and

- Distributing flyers at community organizations, after-school centers, DC churches, DC Metro stations, and several DC neighborhoods populated with low-income families.

The implementation team then scheduled and advertised a series of *application* events at the DC Convention Center for April 28 to May 1. The application events included a mandatory orientation session for families and the distribution of the application form, which collected both baseline characteristics of the families and students and information about the families' eligibility for the program.[24]

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[22] Participating schools that increase their tuition by more than 20 percent in a given year or increase their annual enrollment by more than 50 percent are required to submit to an inspection by a task force of education experts before being permitted to initiate or continue their participation in the scholarship program.

[23] Shortly after the legislation was enacted in January 2004, Fight For Children (FFC), a 501(c)3 organization, was designated to serve as the interim entity to promote awareness of the program and lay the foundation for its implementation. Among other activities, FFC initiated an advertising campaign that featured radio and bus ads, established a web page and call center to inform families about the program, and built a database of families that expressed an initial interest in subsequently applying for the program and another database of private schools interested in participating in the program.

[24] As part of the orientation sessions, officials of the WSF explained the requirements of the program and the procedure for applying, being selected for, and using a scholarship; members of the technical advising team and Institute of Education Sciences (IES) also were present to discuss the evaluation component of the program and explain the rights and responsibilities of participants. Also present were officials from the Public School Aid Service (PSAS), a company that verifies eligibility for government and school-sponsored scholarship programs. PSAS was under contract to WSF to provide those services and, as part of the application events, to train volunteers and assist families in documenting their income and residency eligibility.

The application form required parents to confirm that student applicants met all eligibility criteria and to provide documentation for verification purposes. For example, income was verified with reference to a family's 2003 income tax return and supporting documents such as official benefits statements pertaining to income assistance programs. A student's entering grade level was verified using a dated report card and student birth date (for rising kindergartners). DC residency was established using a family's tax return or a recent utility bill. Families were encouraged to bring full documentation to application events, where copy machines were available to them. If they submitted an application that lacked complete documentation they were told exactly what additional documentation they needed to provide and where they needed to send it. Program staff repeatedly contacted families with incomplete applications in order to encourage completion.

At the conclusion of the series of application events, the program operators decided to extend the application period in order to enable more families to apply. The WSF initiated and advertised extended evening and weekend office hours to assist applicants on a walk-in basis from May 3 through May 17. The implementation team and support organizations staffed a series of 10 application meetings in community centers located within the residential boundaries of DC schools that had been declared in need of improvement under No Child Left Behind (NCLB).[25] Throughout this period, volunteers assisting the implementation team visited homebound parents with disabilities to help them in completing applications.

On May 26, the implementation team closed new applications to the program. Applicants were given until June 1 to provide all of the documentation necessary to complete their applications and verify their eligibility for the program. Members of the technical advising team based at Westat consolidated the information that had been collected to that point about participating schools and applicants into a master database.

The results of the outreach, application, and eligibility verification process provide some sense of the demand for this scholarship program, given its particular requirements and the compressed time period within which it was launched in 2004 (Table 2-5).

- Just over 40,000 students were estimated to be potentially eligible for the program, based on data from the U.S. Census regarding the total number of children in grades K-12 in the District with family incomes at or below 185 percent of poverty in 2000.

- Distinct families representing 5,863 school-age children inquired about the scholarship program and expressed an interest in applying, according to figures obtained from the nonprofit organization that advertised the program before WSF was awarded the program management grant. If all of these children were eligible for the program (an unlikely assumption), then they would represent approximately 14 percent of the eligible population of students.

- Applications were submitted on behalf of 2,692 students, representing 7 percent of the eligible population and roughly half of the number of student inquiries.

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[25] One or more meetings took place from May 4 through May 13 at the Langston Terrace housing project, Tyler House housing project, Fletcher Johnson Education Center, Barry Farm Community Center, Barry Farm Recreation Center, and Woodland Terrace Community Center.

- A total of 1,848 students were confirmed to be eligible for the program; an unknown number of additional applicants might have been deemed eligible had they completed their application.[26] The number of confirmed eligible applicants represents 5 percent of the eligible population, about one-third of the inquiries, and 69 percent of all applicants.

- Of these eligible applicants, 1,330 (72 percent) had been enrolled in DCPS in the 2003-04 school year, and 6 percent of those were coming from schools designated as in need of improvement under NCLB as of spring 2004.[27] Another 518 (28 percent of all eligible applicants) were already attending private schools but satisfied all of the program requirements and, therefore, were deemed eligible for scholarships.

Table 2-5.   Number and Percentage of Participants, by Application Status: Spring 2004

Measure	Eligible Base	Inquiries	Applicants	Eligible Applicants	Public Eligible Applicants	Private Eligible Applicants
Number of students	40,507	5,863	2,692	1,848	1,330	518
% of base	100	14	7	5	NA	NA
% of inquiries		100	46	32	NA	NA
% of applicants			100	69	NA	NA
% of eligibles				100	72	28

NOTE: Because the eligible base, inquiries, and applicants included an unknown combination of public and private school students, it would not be appropriate to express the number of public or private eligibles as a percentage of those bases.

SOURCE: Figure for the "Eligible Base" is based on data from the U.S. Census, population of the District of Columbia age 5 to 17 under 185 percent of the federal poverty line in 2000. The exact number for 2004 is likely to differ somewhat from this 2000 figure. Figure for "Inquiries" provided by Fight For Children. Figures for "Applicants" and "Eligible Applicants" were drawn from the applicant database, with eligibility determined by PSAS. Numbers of applicants from public or private schools were determined by cross-matching the name of the school each child was attending against a list of public and private schools in the District compiled from the DCPS web site and the NCES Common Core of Data.

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[26] A total of 604 student applications were never completed. Applicants provided a number of reasons for failing to complete their applications, including that they received a spot in a preferred public or charter school, that they were not confident that they would find a desirable private school near their home, or that they realized that they would not be eligible. An additional 240 student applications were completed, but the applicants were confirmed to be ineligible for the program.

[27] While there were 79 applicants from the 15 schools designated as SINI in 2003, in advance of the first year lottery in May 2004, DCPS designated an additional 73 schools as in need of improvement in August 2004, two months after the scholarship lottery (See http://silicon.k12.dc.us/NCLB/index.asp, accessed February 15, 2004). A total of 535 program applicants came from 2003-designated or 2004-designated SINI schools, representing 29 percent of all program applicants this first year. Of these students, 433 (81 percent) were awarded scholarships. Twice as many Opportunity Scholarships were awarded to students applying from 2003- or 2004-designated SINI schools than were awarded to students applying from private schools.

3. SCHOLARSHIP AND PLACEMENT LOTTERIES AND INITIAL USE OF SCHOLARSHIPS AWARDED

As discussed in Chapter 1, the DC School Choice Incentive Act requires that a random selection process (e.g., a lottery) be used to select scholarship recipients, if the program or specific schools are "oversubscribed"—that is, have more demand for them than there are slots available. These lotteries were to serve not only as the fairest way to allocate scholarships and placements, but also as the basis for creating the randomly determined treatment and control groups for the impact evaluation. In the initial year, there were more eligible applicants than new slots only in the upper grades of participating private schools. Later, among scholarship recipients, there was more demand than slots at some grade levels in particular private schools.

As a result, the technical advising team assisted the program in designing and executing two separate lotteries. The scholarship lottery determined which of the eligible applicants in oversubscribed grades would receive scholarships. The placement lottery drew upon the school preferences expressed by the parents of scholarship winners to determine which students would receive scarce seats in specific private schools. Because of the priority categories specified in the law, SINI scholarship recipients were placed first, followed by recipients from non-SINI public schools, then recipients from private schools. This chapter describes the design, operation, and results of the lotteries and other placement efforts.

3.1   Statutory Priorities

Section 306 of the Act includes congressional priorities to guide the award of scholarships and scarce seats to eligible applicants. Program operators are instructed to "provide students and families with the widest range of educational options"[28] and to perform the following:

1. Give priority to students attending a public school in need of improvement under NCLB at the time of application to the program; and

2. "Target resources to students and families that lack the financial resources to take advantage of available educational options."

Regarding the first priority, the program implementer, the technical advising team, and ED agreed that policymakers will want to know if the program is having an effect on all types of students, including those who transferred out of NCLB-eligible schools. Thus, it would be desirable to include applicants from SINI schools in the rigorous impact evaluation and, therefore, in the random assignment of students as part of the scholarship lottery. Awarding scholarships to all SINI students would prevent the evaluation from generalizing findings of program impacts to those students from designated low-performing schools that are a high priority of the program.

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[28] To meet the legislation's requirement that the program provide a wide range of education options, parents of scholarship recipients were encouraged to list up to four preferred private schools for each scholarship student. This was expected to improve their likelihood of being able to take advantage of the school choices available to them.

However, because the 79 SINI students represented such a small share (4 percent) of the overall applicant pool in the first year, there was little possibility of separately analyzing the impacts for this subgroup.[29] Therefore, for *the first year only*, every eligible applicant who was currently attending a SINI school was automatically awarded a scholarship.[30] The SINI scholarship winners also were the first group of students assigned scarce seats in preferred private schools through the subsequent placement lottery.

In response to the second statutory priority, eligible applicants from non-SINI public schools were assigned the second-highest probabilities for scholarship award and were the second group in line for the placement lottery, after the SINI applicants. The fact that public school applicants were not yet attending private schools but wanted to was interpreted as evidence that their families lacked the resources to enroll in a school of choice.

The eligible applicants already attending private schools at baseline were given the lowest priority in the scholarship and placement lotteries, based on the first two statutory priorities. Thus lotteries had to take into account three priority strata: (1) SINI applicants, (2) non-SINI public school applicants, and (3) private school applicants.

3.2   Scholarship Lottery Design and Implementation

The scholarship lottery was designed to accomplish several objectives.[31] First, the lottery needed to take into account the legislated priorities, which essentially give some groups of eligible students a greater chance of obtaining a conditional scholarship than other students. Second, the lottery had to lay the foundation for the rigorous evaluation of program impacts and effectiveness called for in the law. Finally, the lottery had to balance the program's desire to maximize the use of the scholarships with a need to limit the number of disappointed families not able to find school placements; that is, to ensure that there would not be too many students seeking the fixed number of private school slots in each grade. Therefore, an important part of the lottery design was the creation of scholarship award probabilities that reflected the number of applicants in relation to the number of slots available in private schools by grade level groups or "bands."

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[29] While there were 79 applicants from the 15 schools designated as SINI in 2003, in advance of the first year lottery in May 2004, DCPS designated an additional 73 schools as in need of improvement in August 2004, two months after the scholarship lottery (See http://silicon.k12.dc.us/NCLB/index.asp, accessed February 15, 2004). A total of 535 program applicants came from 2003-designated or 2004-designated SINI schools, representing 29 percent of all program applicants this first year. Of these students, 433 (81 percent) were awarded scholarships. Twice as many Opportunity Scholarships were awarded to students applying from 2003- or 2004-designated SINI schools than were awarded to students applying from private schools.

[30] With more schools identified as SINI and the program implementer's plan for aggressive recruitment of students from these schools in 2005, it is likely that a much higher number of students in this priority group will apply to the DC Opportunity Scholarship Program next year. Under these conditions, the group will be given highest but not absolute priority and will be part of the random assignment process that will enable that important category of students to be included in the rigorous impact evaluation.

[31] This first stage lottery results in a "conditional scholarship" for lottery winners, because to use the scholarship, families must ultimately go through a placement process at any participating school in which they are interested.

Applicants and Available Private School Slots, by Grade Band

The awarding of scholarships to public school applicants for the first year was constrained by the limited availability of new private school seats at certain grade levels, not necessarily by the amount of funds available for scholarships. The distribution of eligible public school applicants by grade did not closely match the distribution of new slots by grade in participating private schools (Figure 3-1):
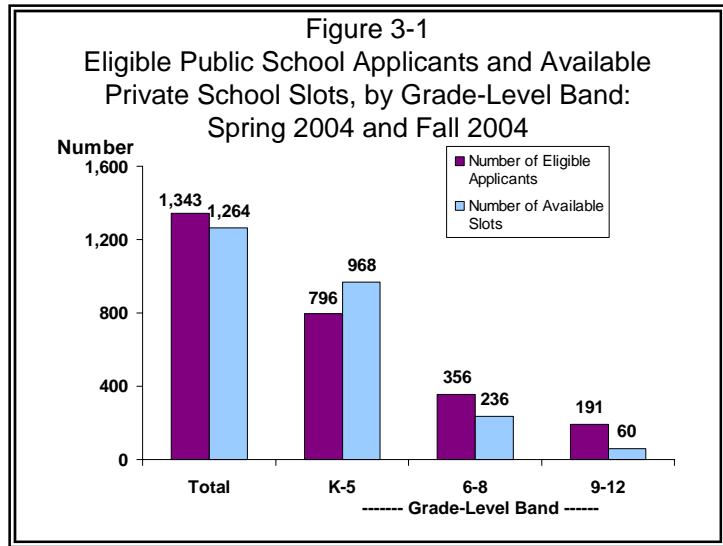
- In grades K to 5, more private school seats were available than eligible public school applicants interested in filling them (i.e., there was more than one slot available to each such applicant in the elementary grades).

- Grades 6 to 8 were modestly oversubscribed given seat availability.

- Grades 9 to 12 were severely oversubscribed given seat availability.

Figure 3-1
Eligible Public School Applicants and Available Private School Slots, by Grade-Level Band: Spring 2004 and Fall 2004

Since eligible private school applicants already held slots in their private schools, they were not constrained by slot availability in the same way as public school applicants.

Creating Probabilities of Scholarship Award

The first step in generating the probabilities for the scholarship lottery was to create base probabilities that matched the ratio of slots to applicants. The base probability for K to 5 public school applicants was above 100 percent, meaning that all would receive scholarships. The base probabilities for eligible public school applicants entering grades 6 to 8 and 9 to 12 were 66 percent and 31 percent, respectively (Table 3-1).

In finalizing the probabilities, the technical advising team also took into account that some students awarded scholarships are likely to choose not to use them. Low-income inner-city families are highly mobile, and some of them would likely move out of the District before the start of the school year, making them ineligible for the program. Other scholarship winners might choose to remain in their current public school or enroll in another public school in the District such as a charter school. Therefore, a decision was made to assign more scholarships than the number of slots available in the middle and high school grades.[32] A previous evaluation of the partial-tuition scholarship program for elementary

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[32] No overassignment of scholarships was necessary at the elementary grades, since more slots were available than there were eligible applicants.

Table 3-1.   Eligible Public School Applicants and Available Private School Slots: Spring 2004 and Fall 2004

Grade-Level Band[1]	Number of Eligible Applicants	Number of Available Slots	Ratio of Slots/Applicants
K-5	796	968	1.22
6-8	356	236	0.66
9-12	191	60	0.31
Totals	**1,343**	**1,264**	**0.94**

[1] Forecasted grade level of each applicant based on parental reports of "Grade entering for the 2004-05 school year" on the application form. All applications for students forecasted to be entering kindergarten in 2004-05 were examined to determine if the child's age was above the cutoff for kindergarten enrollment.

SOURCES: Figure for the "Number of Eligible Applicants" drawn from the applicant database. "Number of Available Slots" based on official reports from all participating private schools as of June 1, the slot cutoff for purposes of designing the scholarship lottery.

school students in New York City reported that 18 percent of students awarded scholarships there did not use them in the first year.[33] We might expect that the rate of non-usage would be somewhat lower for the middle school students who receive Opportunity Scholarships, since they cover the full tuition, but somewhat higher for the high school students, who were able to select from relatively few participating schools in the first year.[34]

Based on these expectations, we set the scholarship "overage" as 16 percent for middle school students and 28 percent for high school students. Thus, the overall scholarship probability for middle school students applying from public schools was 82 percent (66 percent + 16 percent) and the probability for public high school applicants was 59 percent (31 percent + 28 percent). Since the SINI public school applicants within these grade bands were automatically awarded scholarships this first year, the award probabilities for the non-SINI public school applicants were somewhat lower than the grade-band average, depending on the proportion of slots that automatically were awarded to SINI public applicants.

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[33] Howell et al., *The Education Gap,* 44.

[34] Only nine participating private schools served students in any of the high school grades.

Results of the Scholarship Lottery

Once these decisions had been made, the scholarship lottery operated as a series of mini-lotteries for each of the priority strata and grade bands within them. The computer program applied separate selection probabilities to the groups of eligible applicants who met the various priority and grade-band criteria (Figure 3-2 and Table 3-2).

Figure 3-2
Scholarship Probability, by Type of Applicant and Grade-Level Band: Spring 2004

Grade-Level Band	Public "SINI"	Other Public	Private
Total	100	85	43
K-5	100	100	55
6-8	100	76	42
9-12	100	28	17

- Because the award of scholarships to the public school applicants in grades K to 5 was not constrained by the number of slots available, all those applicants were automatically awarded scholarships.
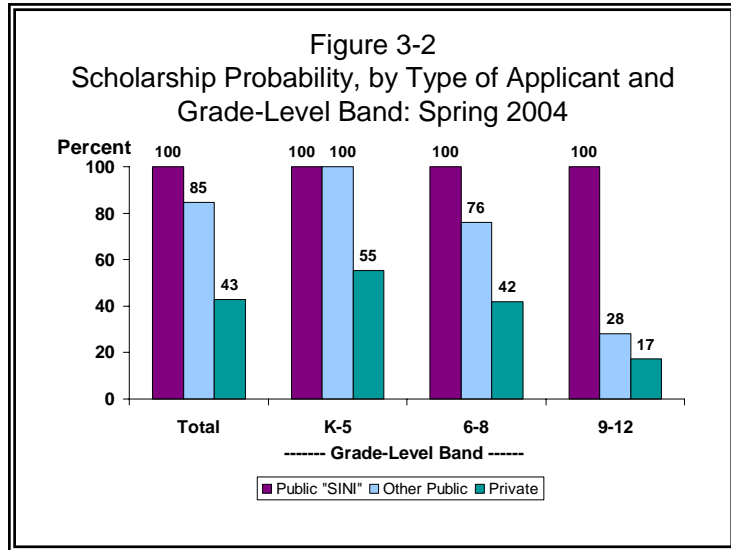
- The SINI public school applicants, representing the highest statutory priority, all received scholarships even if they were entering the slot-constrained middle and high school grades.

- A modest number of non-SINI public school applicants entering middle school and a moderate number of non-SINI public school applicants entering high school were randomly assigned to the control group (81 and 112, respectively).

- A total of 216 of the applicants already attending private schools were awarded scholarships. This last number was determined by ED and the DC Mayor, based on setting award probabilities at about half of the probabilities for non-SINI public school applicants in the relevant grade bands.

Table 3-2.   Lottery Probabilities and Assignments, by Applicant Type and Grade-Level Band: Spring 2004

Type of Applicant	Grade-Level Band			Total[1]
	K - 5	6 - 8	9 - 12	
Public SINI				
Eligibles	24	20	35	79
Probability	100.0%	100.0%	100.0%	100.0%
Scholarships	24	20	35	79
Nonrecipients	0	0	0	0
Non-SINI Public				
Eligibles	772	336	156	1,264
Probability	100.0%	75.9%	28.2%	84.7%
Scholarships	772	255	44	1,071
Nonrecipients	0	81	112	193
Private				
Eligibles	239	156	110	505
Probability	55.2%	41.7%	17.3%	42.8%
Scholarships	132	65	19	216
Nonrecipients	107	91	91	289
Totals				
Eligibles	1,035	512	301	1,848
Probability	89.7%	66.4%	32.6%	73.9%
Public Scholarships	796	275	79	1,150
Private Scholarships	132	65	19	216
Total Scholarships	**928**	**340**	**98**	**1,366**
Public Nonrecipients	0	81	112	193
Private Nonrecipients	107	91	91	289
Total Nonrecipients	**107**	**172**	**203**	**482**

[1] The totals here for combined public school applicants (79+1264 = 1343) and private school applicants (505) differ from the figures of 1330 and 518 presented elsewhere (e.g., in Table 2-5). The reason is that 13 applicants were originally classified as attending non-SINI public schools based on parental responses to the school type and name of school questions in the baseline survey. In all 13 cases, the parent indicated that the child was attending a public school and provided either no school name (4 cases) or a school name that did not obviously signify the type of school (9 cases—4 of which were preschools). Further investigations by the technical advising team indicated that these 13 students were attending private schools or private preschools, and their school type classification was corrected accordingly.

NOTE: The shaded boxes represent the randomization of the impact analysis sample.

SOURCE: Evaluation database (based on information from multiple sources: (1) the DC Opportunity Scholarship Program applications, (2) the program operator's files, and (3) data files from DCPS).

As a result of the automatic awarding of scholarships to some students and the randomization process in oversubscribed grades:[35]

- A total of 1,366 eligible applicants were awarded program scholarships in the initial year.[36] They comprise the program sample that will be the subject of performance reporting in future evaluation reports. Of these, 1,150 (84 percent) were applicants from public schools, and 216 (16 percent) were applicants from private schools.

- A total of 299 (22 percent) of the students in the program sample comprise the treatment group for the impact sample (Table 3-3). They were all public school applicants entering grades 6 to 12, where the number of eligible applicants exceeded the number of available private school slots.

- A total of 482 students were randomly assigned to nonrecipient status. Of the students who did not receive scholarships through the lottery, 193 (40 percent) were public school applicants who will comprise the control group for the impact analysis. We will track their academic achievement and experiences over time and compare them with those of the 299 scholarship recipients in the treatment group to assess program impact.

- The remaining 289 (60 percent) nonrecipients who were private school applicants are members of neither the program sample (because they did not receive a scholarship) nor the impact sample (because they are nonrecipients likely to continue to attend private school). Thus, this group of eligible applicants from the 2003-04 cohort will not be followed in the future as part of the evaluation.

In sum, the scholarship lottery produced two groups of students for purposes of meeting statutory requirements for the DC Choice Opportunity Scholarship program evaluation. The 1,366 scholarship recipients will be the subject of annual performance reporting. The 492 public school applicants who were entering grades subject to random assignment will contribute to the annual impact analysis (see shaded cells of Table 3-3): these include 299 students assigned to the treatment group (and also included in the performance reporting sample) and 193 students assigned to the control group. The 289 private school applicants who were not awarded scholarships belong to neither group. Since they previously attended and presumably will continue to attend private school using resources outside of the scholarship program, following these students after baseline would not contribute meaningfully to the evaluation. To conserve resources, this group of initial applicants will not be part of the evaluation going forward.

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[35] The customized computer program designed by the technical advising team to implement the lottery was executed at the WSF offices on June 16, 2004. Members of the public and officials from ED were present to witness the lottery. A diagnostic program confirmed that the lottery operated exactly as designed, including the creation of comparable treatment and control groups for applicants in the oversubscribed grades 6 to 12.

[36] Of the 1,366 scholarship winners, 1,249 were selected via the initial execution of the lottery program. As described in Chapter 2, after the lottery, additional applicants became eligible for the program either by providing necessary documentation that completed their original application or through an appeals process conducted by the WSF. These additional eligible applicants were automatically awarded scholarships if they were attending SINI public or public school grades that were not oversubscribed (i.e., entering K-5), otherwise they were randomly assigned to the scholarship or control group using the same probabilities that had been applied to the initial group of eligible applicants. This subsequent lottery process resulted in an additional award of 117 scholarships and eight additional control group members, since most of the newly eligible applicants qualified for the automatic scholarship awards.

Table 3-3. **DC Opportunity Scholarship Program Applicants, by Receipt of Scholarship and Inclusion in the Impact Analysis Sample: Spring 2004**

School Type at Application and Grade Band	Eligible Applicants	Applicants who Received Scholarships (Performance Reporting Sample)			Applicants who Did Not Receive Scholarships		
		Non-Impact Sample Recipients	Impact Sample Recipients	Total Scholarship Recipients	Impact Sample Nonrecipients	Non-Impact Sample Nonrecipients	Total Nonrecipients
SINI							
Grades K-5	24	24	0	24	0	0	0
Grades 6-8	20	20	0	20	0	0	0
Grades 9-12	35	35	0	35	0	0	0
Subtotal	**79**	**79**	**0**	**79**	**0**	**0**	**0**
Non-SINI Public							
Grades K-5	772	772	0	772	0	0	0
Grades 6-8	336	0	255	255	81	0	81
Grades 9-12	156	0	44	44	112	0	112
Subtotal	**1,264**	**772**	**299**	**1,071**	**193**	**0**	**193**
Private							
Grades K-5	239	132	0	132	0	107	107
Grades 6-8	156	65	0	65	0	91	91
Grades 9-12	110	19	0	19	0	91	91
Subtotal	**505**	**216**	**0**	**216**	**0**	**289**	**289**
Totals	**1,848**	**1,067**	**299**	**1,366**	**193**	**289**	**482**

NOTE: The shaded boxes represent the randomization of the impact analysis sample.

SOURCE: Evaluation database (based on information from multiple sources: (1) the DC Opportunity Scholarship Program applications, (2) the program operator's files, and (3) data files from DCPS).

However, the impact sample in the first year of the program is not, on its own, sufficiently sizable to identify program impacts unless they are very large. The statistical power analysis conducted for the evaluation (see Chapter 1 and Appendix A) suggests this initial treatment (scholarship) and control (no scholarship) group in the impact sample is too small for the evaluation to reliably draw conclusions about any differences in achievement outcomes that might be expected from an intervention of this kind.[37] Instead, the treatment and control groups from the first year lottery will be combined with those from the lottery for second year applicants, expected in April 2005, to bring more evidence to bear on the rigorous evaluation of program impacts.

3.3   Placement Lotteries

To receive a seat under the DC Opportunity Scholarship Program, scholarship winners were instructed to identify and visit each private school that they were interested in attending. To facilitate this process, the WSF and its partners conducted school fairs where parents and children were given the opportunity to meet with representatives from participating schools to learn about the programs and admission requirements to enter the schools.[38]   Scholarship winners were strongly encouraged to meet with representatives from more than one school to maximize their chance of placement in a school of their choice.

It was a requirement of the scholarship program that to receive a seat in a private school, scholarship winners must (1) visit with private school representatives and secure a provisional seat in that school and (2) complete and submit a school preference form to the WSF listing schools by first, second, third, and fourth choice.

Although the program operators initially planned to conduct a single placement lottery, this was not possible because many participating schools were late to finalize the number of seats available to scholarship winners, and many families failed to complete their school visits and other admissions requirements by the lottery deadline of July 12.[39] A decision was made to go forward with the lottery so that the substantial number of families that *had* completed the school search process in time could be quickly informed about where their children would be attending school in the fall. The program implementer determined that they would assist the remaining scholarship recipients in completing their search and in finding appropriate placements. As a result, placements were made using a combination of a lottery for children meeting all of the requirements by the specified deadline followed by WSF placing children in schools on a flow basis as schools finalized their seat openings and scholarship winners completed all of the requirements of their school search. For the purposes of the placement process, no distinction was made between scholarship winners in the impact sample and those in the non-impact sample.

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[37] As discussed in Chapter 1 and Appendix A, statistical power analysis is an important part of evaluation design and demonstrates how well the design will be able to distinguish real impacts from chance differences. The analysis takes into consideration such factors as the size of the impact expected, the proportion of students anticipated to be assigned to the treatment and control groups, and the likely attrition from the study's data collection.

[38] The law allows participating private schools to use the same admissions criteria for federal scholarship recipients as for other applicants to the school.

[39] Because of delays in obtaining a final list of available seats at participating schools, the actual computerized placement lottery could not be run until August 6.

Lottery Methodology Used To Distribute Seats to Scholarship Recipients

To ensure that scholarship winners were assigned seats in a school without bias or favoritism, Westat programming staff wrote and thoroughly tested a computer application program that distributed seats in accordance with the following rules:

- Scholarship winners currently attending a public school but already admitted to a specific private school before the DC Opportunity Scholarship Program began (i.e., "pre-admits") were automatically given a seat in the school in which they were pre-admitted. The automatic award of these seats had no effect on the seats available to other scholarship winners.

- Scholarship winners already enrolled in a participating private school who submitted a form to WSF indicating that they wished to remain in that school were also automatically assigned a seat. As noted earlier, there was no effect on seats available to the remaining scholarship winners.

After eliminating these students from the seat competition, the remaining students were assigned seats under the following rules:

- Students were organized into three categories corresponding to the priority groups used for the scholarship lottery (i.e., all students attending SINI schools were grouped together, all students in non-SINI public schools were grouped together, and all students in private schools who were seeking to change schools were grouped together).

- The students in each separate category were randomly ordered.

- Once the random order was established within each group, the three groups were placed in a single file for school assignment with the SINI public students first, followed by non-SINI public students, and finally private school students seeking to switch schools.

- Placement was based on the school preferences—up to four schools could be named and ranked in order of priority—indicated by each family for each child. Only schools that had agreed to accept the child could be assigned as part of the placement lottery. Since a seat may not have been available in a student's first school preference, an attempt was made to place the student in their second preference, then third, and so on until all preferences were exhausted.

- The seat assignment described here was used for each child, with the exception of families with more than one scholarship student who wanted to place their children in the same school.[40] When this occurred, the children were processed together. The first school preference was examined to determine whether seats were available at that school for all scholarship children in the family. If not, the second preference was examined followed by the third, and so on until all school preferences were checked. If a family placement was not possible, then children were placed individually, as described earlier.

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[40] There were 348 families that won scholarships for multiple children. Of these multi-award families, 129 submitted school preference forms in time for the placement lottery. A total of 119 of the 129 preference forms (92 percent) included a request that all the children in the family be placed in the same school.

Results of the First Placement Lottery

The total number of scholarship winners at the time of the first placement lottery was 1,277.[41] However, 513 of them were not prepared to participate in the first placement lottery because they failed to visit with school representatives to secure a seat, failed to return a school preference form by the deadline, or both. Some of the reasons given include that they could not attend school fairs because of scheduling conflicts, transportation problems, insufficient length of time to visit with school representatives, could not afford to miss work to visit schools, and some simply lost interest in the program.

Next, 196 scholarship winners automatically received a seat in a particular private school. These included (1) students who were currently attending a public school but who had already been admitted to a participating private school for the fall term prior to the late-April program application period, and (2) applicants from participating private schools who completed a school preference form indicating that they intended to remain in their current school. In neither of these cases did a new slot need to be taken at a participating private school. That left a total of 568 students who were entered into the placement lottery to compete for available seats in private schools.[42]

The computerized placement lottery assigned seats to 549 of the 568 students seeking seats in participating private schools for the school year beginning in fall 2004 (Table 3-4). As predicted by the legislation, there were more scholarship recipients applying to some private schools than could be accommodated. However, of the 568 students who were competing for new slots, 531 (93 percent) were assigned their first choice school. Another 3 percent wound up in their second or third preferred school.[43] Because the school preferences clustered around certain geographically or programmatically desirable schools, 19 students (3 percent) could not be placed in a preferred school by the computerized placement lottery.

Followup to the Placement Lottery

Since the start of the school year was rapidly approaching and some participating schools were making additional slots available to scholarship students, the remaining 295 scholarship students who completed their school search after the operation of the placement lottery were assigned to available slots in private schools by WSF on a case-by-case basis. The added slots also permitted WSF eventually to place almost all students who could not be placed by the initial placement lottery, including every student who remained interested in participating in the program. Parents and children were contacted either by telephone or letter notifying them of their successful placement.

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[41] Another 89 students were awarded scholarships after the first placement lottery because they were deemed eligible upon finally completing their application or as a result of the appeals process. All of these students were public school applicants entering grades K-5 and thus were automatically awarded scholarships upon being certified eligible for the program.

[42] The number of scholarship winners listed for SINI public, Non-SINI public, and Private schools differ from the numbers shown in the scholarship lottery. For the placement lottery, if a parent indicated on the school preference form that he/she wanted all of his/her children placed in the same school and the children were currently attending schools that fell under two or more of the classifications below, all children in the family were listed in the highest priority and most advantageous classification. For example, if there were two children in a family and one attended a SINI school while the other did not, both children were classified as SINI. This was done so that SINI students would not be penalized for applying along with one or more non-SINI siblings.

[43] All the students who listed a fourth school choice were placed in their first, second, or third choice school.

Table 3-4. **Results of the Computerized Placement Lottery, by Priority Group: Spring 2004**

Priority Group	Students Competing for Available Seats	Students Assigned First Choice[1]	Students Assigned Second or Third Choice	Total Students Placed
SINI	47	44	0	44
Non-SINI Public	503	471	18	489
Private	18[2]	16	0	16
Total	**568**	**531**	**18**	**549**

[1] If a child submitted an invalid first school preference, and the second school preference was valid and they were able to obtain a seat in that school, the child is counted as being placed in their first preference on this table.

[2] These students were private school scholarship winners who wanted to switch to a different participating private school and, therefore, were entered into the competition for new private school seats.

SOURCE: Applicant database and school preference forms submitted by parents.

At the end of the placement process, 1,040 scholarship students were assigned available seats in participating private schools selected by their parents (Table 3-5). Every scholarship winner, whether in the impact analysis treatment group or not, who completed a school search and remained interested in the program was eventually placed in a private school chosen by the family.

3.4   Scholarship Usage

Of the 1,366 students awarded scholarships through the computerized scholarship lottery and appeals/ extended completion period, 1,040 obtained a placement, and 1,027 had matriculated at a preferred private school as of September 10, 2004. This represents an initial scholarship usage rate of 75 percent for the program sample that will be used for performance reporting. This program-wide scholarship usage rate is at the high end of the range for initial usage among the previous large-scale school voucher or private scholarship programs.[44]

The initial scholarship usage rate for the 299 members of the treatment group in the impact sample was somewhat lower, at 62 percent. The lower rate for this group, in comparison to both the overall program sample and that of other scholarship programs reflects two factors:

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[44] The initial scholarship usage rate was 82 percent in New York City, 78 percent in Dayton, Ohio, and 68 percent in Washington, DC, for the earlier experimental evaluation of private scholarship programs in those three cities. Voucher usage rates were 61 percent in the first year of the Milwaukee Parental Choice Program and estimated to be about 50 percent in the first year of the Cleveland Scholarship and Tutoring Program. See Howell et al., *The Education Gap,* 44; John F. Witte, *First Year Report: Milwaukee Parental Choice Program* (University of Wisconsin-Madison, November 1991), 3; John F. Witte, Andrea B. Bailey, and Christopher A. Thorn, *Second Year Report: Milwaukee Parental Choice Program* (University of Wisconsin-Madison, December 1992), 8; Paul E. Peterson and Bryan C. Hassel, eds., *Learning From School Choice* (Washington, DC: Brookings, 1998), 360.

Table 3-5. **Final Results of Lottery and WSF Student Placements, by Priority Group: Spring 2004**

Priority Group	Scholar-ship Winners	Failed To Complete School Search	Placed Through Lottery	Not Changing Schools[1] or Placed by WSF	Total Students with Placement	Completed Search but Unplaced
SINI public	79	28	33	18	51	0
Non-SINI public	1,071	276	497	298	795	0
Private	216	22	19	175	194	0
Total	**1,366**	**326**	**549**	**491**	**1,040**	**0**

[1] Not changing schools includes public school applicants who obtained admission to a particular private school prior to applying to the program and private school applicants continuing in their previous school. There were 196 students in this category.

SOURCE: Computerized placement lottery database (Westat) and WSF placement records.

- Scholarship usage rates vary significantly by grade level, with the highest usage among K-5 students (Appendix D, Table D2). Since the treatment group in the impact sample does not include any K-5 students, the initial usage rate for the treatment group is lower than the rate for the program sample as a whole and lower than that of other scholarship programs, almost all of which focused on elementary grades.

- In addition, about 16 percent of the DC Opportunity Scholarship recipients are students who were already attending private schools when they applied and thus were virtually certain to use their scholarships. These students are not represented among either the 299 members of the treatment group or recipients of other scholarship programs.

Students who chose to take advantage of their scholarships were distributed throughout the participating schools, although there was some clustering by religious affiliation and location. For example, although about half of the schools are affiliated with the Catholic Church, 61 percent of scholarship users enrolled in a Catholic school. Seventeen percent of the students using scholarships chose a non-Catholic religious school. The proportion of scholarship students attending nonsectarian private schools, 22 percent, is high compared to previous government-sponsored school choice programs. [45]

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[45] For example, only 4 percent of the students participating in the Cleveland Scholarship and Tutoring Program in 1999-2000 attended secular private schools, a fact that figured prominently in the deliberations surrounding the constitutionality of that school choice program (See *Zelman, Superintendent of Public Instruction of Ohio, et al. v. Simmons-Harris et al.* 536 U.S. 647 (2002), p. 1).

This pattern of scholarship use in the District is a function of the types of private schools established and willing to participate in the program and differences in the numbers of new seats that schools of different types made available.

As with the distribution of participating schools described in Chapter 2, the schools that scholarship students have selected are slightly concentrated in a few wards but are also found throughout the District[46] (Figure 3-3). Almost one-quarter of scholarship users are attending private schools in Ward 4, and Ward 6 is hosting nearly 20 percent. The remaining scholarship students are scattered throughout the city, with Ward 2 private schools serving the smallest proportion of participating students.

Figure 3-3
Participating Private Schools Selected by
Scholarship Recipients, by Ward: Spring 2004

Ward 7, 15%
Ward 8, 11%
Ward 1, 10%
Ward 6, 19%
Ward 2, 5%
Ward 3, 8%
Ward 5, 8%
Ward 4, 23%

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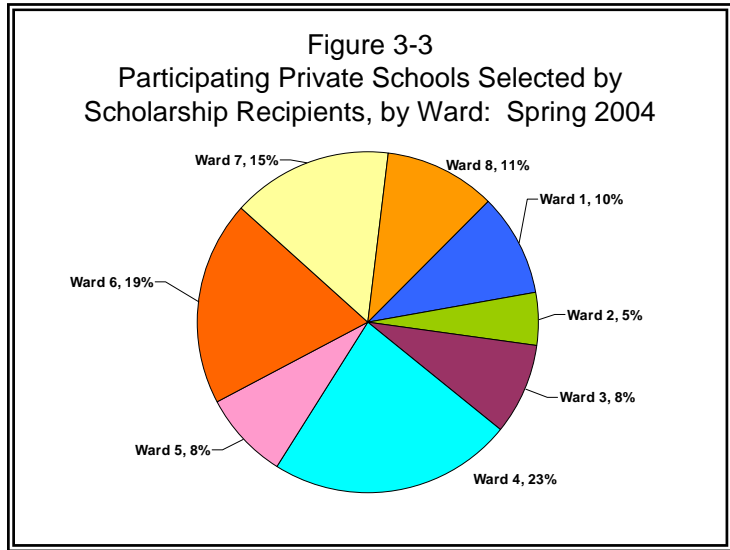
[46] The ward locations of schools were determined using the NCES Common Core of Data and the Citizen Atlas at the District of Columbia Government web site, available at citizenatlas.dc.gov/atlasapps/reporthometab.aspx.

4. CHARACTERISTICS OF PROGRAM APPLICANTS

The implementation and impacts of most programs are shaped by the characteristics of those who apply to participate. The DC Opportunity Scholarship Program is no exception; the law's provisions make it clear, for example, that the program is intended to serve economically disadvantaged families. In determining and interpreting program effects later on, it is important to know how well the program is targeted to disadvantaged families and, beyond that, what types of families and students apply, win scholarships in the lottery, and choose to use them to enroll in a private school. This chapter describes the 1,848 eligible applicants to the DC Opportunity Scholarship Program in part by comparing them, and subsets of them, to several policy-relevant groups. The chapter concludes with some initial evidence regarding the extent that public and private schools in the District are experiencing a significant loss or gain of students due to the first year of program implementation.

4.1 Public School Applicants Compared to Public Nonapplicant Students in the District

There are several reasons to examine the eligible public school applicants to the DC Opportunity Scholarship Program in relation to other DCPS students. Most importantly, the comparison provides a context for considering the kinds of students who might be attracted to the program in future years in the District or to a similar program in other locations.

Of course, program applicants differ from public nonapplicant students in important ways, some by design of the program. Applicants must have family incomes at or below 185 percent of the federal poverty line. In addition, the majority of applicants were young students, in the early elementary grades, while DCPS students are somewhat more evenly spread out across grade levels. These differences are important because they can affect average test scores, racial/ethnic group membership, or other characteristics of interest. As a result, we compare applicants to several different subgroups of DCPS students, in addition to DCPS students overall, and make comparisons within certain grade bands whenever it is practical to do so.

Because the evaluation's primary outcome measure is academic achievement, it is useful to understand whether applicants to the DC Opportunity Scholarship Program *started out* with higher, lower, or similar levels of achievement than nonapplicants. This focus necessarily limits the analysis to the 784 eligible applicants who participated in the accountability testing in DC public and charter schools in the spring of 2004 and could be identified conclusively in the database provided by DCPS.[47] The analysis cannot

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[47] The DCPS Office of Communications and Public Information provided the data file to the technical advising team consistent with the requirement in the legislation that all schools and school systems that are covered by the DC School Choice Incentive Act of 2003 cooperate with the program evaluator in providing information necessary to the evaluation. The DCPS accountability database included demographic information on 1077 eligible applicants, representing 80 percent of all public school eligible applicants. The data base also included a reading or math test score for 784 of these program applicants, or 58 percent of all eligible public school applicants to the program. Of the 42 percent of applicants without such data: (1) 65 percent are students entering grades K-1, for whom there are no DCPS tests offered; (2) another 28 percent are students entering grades 2 and 3 who are not required to take the DCPS accountability tests, although some did and are included in the comparisons; (3) the remaining 17 percent are students entering grades 4 through 12. To examine whether there was any substantial bias in our analysis, we compared the demographic characteristics of students who were tested by DCPS with those who were not tested, both within and across the applicant and nonapplicants samples, using a *t* test for difference of means to identify statistically significant differences. The testers did not differ significantly from the nontesters on any characteristic, except for grade, since testing is mandatory only in grades 3 and higher. Therefore, we are confident that tester/nontester bias does not affect the comparisons that we make here.

include private school applicants, for whom baseline (pre-application) test scores are not available or are not comparable to testing in DCPS.[48]

The accountability database contains the results of DCPS administration of the Stanford Achievement Test, Version 9 (SAT-9) to all students in grades 3 through 11, and some students in grades 1 and 2, in the spring of 2004. These tests covered the areas of reading and mathematics, with results expressed in terms of National Percentile Ranks (NPRs). The NPR for a particular student test score describes the percentage of students who scored below that level on a nationally normed test for the specific grade level, subject, and testing period that applies to the student score.[49] Expressing test-score norms in this way makes them comparable across grade levels. The DCPS database also includes a modest number of student demographic characteristics with which to organize comparisons.

All Public School Applicants Compared to All Nonapplicant DCPS Students

To answer the question—what kinds of students apply to the DC Opportunity Scholarship Program— program applicants as a whole were considered in relation to all DCPS students who did not apply to the program. This analysis yields the following conclusions (Table 4-1):

- Applicants performed similarly to DCPS nonapplicants in both reading and mathematics.[50]

- Applicants are somewhat more likely (16 percent) than public nonapplicant students (14 percent) to have been enrolled in special education.[51]

- Public school students attracted to the DC Opportunity Scholarship Program were more likely to be African American than were nonapplicant public school students (92 percent vs. 85 percent) but less likely to be Hispanic (6 percent vs. 9 percent) or other races (2 percent vs. 6 percent).

- Applicants are substantially more economically disadvantaged than are DCPS students overall; applicants were more likely to be enrolled in the federal Free or Reduced-price Lunch Program (FRL) than were nonapplicants (85 percent vs. 68 percent), a result that is not surprising given the income ceiling for program eligibility.[52]

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[48] There were not sufficient evaluation resources or time during the first year of the program to consider having the evaluation team test all program applicants, including those from private schools.

[49] For example, the score average of nearly 47 NPRs for all K to 5 applicants in reading is about 3 percentile points below the national median for those grades in reading, as approximately 47 percent of students across the country who took the reading test last spring in those grades scored lower than the average for the program applicants.

[50] Test scores were missing from about one-quarter of the sample, so these results should be interpreted with caution. However, as discussed in footnote 47, the background characteristics of testers and non-testers do not indicate any clear biases that would necessarily undermine the comparisons.

[51] Students generally are classified as enrolled in special education if they have an individualized education plan consistent with the federal Individuals with Disabilities Education Act. As with the test score comparison, the significant amount of missing data regarding disability status requires that results be interpreted with caution.

[52] Although all applicants who were deemed eligible for the program were verified as having family incomes that made them eligible for the federal lunch program, some of them were not enrolled in that program. It is well established that not all students who are eligible for the lunch program enroll in it, and the percentage of eligible students who decline to enroll tends to increase in the upper grades. For example, our data indicate that 14 percent of K-5 eligible applicants, 16 percent of grades 6 to 8 eligible applicants, and 19 percent of grades 9 to 12 eligible applicants were not enrolled in the lunch program (Appendix B, Table B1). Any bias that this underenrollment introduces into the sample is likely to be roughly equal for both the program applicant and nonapplicant groups, so it probably does not bias the comparison between the two.

Table 4-1. Characteristics of DC Public School Students, Program Applicants Versus Nonapplicants: Spring 2004

Characteristic	Applicants	DCPS Sample	Difference
Baseline Test Scores[1]			
Average Reading Percentile	41.5	40.1	1.4
Percent missing	*26*	*26*	
Average Mathematics Percentile	47.2	46.3	1.0
Percent missing	*25*	*25*	
Percent in Special Education	16	14	2*
Percent missing	*24*	*23*	
Percent, by Race			
African American	92	85	8**
Hispanic	6	9	-4**
Other race[2]	2	6	-4**
Percent missing	*1*	*1*	
Percent, by Gender			
Female	51	50	0
Percent missing	*0*	*1*	
Percent Participating in Free/Reduced-price Lunch Program	85	68	17**
Percent missing	*2*	*2*	
Sample size	1,077	66,868	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.

[2] "Other race" includes students who were identified as white, Asian, American Indian, or Alaska Native.

NOTE: Detail may not sum to totals because of rounding. Applicant sample includes all applicants identified in the DCPS database, regardless of whether or not they participated in the accountability testing.

SOURCE: Accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

All Public School Applicants Compared to Economically Disadvantaged Nonapplicant DCPS Students

Since, by virtue of the eligibility criteria, program applicants are more economically disadvantaged than DCPS students overall, it is appropriate to consider the applicants' characteristics relative to those of public school students who are similarly disadvantaged. The income criterion for the DC Opportunity Scholarship Program—at or below 185 percent of the federal poverty line—is similar to that defining eligibility for enrollment in the federal FRL program or for students that are Title 1 eligible (Table 4-2).[53]

Using those indicators of economic disadvantage for both applicants and nonapplicants we conclude the following:

- Program applicants have higher test score performance than economically disadvantaged nonapplicants. Applicants scored nearly four NPR points higher in both reading and mathematics than similar nonapplicants.[54]

- Among economically disadvantaged students, there is no statistically significant difference between applicants and nonapplicants in the proportion enrolled in special education.

- Lower income applicants remain somewhat more likely to be African American (93 percent) and less likely to be Hispanic (6 percent) than nonapplicant public school students with similar income levels (88 percent and 10 percent, respectively).

- By design, the two groups are similar regarding their eligibility for the FRL program.

All Public School Applicants Compared to Economically Disadvantaged Nonapplicant DCPS Students, by Grade Bands

In addition to their economic circumstances, program applicants differ from DCPS students overall in terms of their grade levels: applicants, including public school applicants, are more likely to be in the elementary grades and less likely to be in the high school grades than are DCPS nonapplicants. To make the groups as comparable as possible, we, therefore, present data on eligible public school applicants in each of the three grade bands used for the lottery and nonapplicant DCPS students in the identical grade bands who were income-eligible for the program. Students are assigned to a subgroup based on the grade they were forecasted to be entering in the fall of 2004, as is the case with all of the grade-level comparisons in this report. We include here the sample that is limited to economically disadvantaged students, since controlling for family income, which is associated with test scores, generates a more reliable comparison. A comparison by grade band using the full sample of students, including students above the FRL eligibility ceiling, is presented in Appendix B (Table B1).

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[53] The data from the accountability test score file for charter students did not include information on FRL status. The charter student data did include an indicator for whether the student was eligible for Title 1. We confirmed with the DC Office of Communications and Public Information that the income cutoffs for Title 1 and FRL in the District are identical. Thus, we included charter students in the comparison limited to FRL if they were designated as Title 1 eligible.

[54] Test scores were missing from about one-quarter of the sample, so these results should be interpreted with caution. However, as discussed in footnote 47, the background characteristics of testers and non-testers do not indicate any clear biases that would necessarily undermine the comparisons.

Table 4-2.   Characteristics of DC Public School Free or Reduced-Price Lunch Program Students, Program Applicants Versus Nonapplicants: Spring 2004

Characteristic	Applicants	DCPS Sample	Difference
Baseline Test Scores[1]			
Average Reading Percentile	40.2	36.4	3.9**
Percent missing	*25*	*26*	
Average Mathematics Percentile	46.7	43.0	3.7**
Percent missing	*25*	*24*	
Percent in Special Education	17	15	1
Percent missing	*24*	*22*	
Percent, by Race			
African American	93	88	5**
Hispanic	6	10	-5**
Other race[2]	2	2	0
Percent missing	*0*	*0*	
Percent, by Gender			
Female	51	51	0
Percent missing	*0*	*0*	
Percent Participating in Free/Reduced-price Lunch Program	100	100	0
Percent missing	*0*	*0*	
Sample size	894	44,740	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.

[2] "Other race" includes students who were identified as white, Asian, American Indian, or Alaska Native.

NOTE: Detail may not sum to totals because of rounding. Applicant sample includes all eligible applicants identified in the DCPS database that were participating in the free and reduced price lunch program.

SOURCE: Accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

This most detailed comparison of applicants and nonapplicants is nearly identical to the other analyses but provides some additional information (Table 4-3):

- Although program applicants have higher reading and mathematics achievement than non-SINI public school students who are similar in terms of income and grade level, these differences are only statistically significant among elementary students.[55]

- There are no statistically significant differences in the rates of special education enrollment between applicants and similar nonapplicants in any grade band.

- The higher rates of African American applicants and lower rates of applicants of other races are evident at both the elementary and high school levels but not at the middle school level.

- Again, by design, the applicant group is similar to the nonapplicant comparison group in all three grade bands regarding the proportions that are enrolled in the FRL program.

Public School Participants Compared to Economically Disadvantaged Nonapplicant DCPS Students, by Grade Bands

The legislation requires that the evaluation include a comparison between participating eligible students and DCPS students in the same grades, an analysis we refer to as performance reporting. Participants differ from the group of public school applicants above, in that participants: (1) include students who were already attending private school when they applied to the program, and (2) exclude students who did not receive scholarships as part of the lottery for those entering grades 6 through 12 (the impact sample's control group). Unfortunately, at baseline (before the program begins), it is not possible to compare the prior academic achievement of scholarship recipients who were already enrolled in private schools because no test data comparable to that of the DCPS accountability assessment is available from private schools.[56]

Because public school *participants* are such a large subset of public *applicants*, comparing either group to similarly economically disadvantaged DCPS students in the same grade levels yields consistent similarities and differences (Table 4-4):

- Program participants in grades K to 5 score somewhat higher in reading and mathematics than comparable nonapplicants. They also are more likely to be African American and less likely to be Hispanic than are nonapplicants. These results are identical to the K to 5 comparisons of eligible public school applicants to DCPS nonapplicants in Table 4-3 because all eligible public school applicants in grades K to 5 automatically became program participants.[57]

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[55] Test scores were missing from about one-quarter of the sample, so these results should be interpreted with caution. However, as discussed in footnote 47, the background characteristics of testers and non-testers do not indicate any clear biases that would necessarily undermine the comparisons.

[56] In addition, DCPS measures other characteristics, such as race/ethnicity and special education status, differently than does the baseline survey the evaluation team administered

[57] Test scores were missing from about one-quarter of the sample, so these results should be interpreted with caution. However, as discussed in footnote 47, the background characteristics of testers and non-testers do not indicate any clear biases that would necessarily undermine the comparisons.

Table 4-3.   Characteristics of DC Public School Free or Reduced-Price Lunch Students by Grade Band, Program Applicants Versus Nonapplicants: Spring 2004

Characteristic	Grades K-5			Grades 6-8			Grades 9-12		
	Applicants	DCPS Sample	Difference	Applicants	DCPS Sample	Difference	Applicants	DCPS Sample	Difference
Baseline Test Scores[1]									
Average Reading Percentile	46.5	42.6	4.0*	38.0	36.4	1.5	29.7	28.8	0.8
Percent missing	*42*	*44*		*3*	*5*		*3*	*14*	
Average Mathematics Percentile	51.2	47.8	3.5*	43.8	42.3	1.5	41.7	37.9	3.8
Percent missing	*41*	*42*		*2*	*5*		*3*	*13*	
Percent in Special Education	17	13	3	18	17	1	14	16	-2
Percent missing	*41*	*41*		*2*	*3*		*2*	*9*	
Percent, by Race									
African American	94	87	7**	88	90	-1	95	89	6*
Other race[2]	6	13	-7**	12	10	1	5	11	-6*
Percent missing	*0*	*0*		*0*	*0*		*0*	*1*	
Percent, by Gender									
Female	52	51	1	51	51	0	46	52	-6
Percent missing	*0*	*0*		*0*	*0*		*0*	*1*	
Percent Participating in Free/Reduced-price Lunch Program	100	100	0	100	100	0	100	100	0
Percent missing	*0*	*0*		*0*	*0*		*0*	*0*	
Sample size	509	20,893		259	12,364		126	11,483	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.
[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.
[2] "Other race" includes students who were identified as Hispanic, white, Asian, American Indian, or Alaska Native. Because of small cell sizes, Hispanic was combined with other race in this table.
NOTE: Detail may not sum to totals because of rounding. Applicant samples include all eligible applicants identified in the DCPS database that were participating in the free or reduced-price lunch program.
SOURCE: Accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

Table 4-4. **Characteristics of DC Public School Free or Reduced-Price Lunch Students by Grade Band, Program Participants Versus Nonapplicants: Spring 2004**

Characteristic	Grades K-5			Grades 6-8			Grades 9-12		
	Participants	DCPS Sample	Difference	Participants	DCPS Sample	Difference	Participants	DCPS Sample	Difference
Baseline Test Scores[1]									
Average Reading Percentile	46.5	42.6	4.0*	37.7	36.4	1.3	24.0	28.8	-4.8
Percent missing	*42*	*44*		*3*	*5*		*4*	*14*	
Average Mathematics Percentile	51.2	47.8	3.5*	43.0	42.3	0.7	41.0	37.9	3.1
Percent missing	*41*	*42*		*1*	*5*		*4*	*13*	
Percent in Special Education	17	13	3	17	17	0	19	16	2
Percent missing	*41*	*41*		*1*	*3*		*2*	*9*	
Percent, by Race									
African American	94	87	7**	88	90	-2	95	89	6
Hispanic	5	12	-7**	9	9	1	0	9	-9*
Other race[2]	1	2	-1	2	1	1	5	2	4*
Percent missing	*0*	*0*		*0*	*0*		*0*	*1*	
Percent, by Gender									
Female	52	51	1	50	51	-2	45	52	-6
Percent missing	*0*	*0*		*0*	*0*		*0*	*1*	
Percent Participating in Free/Reduced-price Lunch Program	100	100	0	100	100	0	100	100	0
Percent missing	*0*	*0*		*0*	*0*		*0*	*0*	
Sample size	509	20,893		201	12,364		55	11,483	

* Statistically significant at the 95 percent confidence level.
** Statistically significant at the 99 percent confidence level.
[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.
[2] "Other race" includes students who were identified as white, Asian, American Indian, or Alaska Native.
NOTE: Detail may not sum to totals because of rounding. Participants samples differ from previous samples because they are limited to scholarship recipients identified in the DCPS database that were participating in the free or reduced-price lunch program.
SOURCE: Accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

- The only statistically significant differences between public school program participants and nonapplicants in grades 6 to 12 involve student race and ethnicity. High school participants are less likely to be Hispanic and more likely to be a race other than African American or Hispanic than are nonapplicants.

- Within all three grade bands, program participants are statistically similar to DCPS nonapplicants in their special education status, gender, and (by design) eligibility for free or reduced-price lunch.

4.2   Applicants in the Impact and Non-Impact Samples

While it is important to examine who applies to the DC Opportunity Scholarship Program, for the evaluation it is equally critical to ensure that the applicants who will be the focus of the impact analysis— the treatment and control groups randomly assigned as part of the lottery—are similar prior to the beginning of the program. It is on this similarity between the groups, not only in characteristics easily measured but also in those not observed, that the scientific benefits of the RCT approach rests. As described in Chapters 1 and 2, the impact sample consists of public school applicants who were not from schools in need of improvement (non-SINI) and who were entering the oversubscribed grades of 6 through 12.

However, because the impact sample, at least in the first year of the program, is only a subset of all program applicants, it is also useful to review how the characteristics of the impact sample differ from the characteristics of students who will not be included in the analysis of program effectiveness (or what we will call the "non-impact sample" of applicants).[58] The existence of many significant differences between the impact and non-impact samples might limit one's ability to extrapolate the results of the impact analysis to measuring the program impacts as a whole.[59]

Because grade level can account for significant differences in characteristics and the impact sample includes only students entering grades 6 through 12, the comparisons are limited to those grades and suggest that (Table 4-5):

- The treatment and control groups are statistically similar on important educational and family background measures that could affect outcomes, such as baseline test scores, racial/ethnic composition, mother's average years of school, and family income. Although the two groups are not identical, the differences that exist are within the range of what we might expect due to mere chance. None of the differences are statistically significant.

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[58] As described in Table 3-3, the non-impact sample consists of 1,356 eligible applicants. A total of 1,067 are scholarship recipients – 851 of whom were public school applicants who were automatically awarded scholarships and 216 of whom were private school applicants. The non-impact sample also includes 289 scholarship nonrecipients who were private school applicants.

[59] It is not appropriate, statistically, to assume that the impact analysis results would apply to the student groups not included in the impact sample. In particular, applicants already enrolled in private schools, excluded from the impact sample, are likely to be quite different than public school applicants.

Table 4-5. Characteristics of the Impact Sample and Non-Impact Sample for Applicants Entering Grades 6 to 12, Spring 2004

Characteristics	Treatment	Control	Difference	Impact Sample	Non-Impact Sample	Difference
Baseline Test Scores[1]						
Average Reading Percentile						
Grades 6-8	39.6	42.7	-3.1	40.3	35.1	5.2
Grades 9-12	32.9	35.6	-2.7	34.9	19.5	15.3**
Percent missing	*17*	*22*		*19*	*84*	
Average Mathematics Percentile						
Grades 6-8	44.2	48.1	-4.0	45.1	42.0	3.1
Grades 9-12	47.6	43.8	3.8	44.9	36.3	8.6
Percent missing	*16*	*22*		*18*	*85*	
Percent of Students with a Learning or Physical Disability	18	23	-5	20	12	7**
Percent missing(average)	*6*	*7*		*6*	*3*	
Percent, by Race						
African American	93	94	-1	93	90	3
Other race[2]	7	7	0	7	10	-2
Percent missing	*5*	*6*		*5*	*10*	
Percent Hispanic (any race)	9	7	2	8	16	-8**
Percent missing	*4*	*7*		*5*	*4*	
Mother's Average Years of Schooling	12.6	12.8	-.2	12.7	12.8	-.2
Percent missing	*17*	*16*		*17*	*15*	
Average Family Income	$18,767	$19,029	-$262	$18,870	$19,334	-$464
Percent missing	*0*	*0*		*0*	*0*	
Percent of Students whose Mothers are Employed Full Time	49	54	-5	51	48	4
Percent missing	*19*	*19*		*19*	*17*	
Sample size	299	193		492	321	

* Statistically significant at the 95 percent confidence level.
** Statistically significant at the 99 percent confidence level.

[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.
[2] "Other race" includes respondents who were identified as white, Asian, American Indian, Alaska Native, Pacific Islander, or multiracial. Respondents classified as "multiracial" if more than one race category was selected.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: Eligible Applicant Database. Test-scores obtained from the accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

- There are a few significant differences between the impact sample as a whole and the non-impact sample, at least for those entering grades 6 through 12. While the extent of missing baseline achievement data for the non-impact sample precludes a reliable comparison of test scores, members of the impact sample are more likely than members of the non-impact sample to report having a learning or physical disability (20 percent vs. 12 percent) but are less likely to be of Hispanic ethnicity (8 percent vs. 16 percent).

These results give us confidence that the random assignment process worked as designed to generate two comparable subgroups for the impact analysis. However, the impact analysis sample does not appear to be comparable to the sample of applicants who will not be included in the rigorous part of the evaluation on at least a few dimensions.

4.3   Eligible Applicants by Type of Previous School

The differences between evaluation subsamples underscore that the program applicants are a diverse group, and these differences may play a role in the extent to which the program is effective and for which students. In particular, applicants are likely to vary somewhat in their educational and background characteristics depending on the type of school that they attended previously—SINI, non-SINI public schools, charter schools, and private schools.[60]

As described in Chapter 3, the eligible applicants were drawn primarily from public schools that were not designated in need of improvement under NCLB at the time of application.[61] A total of 15 schools, representing 9 percent of all DCPS, had been designated as SINI as of the program application period. Seventy-nine students, or 4 percent of all eligible applicants, were drawn from the schools designated as SINI during the 2003-04 school year. A total of 993 students, or 54 percent of all eligible applicants, were drawn from non-SINI public schools. Public charter schools generated 258 applicants, or 14 percent of the total, with private schools accounting for the remaining 518 eligible applicants (28 percent). Detailed information on all applicants was collected as part of the application process and analyzed for differences and similarities by type of school previously attended. As a way of summarizing, in these analyses an average for a school type subgroup was designated as significant if it differs statistically from the average for all applicants with that particular subgroup excluded.[62]

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[60] The data presented in this chapter were drawn almost exclusively from the application form and baseline survey, with the exception of test-score data taken from the DCPS database.

[61] The numbers of eligible applicants by subgroup differ somewhat in this chapter from the totals used for the priority-group classifications described in Chapters 2 and 3. First, the 258 applicants from charter schools are a significant component of the non-SINI public group, and, thus, were separated out from that group for the purposes of this analysis. Second, 13 applicants were originally classified as attending non-SINI public schools based on parental responses to the school type and name of school questions in the baseline survey. In all 13 cases, the parent indicated that the child was attending a public school and provided either no school name (4 cases) or a school name that did not obviously signify the type of school (9 cases—4 of which were preschools). Further investigations by the technical advising team indicated that these 13 students were attending private schools or private preschools, and their school type classification was corrected accordingly.

[62] Specifically, for each characteristic, each subgroup (e.g., SINI Public, Non-SINI Public, Charter, Private) average was compared with the population average excluding that subgroup, using a *t* test to determine if the subgroup score was statistically different from the collective members of the other subgroups. For example, the average reading score of 19.5 NPRs for SINI public applicants entering grades 9 to 12 was significantly different from the average for all other applicants excluding those from SINI public schools. This approach was selected instead of conducting multiple pair-wise comparisons because it directly and efficiently addresses the question "Is this subgroup average different from the rest?" The *t* test was used instead of a *Z* test because the *t* test is a more powerful statistical test, which is an important concern when subgroups are small (e.g., the SINI public subgroup).

Educational Characteristics of Eligible Applicants

We examined the grade-level distributions, average test scores, disability status, and English proficiency for all applicants by previous type of school. Pre-application test score data were only available for public and charter school applicants who completed the DCPS accountability tests in spring 2004. Comparable test data were not available for private school applicants. But other significant findings include the following:

- More than half of all applicants (55 percent) were at the elementary level (Table 4-6). SINI public schools were less likely to have elementary school program applicants and more likely to have high school applicants than other types of schools, although this largely reflects the proportion of SINI-designated schools that were high schools (7 of 15).[63] Non-SINI public schools, which had the majority of program applicants, were substantially more likely than other schools to send elementary-level applicants and less likely to generate high school applicants.

- Overall, applicants tended to score somewhat higher in mathematics than in reading and higher in the younger grades than in the older grades (Table 4-7). At the high school level, applicants from SINI public schools scored substantially lower in reading—and applicants from non-SINI public schools significantly higher—than applicants from non-SINI public schools. The test scores for the remaining grade-band and school-typesubgroups in reading, and all of the subgroup averages in mathematics, are statistically similar to the applicant norms.[64]

Table 4-6.   Percentage of Applicants in Various Grade Bands, By Type of School Previously Attended: Spring 2004

Forecasted Grade Level Fall 2004	Total	SINI Public	Non-SINI Public	Charter	Private
Kindergarten-5	55	32**	66**	45*	47**
6-8	27	26	25	33	31
9-12	16	44**	10**	20	22
Total	100	100	100	100	100
Sample size	1,848	79	993	258	518

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

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[63] Seven of the 15 SINI schools were high schools, and high school students were significantly less likely to apply for the program than were students in the elementary and middle school grades.

[64] Test scores were missing from all of the private school applicants and one-quarter to one-half of the members of the other subgroups, so these results should be interpreted with great caution.

- For the total population of eligible applicants, 14 percent have a learning or physical disability, according to parental reports (Table 4-7). Applicants from non-SINI public schools are slightly more likely to report a learning or physical disability, whereas private school applicants are somewhat less likely to report such a disability.[65]

Table 4-7.   Educational Characteristics of Eligible Applicants by School Type: Spring 2004

Characteristics	Total	Public SINI	Non-SINI Public	Charter	Private
Baseline Test Scores[1]					
Average Reading Percentile					
Grades K-5	47.0	49.9	47.5	43.8	NA
Grades 6-8	39.9	35.1	39.9	41.3	NA
Grades 9-12	31.7	19.5**	38.0**	27.9	NA
Percent missing	*57*	*22*	*42*	*38*	*100*
Average Mathematics Percentile					
Grades K-5	51.1	67.1	51.0	48.5	NA
Grades 6-8	44.8	42.0	44.5	46.7	NA[2]
Grades 9-12	43.1	36.3	46.0	42.4	NA
Percent missing	*56*	*23*	*41*	*38*	*100*
Percent with a Learning or Physical Disability					
	14	16	16*	16	10**
Percent missing (average)	*7*	*11*	*9*	*5*	*6*
Sample size	1,848	79	993	258	518

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.

SOURCE: Eligible Applicant Database. Test scores obtained from the accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

Background Characteristics of Eligible Applicants

We also collected information about the demographics and socioeconomic status of applicants:

- The overwhelming majority of eligible applicants to the program, 95 percent, are African American (Table 4-8). Private school applicants were somewhat less likely to identify their race

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[65] Both the size of the difference and the size of the samples being compared factor into the determination of statistical significance. As a result, even though the subgroup of SINI public applicants reported the highest rate of learning or physical disabilities (16 percent), that level does not differ statistically from the rates of students from the other subgroups because the sample of SINI public applicants is so small—just 79 students.

as African American (92 percent), whereas applicants from charter schools were somewhat more likely to do so (98 percent).[66]

- The average family income of applicants in 2003 was $18,742. The family incomes of SINI public and non-SINI public applicants averaged slightly less than the other groups, whereas the incomes of private school applicants were somewhat higher than the norm.

- Mothers' education is also considered an important indicator of socioeconomic status. The mothers of applicants averaged almost 13 years of postkindergarten education.[67] Mothers of applicants from non-SINI public schools averaged slightly less formal education than those in the other subgroups, and the mothers of private school applicants averaged somewhat more formal education (13.2 years).

- Nearly half of the mothers of applicants (47 percent) were employed full time at the time of application. Applicants from non-SINI public schools were somewhat less likely to have mothers who worked full time (45 percent), and charter school applicants were significantly more likely (54 percent). About one-fifth of the program applications indicated that the student's mother is married, a percentage that did not vary significantly among the various applicant groups.

Additional information about such baseline survey items as parental views of and satisfaction with their child's school are presented in Appendix C.

4.4   Scholarship Users and Nonusers

Some people who are offered the benefit of a new government program inevitably decide not to avail themselves of it. This has been the case for both government-financed and private-funded school choice programs in the United States. As discussed in Chapter 3, the initial scholarship usage rate for the DC Opportunity Scholarship Program was 75 percent, though the usage rate for members of the impact subsample was somewhat lower, at 62 percent.

Those earlier studies of school choice programs found that students who actually use scholarships tend to differ modestly from students who receive scholarships but do not use them.[68] Most, but not all, differences suggested that scholarship users are somewhat more advantaged academically and in terms of family background than students who decline to use their scholarships.

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[66] Again, the proportion of applicants who are African American was highest among the SINI public subgroup, but the small size of that subgroup means that we cannot know with confidence that it is significantly different from the norm in that regard.

[67] Comparing the applicant data to census data for the DC for all adults ages 25 to 64 years old in households that are at or below 185 percent of poverty in the District indicates that the mothers of program applicants have higher levels of educational attainment. This may or may not suggest that applicant families are relatively advantaged, because the census numbers include men, whose educational attainment tends to be lower than that of women. Although the baseline application and survey requested information about the applicant's birth father, only 10 to 15 percent of applications included responses to those questions.

[68] William G. Howell, "Dynamic Selection Effects in Means-Tested, Urban School Voucher Programs," *Journal of Policy Analysis and Management 23*, No. 2, Spring 2004, pp. 225-250; William G. Howell and Paul E. Peterson, with Patrick J. Wolf and David E. Campbell, *The Education Gap: Vouchers and Urban Schools* (Washington, DC: Brookings, 2002), pp. 65-80; John F. Witte, *The Market Approach to Education* (Princeton, 2000), pp. 60-61.

Table 4-8.   Demographic Characteristics of Eligible Applicants by School Type: Spring 2004

Characteristics	Total	Public SINI	Non-SINI Public	Charter	Private
Percent, by Race					
African American	95	96	96	98*	92**
Other race[1]	5	4	4	2*	8**
Percent missing	*9*	*1*	*8*	*5*	*13*
Percent of Students whose Mothers have the Following Level of Education					
No high school diploma	13	20	15**	9*	10*
High school diploma/GED	29	27	32	30	24
Some college, no degree	32	32	31	37	32
Associates degree or higher	25	22	21*	23	33*
Percent missing	*13*	*16*	*13*	*18*	*12*
Mother's Average Years of Schooling	12.77	12.62	12.56**	12.85	13.15**
Percent missing	*13*	*16*	*13*	*17*	*12*
Average Family Income	$18,742	$16,033*	$18,021*	$19,328	$20,246**
Percent missing	*0*	*0*	*0*	*0*	*0*
Percent of Students whose Mothers are Employed Full Time	47	43	45*	54*	49
Percent missing	*16*	*20*	*16*	*18*	*14*
Percent of Students whose Mothers are Married	19	21	19	16	22
Percent missing	*12*	*14*	*11*	*13*	*13*
Sample size	1,848	79	993	258	518

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] "Other race" includes respondents who were identified as white, Asian, American Indian, Alaska Native, Pacific Islander, or multiracial. Respondents classified as "multiracial" if more than one race category was selected.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: Eligible Applicant Database.

Differences between scholarship users and nonusers in the impact sample are a particular concern, since it could affect the ability of the evaluation to generate reliable assessments of program impact. Fortunately, the scholarship user and nonuser subgroups within the impact are similar in almost all key respects (Table 4-9, Impact Sample columns). Although users are less likely than nonusers to report having a learning or physical disability (12 percent versus 27 percent), users are statistically comparable to nonusers regarding a number of important academic and family background factors including baseline test scores, race and ethnicity, income, and mother's years of schooling and employment status.

A comparison of the user and nonuser subgroups in the larger Program Sample reveals a few more statistically significant differences than in the Impact Sample. Among all the scholarship recipients in the DC Opportunity Scholarship Program, the 1,027 who actually used the scholarship to enroll in a preferred private school differed from the 339 nonusers in several important respects (Table 4-9, Program Sample columns). The notable differences between scholarship users and nonusers in the Program Sample included the following (see Appendix D for the full set of comparisons):

- Users entering grades K to 5 scored somewhat higher in reading (8.8 NPR) and mathematics (9.7 NRP) than nonusers. However, this result should be interpreted with extreme caution, as baseline test scores were available for less than half of the students.

- Nine percent of users reported having a learning or physical disability compared to 29 percent of nonusers.

- Mothers of scholarship users reported .2 more years of education than mothers of nonusers.

There were no statistically significant differences between scholarship users and nonusers in the Program Sample regarding the following:

- Test-score performance for students in grades 6 to 8 or 9 to 12,
- Student's race or ethnicity,
- Family income, or
- Mother's employment.

It is impossible to know at this point if the sizeable and consistent difference between scholarship users and nonusers regarding learning or physical disabilities is the result of parental decisions regarding what is best for their child or limitations in the ability of participating private schools to accommodate the special educational challenges that some scholarship students face. At the same time, there is no evidence in the data that scholarship recipients of differing races, ethnicities, or family incomes are differentially willing or able to use an Opportunity Scholarship to switch to a private school of their parent's choosing.

Table 4-9. Educational and Demographic Characteristics of the Users and Nonusers in the Impact Sample and Program Sample, Spring 2004

Characteristics	Impact Sample			Program Sample		
	Users	**Nonusers**	**Difference**	**Users**	**Nonusers**	**Difference**
Baseline Test Scores[1]						
Average Reading Percentile						
Grades K-5	NA	NA	NA	49.1	40.3	8.8**
Grades 6-8	39.9	38.9	1.1	39.8	38.1	1.8
Grades 9-12	39.6	27.7	11.9	30.0	23.6	6.4
Percent missing (average)	*16*	*20*		*56*	*41*	
Average Mathematics Percentile						
Grades K-5	NA	NA	NA	53.4	43.8	9.7**
Grades 6-8	44.8	43.0	1.8	44.9	42.3	2.7
Grades 9-12	49.4	46.1	3.4	40.3	43.8	-3.5
Percent missing (average)	*14*	*19*		*56*	*40*	
Percent of Students with a Learning or Physical Disability	12	27	-15**	9	29	-20**
Percent missing (average)	*6*	*5*		*6*	*8*	
Percent, by Race						
African American	92	96	-4	94	96	-2
Other race[2]	8	4	4	6	4	2
Percent missing	*7*	*5*		*6*	*6*	
Percent Hispanic (any race)	10	7	2	7	7	1
Percent missing	*3*	*5*		*4*	*7*	
Average Family Income	$18,342	$19,457	-$1,115	$18,652	$17,841	$812
Percent missing	*0*	*0*		*0*	*0*	
Mother's Average Years of Schooling	12.5	12.7	-0.3	12.7	12.5	.2*
Percent missing	*14*	*23*		*11*	*19*	
Percent of Students whose Mothers are Employed Full Time	49	50	-1	46	44	2
Percent missing	*16*	*25*		*13*	*23*	
Sample size	185	114		1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.

[2] "Other race" includes respondents who were identified as white, Asian, American Indian, Alaska Native, Pacific Islander, or multiracial. Respondents classified as "multiracial" if more than one race category was selected.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: Eligible Applicant Database. Test-scores obtained from the accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

4.5   Applicant Response Rates Among Public and Private Schools

In addition to examining the impact on students, the law also calls for the evaluation to examine the impact of the program on schools in the District. Such "systemic effects" could take place if significant percentages of students in the public school system or in specific schools apply for, receive, and use scholarships to transfer to private schools. With regard to the public schools, the DC Opportunity Scholarship Program could have either positive or negative effects. One theoretical argument suggests that scholarship programs will divert funding and the most motivated students from public schools to private schools, leaving the public school system with fewer resources with which to educate the remaining student population.[69] Another theory is that schools behave in a manner similar to firms and will respond to competition by becoming more efficient.[70] In the case of schools, it is the risk of losing students and subsequently funding that may provide an impetus for public schools to provide additional services and produce better student outcomes. Private schools in jurisdictions with greater school choice may face similar incentives to improve or expand in order to retain as many of their current students and attract more.

In practice, two features of choice programs are required if effects on public schools are to be observed. First, the threat of losing students to the choice program must be significant.[71] It is important to note that the threat need not be that students actually take the scholarship (at least initially) but that the program is available to a large share of the student population. The second feature is that the loss of students to the choice program also entails a loss of funding. However, according to a Memorandum of Understanding between the Office of the DC Mayor and DCPS, public schools that lose students as a result of the Opportunity Scholarship program will be reimbursed for any lost resources, thereby eliminating any fiscal impact of the program on specific public schools, at least in the short run. Still, an analysis of the response of public schools to the scholarship program is both mandated and of policy interest.

Public School Application and Use Rates

To provide a foundation for a later analysis of the effects of the DC Opportunity Scholarship Program on DC schools, we first need to describe the extent to which public schools have so far been affected by program applications and scholarship users—an indicator of the seriousness of the pressure that the public schools may face. There are 197 public schools in Washington, DC, including all DCPS schools and all public charter schools.[72] We ranked those schools based on the proportion of students in the school who applied for the program or used a scholarship to transfer out of the school, from 0 percent to at least 5 percent (Table 4-10):

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[69] Henry M. Levin, *Privatizing Education: Can the Marketplace Deliver Choice, Efficiency, Equity, and Social Cohesion?* (Boulder, CO: Westview, 2001), 6.

[70] See especially Caroline M. Hoxby, "School Choice and School Competition: Evidence from the United States," *Swedish Economic Policy Review* 10 (2003): 11-67.

[71] For example, see David L. Armour and Brett M. Peiser, "Interdistrict Choice in Massachusetts," in Paul E. Peterson and Bryan C. Hassel, eds., *Learning From School Choice* (Washington, DC: Brookings, 1998), 157-186.

[72] The list of schools was obtained from the web sites of DCPS and the DC Public Charter School Board.

Table 4-10. **Public School-Level Scholarship Application and Use Rates: Spring 2004 and Fall 2004**

Percent of Student Body	Applied for the Program		Used a Scholarship	
	Number of Schools	Percent of Schools	Number of Schools	Percent of Schools
0	25	13	51	26
0.1 – 1.0	47	24	63	32
1.1 – 2.0	56	28	47	24
2.1 – 3.0	38	19	21	11
3.1 – 4.0	12	6	12	6
4.1 –	19	11	3	2
Total	197	100	197	100

NOTE: Detail may not sum to totals because of rounding.

SOURCES: Application and usage numbers by school generated from the Applicant Database and WSF Placement Database. Enrollment figures for DCPS are from the 2002-23 school year and were obtained from Membership in the District of Columbia Public Schools by School and Grade, October 7, 2003, available on the DCPS web site, www.k12.dc.us/dcps/data/enrollment/membership-Oct.703_official_.pdf. Enrollment figures for DC public charter schools chartered by the District Board of Education are from the 2002-03 school year and were obtained from the Common Core of Data, National Center for Education Statistics. Enrollment figures for the DC public charter schools chartered by the DC Public Charter School Board are from the 2003-04 school year and were obtained from the Board's web site at www.dcpubliccharter.com.

- Over one-quarter of the public schools in the District experienced no student losses due to the program.

- Another 56 percent of DCPS schools had program-related transfers out that totaled less than 2 percent of their student populations.

- Seventeen percent of District schools lost about 2 to 4 percent of their students.

- Finally, 2 percent of the public schools in the District experienced more significant student transfers of over 4 percent under the program.

For now, it appears that very few public schools in the District have experienced a significant loss of students to the DC Opportunity Scholarship Program.

Private School Reliance on DC Choice Program

Much of the discussion surrounding K to 12 scholarship programs revolves around the composition of students entering private schools. Schools participating in choice programs make a second, perhaps equally important, set of decisions about the number of students to admit. The larger the share of entering students that come through these programs, the greater is the investment of the private school in the program and the potential exposure to the challenges of assimilating a sizable population of new private

school students who are using scholarships. Moreover, private schools with a large proportion of their student body comprised of Opportunity Scholarship students may become relatively dependent on the program for the necessary resources to operate. Or they may choose to continue to expand their facilities in order to serve additional scholarship students.

Fifty-eight DC private schools participated in the DC Opportunity Scholarship Program in the first year. Of those, reliable enrollment data were available for 54 schools. Our analysis indicates that, for most of the participating private schools, students using DC Choice Opportunity Scholarships make up a significant share of their enrollments (Table 4-11)[73]:

- In 28 percent of the schools over 20 percent of their students are using Opportunity Scholarships this year, including 9 percent of the schools with over half of their students using program scholarships.

- In an additional 37 percent of the private schools, scholarship students make up between 5 and 20 percent of their student population this school year.

- Slightly more than one-third will have student bodies comprised of less than 5 percent program scholarship students in 2004-05.

The extent of student losses and gains due to the program suggest that private schools in the District may be more affected by the initial implementation of the DC Opportunity Scholarship Program than are DC public schools at this point in time.

Table 4-11.   Private School Reliance on Scholarship Program: Fall 2004

	Schools with Scholarship Users	
Percent of Student Body	**Number of Schools**	**Percent of Schools**
0	4	7
0.1 – 5.0	15	28
5.1 – 10.0	6	11
10.1 – 15.0	7	13
15.1 – 20.0	7	13
20.1 – 33.3	7	13
33.4 – 50.0	3	6
50.1 –	5	9
Total	54	100

NOTE: Detail may not sum to totals because of rounding.

SOURCE: Scholarship users drawn from the WSF Placement Database. Private school enrollments are for the 2003-04 school year and are drawn from the WSF DC Opportunity Scholarship Directory of Participating Schools.

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[73] Students using DC Opportunity Scholarships at private schools include both students who transferred to those schools from public schools and students who were already attending the private school before they applied for and received a scholarship through the lottery.

Appendix A

Appendix A: Analysis of Study Power

To ensure that the experimental evaluation of program impact will produce reliable findings, the sample size must be large enough to enable the analysis to answer the study's central questions and to measure program effects that are large enough to be both meaningful in students' lives and relevant to policy debates about the efficacy of educational interventions. The ability of a study to do so is a function of the study's precision or "power."

Minimum detectable effects are a simple way to express the statistical precision of an impact study design. Intuitively, a minimum detectable effect is the smallest program impact that could be measured with confidence given random sampling and statistical estimation error.[74] For example, from a benefit-cost perspective one might ask whether a proposed sample could reliably detect the smallest impact needed for a program to "break even" (that is, produce benefits equal to costs). One would want a sample that was large enough to ensure that an estimated impact around this "break-even" point was a reliable indicator of the program's true impact and not just due to chance variation. A smaller sample might enable the study to detect only impacts that are well above this break-even point and thus very difficult or costly to attain. A study that used a sample of this size would therefore miss an opportunity to produce reliable estimates of policy-relevant impacts. Hence, it would be "under-powered" statistically.

The goals of statistical power analysis and sample size estimation are to determine how large a sample is needed to make accurate and reliable statistical judgments; and how likely a statistical test will detect effects of a given magnitude.

To determine the sample size required for the scholarship program, we use the following information. Suppose the statistical model is given by:

$$T = \gamma_1 + \gamma_2 P + \gamma_3 X + \varepsilon$$

where T = test score,
         P = treatment status, and
         X demographics, baseline score and time controls.
         γ_2 is the treatment effect

The null hypothesis, i.e. the initial assumption that the treatment has no effect, is $\gamma_2 = 0$. The power is the probability of rejecting this null if the treatment actually has an effect.

Let:
     α be the statistical significance level, set equal to 0.05 (i.e. 95 percent confidence).
     $(1-\beta)$ be the power of the test (acceptable range of 80-90 percent).
     n_T be the sample size for the treatment sample.
     n_C be the sample size for the control sample.
     σ be the standard deviation for an outcome of interest, in this case, test scores.
     ρ be the correlation between a given student's test scores at baseline and outcome year 1.

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[74] We define a minimum detectable effect as the smallest true program impact that would have an 80 percent chance of being detected (have 80 percent power) using a two-tail hypothesis test at the 0.05 level of statistical significance. We use a two-tail test because it is conceivable that the scholarship program could have either a negative or positive effect on test scores, even though the policy question is about improved test scores. Clustering of students may also affect the sample size calculations, however the extent of that clustering is unknown at this time. When the data is analyzed, it may be necessary to increase the sample needed or the size of the effect that can be detected.

Estimated Sample Size Required For Desired Power Analyzing Test Scores in Outcome Years 1 and 3

Although the evaluation will analyze outcomes such as test scores in every year post baseline, for simplicity, we present the power analysis numbers for two representative years – the first and third outcome years. Central to analytic power is the sample size of study participants *who actually provide outcome information in a given year*. Thus, this power analysis factors in expected study attrition over time. It also takes account of the correlation between baseline test scores and outcome test scores. By including baseline test scores in the statistical estimation of outcome test scores, analysts make the estimation of the impact of the treatment on the outcome more precise, thus increasing power. Since baseline test scores were obtained for most but not all members of the impact sample, the power analysis is conducted under conditions of the absence of baseline test scores and the presence of baseline test scores. Finally, all else equal, power is greatest when the treatment and control groups are the same size. It is unlikely that this condition will be met in practice. Therefore, the sample size estimations are made under the condition of balanced treatment and control groups and the more likely scenario of twice as many treatment as control group members.

Assume: H_o: $\gamma_2 = 0$
H_1: $\gamma_2 \neq 0$
$\alpha = 0.05$
$\boldsymbol{\sigma} = 20$
$\rho = 0.57$ (correlation between baseline and post test scores)
Annual study attrition of 15 percent from treatment and control group

We would like our statistical tests of program impacts to have at least **80 percent power** for detecting a difference in the means of the treatment and control groups of 0.15 to 0.20 standard deviations.[75] That is, power = $(1-\beta) = 0.80$, and $\Delta = |\gamma_2| = 0.15\sigma$ in the first case; and $\Delta = |\gamma_2| = 0.20\sigma$ in the second case. The assumptions above regarding test score standard deviations and correlations are drawn from the actual data obtained from the previous experimental evaluation of the privately-funded Washington Scholarship Fund program, 1998-2001.[76] Though characterized as assumptions, they are likely to be more accurate than mere educated guesses because they are based on actual data from a similar analysis.

Without the aid of baseline test scores, over 1,600 students would need to be subject to random assignment for the impact analysis to have 80 percent power in detecting a program effect of 0.15 standard deviations in outcome year 1(Table A1). Accounting for study attrition, the required sample size would need to be almost 2,300 students in order to have sufficient power to identify such a moderately-size effect in outcome year 3. Should the test score impact of the program be somewhat larger, 0.20 standard deviations, the analysis would be adequately powered for year 1 if only a little over 900 students were randomly assigned and for year 3 if slightly less than 1300 students were randomized.

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[75] A number of prominent evaluations of educational interventions have reported statistically significant impacts near or within the range of 0.15 to 0.20 standard deviations over one to three years. Such impacts are generally characterized as moderate in size and policy relevant. For examples, see Howell et al., *The Education Gap,* 151; Alan B. Krueger, "Experimental Estimates of Education Production Functions," *Quarterly Journal of Economics* 114, no. 2, (May 1999): 525; Ann Flanagan, Jennifer Kawata, and Stephanie Williamson, *Improving Student Achievement: What NAEP Test Scores Tell Us* (Santa Monica, CA: RAND Corporation, 2000), 59.

[76] See Patrick J. Wolf, Paul E. Peterson, and Martin R. West, *Results of a School Voucher Experiment: The Case of Washington, D.C. After Two Years,* Paper delivered at the National Center for Education Statistics 2001 Data Conference, Mayflower Hotel, Washington, D.C., July 25-27.

Table A1. Required Sample Size: No Baseline Scores, Balanced Treatment and Control Groups

| Treatment Group Equal to Control Group | No Baseline Test Score 0.15σ | | No Baseline Test Scores 0.20σ | |
| | Year of Evaluation | | Year of Evaluation | |
	One	Three	One	Three
N_T	821	1,137	462	640
N_c	821	1,137	462	640
Total N	1,642	2,274	924	1,280

SOURCE: Unnecessary, as numbers are from statistical formulas and not actual data.

Under the more likely condition of twice as many students in the treatment than control groups, the sample sizes required to detect a 0.15 or 0.20 standard deviation program effect after one and three years are slightly larger (Table A2). Still, should the test score impact be as large as 0.20 standard deviations, the analysis would be able to detect it in year 1 if somewhat more than 1,000 students were randomized, and in year 3 if somewhat more than 1,400 students were randomly assigned.

Table A2. Required Sample Size: No Baseline Scores, Treatment Group Larger Than Control Group

| Treatment Group Larger Than Control | No Baseline Test Score 0.15σ | | No Baseline Test Scores 0.20σ | |
| | Year of Evaluation | | Year of Evaluation | |
	One	Three	One	Three
N_T	1,232	1,705	693	959
N_c	616	853	347	480
Total N	1,848	2,558	1,040	1,439

SOURCE: Unnecessary, as numbers are from statistical formulas and not actual data.

Since including baseline test scores in the estimation of experimental test score impacts improves the precision and subsequent power of the analysis, and over 75 percent of the members of the initial impact sample were tested at baseline, the actual sample size needed for a sufficiently powered analysis may be closer to the figures presented below (Table A3). With the aid of baseline test scores, about 2,000 would need to be randomly assigned to detect a 0.15 standard deviation effect in year 3, and only 1,100 would need to be randomized in order to detect a 0.20 standard deviation effect in year 3.

Table A3. **Required Sample Size: Baseline Scores, Balanced Treatment and Control Groups**

Treatment Group Equal to Control Group	Baseline Test Scores 0.15σ		Baseline Test Scores 0.20σ	
	Year of Evaluation		Year of Evaluation	
	One	Three	One	Three
N_T	707	979	398	550
N_c	707	979	398	550
Total N	1,414	1,960	796	1,100

SOURCE: Unnecessary, as numbers are from statistical formulas and not actual data.

Under the more likely condition of twice as many students in the control than treatment, the sample sizes required to detect a 0.15 or 0.20 standard deviation program effect after one and three years are slightly larger (Table A4). Still, should the test score impact be as large as 0.20 standard deviations, the analysis would be able to detect it in year 1 if just under 900 students were randomized and in year 3 if somewhat more than 1,200 students were randomly assigned.

Table A4. **Required Sample Size: Baseline Scores, Treatment Group Larger Than Control Group**

Treatment Group Larger Than Control	Baseline Test Score 0.15σ		Baseline Test Scores 0.20σ	
	Year of Evaluation		Year of Evaluation	
	One	Three	One	Three
N_T	1,060	1,467	596	826
N_c	531	734	300	414
Total N	1,591	2,201	896	1,240

SOURCE: Unnecessary, as numbers are from statistical formulas and not actual data.

Appendix B

Appendix B
Characteristics of Eligible Applicants versus Nonapplicants:
DC Public School Students

The statute requires that the annual evaluation reports on the program include a comparison between program participants and nonapplicants from District public schools. The DCPS Office of Communications and Public Information provided the technical evaluation team with data that permit comparisons such as between public school applicants and nonapplicants as well as participants and nonapplicants, using information regarding a modest number of educational and background characteristics that DCPS collects on all of its students. Because the only individual signifiers that were available in the DCPS database were student names, birthdates, and grades, we were only able to confirm the identity in the database of 1077 of 1343 (i.e., 80 percent) public school eligible applicants to the program.[77] Thus, the comparisons presented below should be interpreted with caution.

Chapter 4 of the report includes four tables that compare various samples of program applicants and participants to DCPS nonapplicants. Appendix Table B1 provides a fifth comparison, of all eligible applicants in the database to all nonapplicant DCPS students, regardless of free or reduced-price lunch status and broken out by grade band. Because this applicant sample includes students who did not complete the accountability testing and students who were not participating in the free or reduced-price lunch program, it is a more expansive applicant sample than some of the more restrictive samples used in the comparison tables in Chapter 4. Although this comparison is informative, conclusions regarding the comparisons should be made with caution, as the sample of eligible applicants is limited to low-income students whereas the sample of DCPS nonapplicants includes at least some middle to high income students.

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[77] Many of the names of eligible applicants are subject to alternative spellings and the birth date variable was missing some data and included some entries that did not appear to be valid.

Table B1.   Characteristics of District Public School Students, by Grade Band, Program Applicants Versus Nonapplicants: Spring 2004

Characteristic	Grades K-5			Grades 6-8			Grades 9-12		
	Applicants	DCPS Sample	Difference	Applicants	DCPS Sample	Difference	Applicants	DCPS Sample	Difference
Baseline Test Scores[1]									
Average Reading Percentile	46.86	46.37	0.49	39.98	40.65	-0.68	31.66	32.91	-1.24
Percent missing	*43*	*44*		*3*	*6*		*4*	*14*	
Average Mathematics Percentile	50.95	51.18	-0.23	44.91	46.11	-1.20	43.09	41.26	1.83
Percent missing	*42*	*43*		*2*	*5*		*4*	*13*	
Percent in Special Education	16	12	4*	18	16	2	13	15	-1
Percent missing	*41*	*42*		*1*	*3*		*3*	*10*	
Percent, by Race									
African American	94	82	11**	89	87	2	94	86	8**
Other race[2]	6	18	-11**	11	13	-2	6	14	-8**
Percent missing	*2*	*2*		*0*	*1*		*0*	*1*	
Percent, by Gender									
Female	52	50	2	49	51	-1	48	51	-3
Percent missing	*0*	*0*		*0*	*0*		*0*	*1*	
Percent Participating in Free/Reduced-price Lunch Program	86	71	15**	84	72	12**	81	60	21**
Percent missing	*4*	*4*		*0*	*0*		*0*	*0*	
Sample size	614	30,468		308	17,279		155	19,121	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.

[2] "Other race" includes students who were identified as Hispanic, white, Asian, American Indian, or Alaska Native. Because of small cell sizes, Hispanic was combined with other race in this table.

SOURCE: Accountability testing database for DC public and charter schools, DCPS Office of Communications and Public Information.

Appendix C

Appendix C
Characteristics of Student Eligible Applicants by Type of Previous School

This appendix presents additional detail about the eligible applicants to the program in the initial year of implementation. Table C1 describes the forecasted entering grades of applicants, by school type. Table C2 presents information about student race and gender. Tables C3 and C4 describe the relationship of the adult applicant to the child applicant as well as parental involvement in the child's education. Finally, Tables C5-C8 describe the responses of applicants to various questions about school facilities, problems at school, parental satisfaction with school, and the features that parents are looking for in a school.

These comparisons are merely descriptive in nature. Since students with different characteristics and motivations self-select themselves into different types of schools prior to applying for the program, none of the comparisons presented here should be interpreted as meaning that the types of schools that the students attended actually were responsible for the differences. For example, most applicants from private schools seek a scholarship in order to remain in their school, while all applicants from public schools are trying to switch to a private school. Therefore, it is not surprising that the parents of private school applicants were much more satisfied with their child's school than were the parents of public school applicants.

Table C1.   Percent of Students Entering Various Grades, Eligible Applicants: Spring 2004

Grade Level[1]	Total	Public SINI	Non-SINI Public	Charter	Private
Kindergarten -1	20	10*	25**	13**	16**
2-3	18	11	19	16	18
4-5	18	9*	21**	16	15*
6-7	19	11	19	21	20
8-9	15	23	11**	22**	19**
10-12	10	35**	5**	12	13**
Percent missing	*0*	*0*	*0*	*0*	*0*
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

[1]   Grade levels were combined because cell sizes were too small to report separately by grade.

SOURCE: Eligible Applicant Database.

Table C2.   Student's Race and Gender, Eligible Applicants: Spring 2004

Characteristic	Total	Public SINI	Non-SINI Public	Charter	Private
Percent, by Race					
African American	95	96	96	98*	92**
Other race[1]	5	4	4	2*	8**
Percent missing	*9*	*1*	*8*	*5*	*13*
Percent, by Gender					
Female	51	51	50	49	54
Percent missing	*1*	*1*	*1*	*0*	*1*
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

[1]   "Other race" includes respondents who were identified as white, Asian, American Indian, Alaska Native, Pacific Islander, or multiracial. Respondents classified as "multiracial" if more than one race category was selected.

NOTE: Detail may not round to totals because of rounding.

SOURCE: Eligible Applicant Database.

Table C3.   Adult Applicant's Relationship to Student, Eligible Applicants: Spring 2004

Characteristic	Total	Public SINI	Non-SINI Public	Charter	Private
Percent of Applicants who are the Child's					
Parent	90	92	90	91	89
Other[1]	10	8	10	9	11
Percent missing	*3*	*5*	*3*	*2*	*2*
Percent of Applicants who are the Child's Mother	82	84	83	86	79*
Percent missing	*18*	*16*	*17*	*14*	*21*
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

[1]   "Other" includes grandparent, step parent, other relative, and other adult.

NOTE: Detail may not round to totals because of rounding.

SOURCE: Eligible Applicant Database.

Table C4.   Parental Involvement with Child's Education, Eligible Applicants: Spring 2004

Characteristic	Total	Public SINI	Non-SINI Public	Charter	Private
Percent of Parents who Participated in the Following Activities with Their Child in the Past Month					
Discussed experiences at school	99	97	99	100	99
Helped with mathematics or reading not related to homework	91	78**	93**	92	88*
Worked on homework	95	86**	96**	94	94
Worked on a school project	87	76**	85**	87	93**
Attended school activities with child	89	65**	88	87	95**
Average percent missing	*7*	*9*	*8*	*5*	*6*
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table C5.   School Facilities and Homework, Eligible Applicants: Spring 2004

Characteristic	Total	Public SINI	Non-SINI Public	Charter	Private
Percent of Parents Reporting that Students Have the Following Resources at Their School					
Special programs for non-English speakers	41	43	50**	27**	33**
Nurse's office	77	92**	92**	73	45**
Prepared Lunches	67	84**	81**	64	40**
Cafeteria	80	97**	92**	76*	59**
Special programs for advanced learners	41	30	37**	35	53**
Arts program	70	53**	66**	66	79**
Special education programs	60	57	67**	58	47**
Computer lab	79	79	74**	80	89**
Gym	63	89**	63	46**	67*
Child counselors	79	84	82**	75	75*
Library	82	85	85**	62**	85
After-school program	80	70*	80	75*	85**
Music program	71	61	68**	60**	84**
Individual tutors	44	27*	37**	36*	62**
Average Hours of Daily Homework	1.04	.68**	.85**	1.08	1.41**
Percent missing	*8*	*13*	*9*	*8*	*5*
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table C6.   Problems at Child's School, Eligible Applicants: Spring 2004

Characteristic	Total	Public SINI	Non-SINI Public	Charter	Private
Percent of Parents who Believe the Following Problems at School are Serious					
Fighting	44	85**	58**	45	12**
Tardiness	44	86**	52**	44	23**
Destruction of property	32	79**	42**	22**	10**
Truancy	32	76**	42**	31	10**
Cheating	23	64**	28**	23	9**
Guns or other weapons	18	54**	22**	13	6**
Drug distribution	14	38**	18**	10	6**
Drug and alcohol use	14	35**	16**	11	8**
Average percent missing	9	11	11	5	7
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table C7.   Parental Satisfaction with School, Eligible Applicants: Spring 2004

Characteristic	Total	Public SINI[1]	Non-SINI Public	Charter	Private
Percent of Parents 'Very Satisfied' with the Following Aspects of Their Child's School					
Amount of information from teachers	29		17**	25	58**
Freedom to observe religious traditions	24		7**	13**	63**
Class size	23		8**	15**	57**
Safety	27		12**	22*	60**
Respect between teachers and students	28		13**	23*	63**
Location	33		25**	23**	58**
Parental support for school	28		16**	22**	58**
Academic quality	26		11**	21*	61**
Discipline	27		12**	24	61**
Racial mix of students	21		12**	17	42**
Average percent missing	*7*		*9*	*5*	*5*
Percent of Parents who Gave the School a Grade of					
A or B	53	9**	40**	46**	88**
C	29	26	37**	37**	10**
D	11	32**	14**	11	1**
F	7	32**	8*	7	1**
Percent missing	*5*	*6*	*7*	*2*	*4*
Average Grade Parent Gave School (4.0 Scale)	2.50	1.15**	2.20**	2.36*	3.33**
Percent missing	*5*	*6*	*7*	*2*	*4*
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

[1] Parent satisfaction for students in public SINI schools could not be reported because the cell sizes were too small for some response categories

NOTE: Detail may not round to totals because of rounding.

SOURCE: Eligible Applicant Database.

Table C8.   Valued Features of Schools, Eligible Applicants: Spring 2004

Characteristic	Total	Public SINI	Non-SINI Public	Charter	Private
Percent of Parents who Cited the Following as the Most Important Reason in Choosing a School (Top Four Choices)[1]					
Academic quality	48	54	52*	43	44
Services for students with special needs	5	5	6*	3	4
Convenient location	13	12	11	15	15
School safety	17	17	16	21	15
Average percent missing	*30*	*25*	*32*	*27*	*29*
Sample size	1,848	79	993	258	518

*   Significantly different from the average of the other subgroups at the 95 percent confidence level.
**   Significantly different from the average of the other subgroups at the 99 percent confidence level.

[1] Parents were given a wide variety of reasons to choose from, but only the top four are reported in this table, as cell sizes were too small to report for all response categories. The average percent missing is across all response categories.

SOURCE: Eligible Applicant Database.

Appendix D

Appendix D
Characteristics of Scholarship Users and Nonusers

In addition to considering the characteristics of eligible applicants to a scholarship program, it is also important to examine the characteristics of the students who actually use a scholarship compared to those who do not use one. A total of 1,027 scholarship recipients had used their scholarship to matriculate at a private school as of September 10, 2004. A total of 339 recipients had not used their scholarship by that date. The tables in this appendix present comparisons between the scholarship users and nonusers on a variety of educational, background, and experiential characteristics. Selected items from these comparisons are summarized in section 4.4 of the report. The most noteworthy additional findings from these data are that:

- Users were more likely than nonusers to be entering kindergarten or first grade, less likely than nonusers to be entering the more slot-constrained grades 7 through 12.

- Users had spent an average of 6.1 years in their current residence compared to 7.7 years for nonusers.

- The mothers of scholarship users were somewhat less likely to lack a high school diploma and somewhat less likely to have a graduate degree than were the mothers of nonusers.

- Fifty-three percent of users were female compared to just 45 percent of nonusers.

- Students were less likely to use a scholarship if their parents reported that their previous school had special programs for non-English speakers, advanced learners, or students in special education.

- Students were more likely to use a scholarship if their parents described drugs or alcohol use as a problem at their previous school.

- Students were more likely to use a scholarship if their parents listed "school safety" as the most important reason for choosing a school, less likely to use a scholarship if they listed "services for students with special needs" as the most important reason.

There were no statistically significant differences between scholarship users and nonusers regarding a number of key educational and background factors discussed in section 4.4 as well as mother's marital status and the overall grade that parents gave to their child's previous school.

Table D1.   Student's Educational Characteristics, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Baseline Test Scores[1]			
Average Reading Percentile			
Grades K-5	49.12	40.30	8.82**
Grades 6-8	39.82	38.06	1.76
Grades 9-12	30.00	23.57	6.43
Percent missing	*56*	*41*	
Average Mathematics Percentile			
Grades K-5	53.47	43.75	9.72**
Grades 6-8	44.91	42.26	2.65
Grades 9-12	40.30	43.83	-3.53
Percent missing	*56*	*40*	
Percent with a Learning or Physical Disability	9	29	-20**
Percent missing	*6*	*8*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] Test-score results are in terms of National Percentile Ranks, with 50 as the median score.

SOURCE: Eligible Applicant Database. Test-scores obtained from the accountability testing database for District of Columbia public and charter schools, DCPS Office of Communications and Public Information.

Table D2. Percent of Students by Forecasted Grade Level, Users and Nonusers: Spring 2004

Grade Level	Users	Nonusers	Difference
Kindergarten	14	9	5*
1	13	6	8**
2	11	9	3
3	12	9	3
4	11	9	2
5	11	13	-2
6	8	9	-1
7	7	13	-6**
8	7	11	-4*
9	2	4	-1
10	2	6	-4**
11-12[1]	1	4	-3**
Percent missing	*0*	*0*	
Sample size	1,027	339	

* Statistically significant at the 95 percent confidence level.
** Statistically significant at the 99 percent confidence level.

[1] Cell size too small to report separately by grade.

SOURCE: Eligible Applicant Database.

Table D3.   Family Income, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Students whose Family Income is			
Less than $5,000	11	11	0
$5,000-$10,999	18	24	-6*
$11,000-$24,999	43	38	5
$25,000-$39,999	25	24	1
$40,000 or more	3	4	0
Average Family Income	$18,652.49	$17,840.70	$811.79
Percent missing	*0*	*0*	
Percent of Students whose Families Received the Following Forms of Government Assistance			
Total wages, salaries, tips	53	44	9**
Housing Assistance	7	6	1
TANF (Welfare)	22	28	-7*
Supplemental Security Income	3	6	4**
Social Security	10	14	-3
Child Support	8	8	0
Gifts from family/friends	1	1	0
Interest and dividend income	1	2	0
Other income	7	8	-2
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table D4.   Mother's Employment and Residence, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Students whose Mothers are Employed			
Full time	46	44	2
Part time	15	15	0
Looking for work	30	30	-1
Not looking	10	11	-1
Percent missing	*13*	*23*	
Mother's Average Years Work Experience	7.81	7.98	-17
Percent missing	*51*	*57*	
Average Years at Current Residence	6.11	7.69	-1.58**
Percent missing	*2*	*3*	
Percent who Rent and do not Own	86	82	3
Percent missing	*14*	*17*	
Monthly Rent/Mortgage Payment	$618.38	$586.36	$32.02
Percent missing	*5*	*5*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

NOTES: Detail may not sum to total because of rounding. Mother response is for biological parent only.

SOURCE: Eligible Applicant Database.

Table D5.   Mother's Education, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Students whose Mothers Attained the Following Level of Education			
No high school diploma	11	19	-7**
GED	6	6	0
High school diploma	25	25	0
Some college	35	30	5
Vocational (2 yr) degree or certificate	15	14	1
College graduate	7	4	3
Graduate degree	1	2	-2*
Percent missing	*11*	*19*	
Average Years of Mother's Education	12.73	12.50	23*
Percent missing	*11*	*19*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

NOTE: Mother response is for biological parent only.

SOURCE: Eligible Applicant Database.

Table D6. **Mother's Marital Status and Household Composition, Users and Nonusers: Spring 2004**

Characteristic	Users	Nonusers	Difference
Percent of Students whose Mothers are			
Single, never married	61	58	2
Married	19	16	2
Divorced	10	13	-3
Other[1]	10	12	-1
Percent missing	*10*	*18*	
Household Composition			
Adults in household	1.33	1.31	2
Percent missing	*0*	*3*	
Children in household	2.83	2.70	12
Percent missing	*0*	*3*	
Household size	4.10	3.94	15
Percent missing	*0*	*0*	
Sample size	1,027	339	

* Statistically significant at the 95 percent confidence level.
** Statistically significant at the 99 percent confidence level.

[1] "Other" includes widowed, separated, and divorced, remarried.

NOTE: Mother responses is for biological parent only.

SOURCE: Eligible Applicant Database.

Table D7. **Mother's Ethnicity, Users and Nonusers: Spring 2004**

Characteristic	Users	Nonusers	Difference
Percent of Students whose Mothers are			
African American	93	93	0
Other race[1]	7	7	0
Percent missing	*15*	*22*	
Percent of Students whose Mothers are Hispanic (any race)	8	7	1
Percent missing	*10*	*18*	
Sample size	1,027	339	

* Statistically significant at the 95 percent confidence level.
** Statistically significant at the 99 percent confidence level.

[1] "Other race" includes respondents who were identified as white, Asian, American Indian, Alaska Native, Pacific Islander, or multiracial. Respondent classified as "multiracial" if more than one race category selected.

NOTES: Detail may not sum to total because of rounding. Mother response is for biological parent only.

SOURCE: Eligible Applicant Database.

Table D8.   Student's Ethnicity and Gender, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent, by Race			
African American	94	96	-2
Other race[1]	6	4	2
Percent missing	*6*	*6*	
Percent Hispanic (any race)	7	7	1
Percent missing	*4*	7	
Percent, by Language Most Spoken in Home			
English	93	96	-3
Other language[2]	7	4	3
Percent missing	*4*	*4*	
Percent, by Gender			
Female	53	45	9**
Percent missing	*1*	*2*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] "Other race" includes respondents who were identified as white, Asian, American Indian, Alaska Native, Pacific Islander, or multiracial. Respondent classified as "multiracial" if more than one race category selected.

[2] "Other language" includes all other languages including Spanish and Amharic.

NOTE: Detail may not sum to total because of rounding.

SOURCE: Eligible Applicant Database.

Table D9.   Parental Involvement with Child's Education, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Parents who Participated in the Following Activities with Their Child in the Past Month			
Discussed experiences at school	99	98	0
Helped with mathematics or reading not related to homework	94	90	4**
Worked on homework	97	92	5**
Worked on a school project	86	85	1
Attended school activities with child	90	85	5*
Average percent missing	*8*	*6*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table D10.   School Facilities and Homework, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Parents Reporting that Students have the Following Resources at Their School			
Special programs for non-English speakers	37	54	-17**
Nurse's office	80	89	-9**
Prepared Lunches	70	77	-7*
Cafeteria	81	90	-9**
Special programs for advanced learners	33	46	-12**
Arts program	67	72	-4
Special education programs	57	73	-15**
Computer lab	75	79	-5
Gym	58	68	-10**
Child counselors	78	84	-7*
Library	80	86	-6*
After-school program	82	78	4
Music program	69	72	-4
Individual tutors	37	45	-8*
Average Hours of Daily Homework	.93	.96	-.04
Percent missing	*9*	*7*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table D11.   Problems at Child's School, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Parents who Believe the Following Problems at School are Serious			
Fighting	50	46	4
Tardiness	48	48	1
Destruction of property	35	35	1
Truancy	34	39	-4
Cheating	26	22	4
Guns or other weapons	20	15	4
Drug distribution	16	10	6*
Drug and alcohol use	14	10	5*
Average percent missing	*10*	*9*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table D12. Parental Satisfaction with School, Users and Nonusers, Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Parents 'Very Satisfied' with the Following Aspects of Their Child's School			
Amount of information from teachers	26	23	3
Freedom to observe religious traditions	19	13	6*
Class size	18	17	1
Safety	22	20	2
Respect between teachers and students	23	21	2
Location	31	25	6*
Parental support for school	23	24	0
Academic quality	21	18	3
Discipline	22	20	2
Racial mix of students	17	15	2
Average percent missing	*8*	*9*	
Percent of Parents who Gave the School a Grade of			
A	19	15	4
B	29	31	-3
C	32	32	0
D	13	13	0
F	8	9	-1
Average Grade Parent Gave School (4.0 Scale)	2.37	2.30	7
Percent missing	*6*	*6*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

SOURCE: Eligible Applicant Database.

Table D13.   Valued Features of Schools, Users and Nonusers: Spring 2004

Characteristic	Users	Nonusers	Difference
Percent of Parents who Cited the Following as the Most Important Reason in Choosing a School (Top Four Choices)[1]			
Academic quality	49	47	2
Services for students with special needs	3	13	-10**
Convenient location	13	11	2
School safety	19	11	8**
Average percent missing	*30*	*31*	
Sample size	1,027	339	

*   Statistically significant at the 95 percent confidence level.
**   Statistically significant at the 99 percent confidence level.

[1] Parents were given a wide variety of reasons to choose from, but only the top four are reported in this table, as cell sizes were too small to report for all response categories. The average percent missing is across all response categories.

SOURCE: Eligible Applicant Database.