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Public School Choice: Some Evidence from the National Education Longitudinal Study of 1988

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the National Education Longitudinal
Study of 1988**

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Running head: PUBLIC SCHOOL CHOICE: SOME EVIDENCE
FROM NELS:88

Abstract

Programs to provide parents with opportunities to choose between public schools have increased to the point that more American high school students are enrolled in public "schools of choice" than private schools. Using indicators of students' "exercise of choice" and enrollment in a public school of choice from The National Education Longitudinal Study of 1988, this article explores certain groups' propensities to take advantage of opportunities to choose in the public sector. Controlling on the availability of opportunities for choice in their schools, African Americans and Hispanics show a greater propensity to take advantage of those opportunities than whites and Asian Americans. Students whose parents have lower levels of education are also more likely than those with more education to take advantage of opportunities to choose.

**Public School Choice: Some Evidence from the National
Education Longitudinal Study of 1988**

Prologue

School choice, in various forms, has become an organizational feature of many urban public school systems. Estimates from national longitudinal data indicate that more high school students attend public schools of choice, that is magnets, schools of choice, and vocational schools, than private schools (Plank, Schiller, Schneider, & Coleman, 1993). Concerns related to this change in public school organization are reflected in the number of articles regarding "choice" issues published in *Educational Evaluation and Policy Analysis (EEPA)* over the last two years.

For the past four years, we have been examining school choice using data from the National Education Longitudinal Study of 1988 (NELS:88).¹ Our first analysis (Coleman, Schiller, & Schneider, 1993) used the base year data to estimate who was likely to take advantage of public and private school choice. We found that students whose parents had low levels of education were least likely to consider choosing a public or private school other than the one to which their child would be assigned on the basis of residence. African Americans and Hispanics were more likely to select public schools of choice,

whereas whites and Asian Americans were more likely to select private schools.

For our next analysis we examined who actually attends public schools of choice using NELS:88 First Follow-up data (Plank et al., 1993). In this analysis, we investigated the characteristics of students in high schools of choice. This analysis showed that students in public schools of choice had families with lower incomes and lower levels of educational attainment, and were more likely to be African Americans and have lower initial achievement levels than students in other public or private high schools. Unlike our earlier work, this analysis did not examine who would take advantage of choice if the opportunity for choice were available.

This paper returns to the question of who is likely to take advantage of public school choice, given the opportunity to choose. The design of the NELS:88 sample makes it possible to empirically estimate both an eighth grader's propensity to exercise choice and the overall opportunity to do so in a given eighth grade school. This estimation of the overall opportunity is an important feature of our analysis. It measures the opportunity to choose a high school for students in a given elementary school, and then eighth graders' propensities to take advantage of it. By using a standardized technique for

estimating overall opportunity, we are able to compare individuals' propensities to take advantage of public school choice taking into account the availability of high school choices mentioned by other students in the school.

Our analysis is thus designed and executed to show who takes advantage of public school choice where it is provided. Relying on national data, rather than regional, state, or municipal data, this longitudinal analysis examines first, whether eighth graders were considering attending a public high school other than the one to which they would be assigned on the basis of residence. The second analysis examines the likelihood of attending a public high school of choice, given the opportunity to do so.

Who Has School Choice?

One of the unresolved educational questions today is whether parents should be able to choose the school their children attend (Lieberman, 1989; Lee, Croninger, & Smith, 1994). For many families this is not a pressing issue, since they already exercise school choice when they decide where they want to live. When a family chooses a neighborhood in which to live, it is in essence selecting its children's school, since most children attend the

"assigned" public school in their designated neighborhood attendance zone.

The question of school choice is, however, particularly relevant for urban poor and minority families, who, because of the lack of resources and segregated housing conditions, have few opportunities to select a desirable neighborhood and, thus, the assigned public school within its boundaries.

Whether families with few economic resources and limited educational experiences would take advantage of school choice if it were more widely available has been questioned by policy makers (Rasell & Rothstein, 1993). Some scholars have argued that poor and minority families do not have the information and resources, such as transportation, to exercise choice effectively, even if it were available (Moore & Davenport, 1990). At a more general level, some argue that even if choice were available, there would be few if any good schools that disadvantaged families could choose among (Lee et al., 1994; Wells, 1993b).

The earliest and most direct attempt to study the issue of which kinds of families would be likely to exercise choice of schools occurred in the 1970's in a federally funded "school choice" project in Alum Rock, California. In this program parents of elementary students could choose among school programs in any of fourteen public schools. Results of the Alum Rock project initially

indicated that families with high income and educational levels had greater knowledge of school program alternatives. However, over time information differences between family groups were reduced. Regardless of their social and economic backgrounds, most of the parents chose schools because of neighborhood proximity and the racial and social composition of the school, rather than on the basis of instructional program (Bridge & Blackman, 1978). The Alum Rock results are particularly interesting in that, despite initial differences in information, the propensity to choose and the criterion which the parents used to determine their choice of school did not vary by parents' race and ethnicity or social backgrounds after several years had lapsed.

Who Would Choose?

More recent studies highlight the diversity of choice plans and raise issues of who takes advantage of choice. For example, in studying a public school open enrollment program across 20 school districts in Massachusetts, Fossey (1994) finds that families tend to choose schools in districts with higher levels of parent education, higher levels of student achievement, and higher per pupil expenditures than their original school districts. These results suggest that neighborhood proximity or convenience is not as important as was found in the

Alum Rock study. Moreover, the overwhelming majority of school choosers were white families, contradicting the racial and ethnic findings from the Alum Rock project.

The question of who would choose is also being examined by Witte, Bailey, and Thorn (1993), in evaluating a school choice program in Milwaukee, Wisconsin. They found that African Americans were dramatically overrepresented in students applying to the choice program. They also found that families who participated in the program had slightly higher levels of education than parents of similar income levels who did not. However, it is difficult to make a direct comparison to Alum Rock because of the available program options and eligibility requirements. In Milwaukee, families who elect to participate in the program are restricted to choosing among participating secular private schools in the city. Second, enrollment in the program is restricted to poor families in the Milwaukee school system.

Findings somewhat more supportive of Alum Rock are found by Lee et al. (1994) in their investigation of who favors choice in Detroit. They find that minority and low socioeconomic families are more likely to support choice. But, here again, we cannot make a comparison to the Alum Rock study because only families' desire to have choice available is investigated, not

whether the families actually took advantage of an opportunity to choose.

Thus, questions remain about the extent to which poor and minority families, compared to others, will exercise choice. This paper is a new approach to these questions, examining on a national level families' propensities, or willingness, to take advantage of opportunities for school choice.

Availability of Choice

The availability of public school choice has grown considerably over the past three decades (Cookson, 1994). Before the 1960's most public school choice programs were limited to certain populations, such as children with special learning needs, and students interested in learning specific job skills. The notion of public school choice for "everyone" has its roots in the 1960's when the open education movement promoted "alternative schools" designed to offer a more personalized, challenging, and meaningful experience for young people that would be different from the educational opportunities found in other public schools (Raywid, 1985). Varying in structure, these public alternative schools served relatively small numbers of students in comparison to more traditional public elementary and secondary schools.

Public school choice expanded somewhat during the 1970's as a consequence of the federal Emergency School Aid Act (ESEA) which allowed for the planning and implementation of magnet schools to facilitate desegregation. Designed to offer specialized curricular programs, these magnet schools typically had restricted admission policies in order to meet desegregation guidelines. Today, magnet schools are very much a part of the public school choice options and many of these institutions no longer have restricted racial and ethnic admissions policies (Cookson, 1994; Steel & Levine, 1994; Wells, 1993a).

Public school choice in the 1990's covers a vast array of different types of programs which vary considerably in their admissions and operation policies. In some areas parents can elect to send their children to any school within the district. Examples of intradistrict choice plans include District 4 in New York City and Cambridge, Massachusetts (Cookson, 1994; Glenn, McLaughlin, & Salganik, 1993). Similar to magnet schools, these programs sometimes have racial quotas, and admission is sometimes restricted due to space limitations. Another form of school choice is interdistrict choice in which a family may elect to send their child to a school outside their school district. This type of plan is less common.

When choice is defined as including magnet schools and intra- and interdistrict public schools of choice, the number of high school students in these "choice" schools is sizeable. Estimates from NELS:88 indicate that of the total sample of 17,424 high school sophomores in the NELS:88 First Follow-Up panel, 90.6% of the students are in public schools. Of these, 68.4% are in assigned schools, 13% are in public schools of choice, 5.1% are in magnet schools, 4.0% are in vocational or technical schools. The remaining 9.5% are in private high schools (Plank et al., 1993). From these estimates it appears that more students attend public schools of choice than private schools.

A Natural Experiment

The increased availability of public schools of choice provides us with a natural experiment to examine how responsive families of different backgrounds are to school choice opportunities in the public sector. As has already been discussed, choice opportunities come in many forms: e.g., alternative or magnet schools, open enrollment, inter-district transfers. All of these schools share a common feature; living in the school's residential catchment zone is not required for attendance. Since these schools of choice

are found throughout the country, a national sample including all types of schools is needed to explore the question of who is most likely to take advantage of choice. Although not specifically designed to look at choice, data from NELS:88 are particularly valuable for examining choice because of its national sample.

A national sample, however, presents its own analytical problem, since opportunities for choice are not evenly distributed across geographical locations. Public school choice for eighth grade students is most extensive in some large central cities which have a variety of high schools, including in some cases magnet schools, specialized high schools, or both. Choice among public high schools is less extensive in suburban and rural school districts, which are more likely to consist of a single public high school (Plank et al., 1993). Thus, school policies and geographic location can create opportunities for school choice.

Since racial and ethnic groups and parent education levels are distributed unevenly across central city, suburban, small town, and rural school districts, a misleading picture of the potential responsiveness to choice may result if current opportunities for choice are not taken into account. Students in rural areas, disproportionately white, are more likely to reside in school districts

with a single high school, and thus, be limited to considering only one school. If the constraints on choice due to the limited number of high schools in the district are not taken into account, one could erroneously conclude that whites would be much less likely to exercise choice than families from other ethnic and racial groups. Thus, when examining choice on a national level, one must take into account the opportunities for choice in a given school.

Description of the Sample and Measures

The sample for this analysis is taken from the NELS:88 Base Year and First Follow-Up (FFU) panel. The NELS:88 Base Year, conducted in more than 1,000 schools in 1988, consisted of a nationally representative sample of 24,599 eighth graders, their parents, teachers, and school administrators. The First Follow-Up panel consisted of a substantial subsample of the NELS:88 Base Year students (N=17,424) who were resurveyed in 1990 (Ingels, Scott, Rock, Pollack, & Rasinski, 1994).

In the Base Year, the eighth graders were asked which high school or high schools they were considering attending in the fall, the name of the school or schools, and whether they were public or private. From their

answers, it is possible to classify the students into the following categories: (1) those considering only one public high school; (2) those considering only one private high school; (3) those considering two public high schools; (4) those considering one public high school and one private high school; and (5) those considering two private high schools.

Among students who were considering only public schools (categories 1 and 3), those students in category 3 can be regarded as exercising choice among public schools. Students in categories 2, 4, and 5 represent a different population in that they are considering private schools. Our first analyses compares those students in category 3 to those in category 1.

In previous work, we asked the question, How likely are students from different backgrounds to exercise choice among public high schools? (Coleman et al., 1993). To calculate these estimates we selected from the Base Year student sample the 15,254 students who stated that they were considering one public high school, and the 3,375 students who stated that they were considering more than one public high school.

Not all of the students in the Base Year sample were followed and resurveyed two years later. The major criteria for retaining a student in the FFU panel was based on whether the eighth grade student matriculated to the

same high school as a number of other students who were in the Base Year study. Special considerations were made to follow with certainty selected populations and students attending different types of private schools (Ingels et al., 1994). We suspected that students who choose not to attend the assigned school in their attendance area may in fact matriculate to a school where there would be few, if any, other students from their eighth grade class. Given the sampling criteria, these students would likely be dropped from the panel.

To verify this we compared the proportion of students who in the Base Year reported that they were considering more than one public high school with the proportion of students in the FFU panel who gave this response. Table 1 shows that three out of every four students who responded that they were considering only one public high school were retained in the FFU panel.

Insert Table 1 about here

However, only one out of every two students who indicated that they were considering more than one public high school were retained in the panel.

Thus, students stating that they were considering only one high school were

one and a half times as likely to be retained in the panel as those students who listed more than one high school.

Since students who named more than one public school were more likely to be dropped from the sample, we were concerned that the distribution of the social characteristics of the students who named more than one public high school may differ significantly between the Base Year sample and FFU panel. Using the samples weighted to be representative of the 1988 eighth grade cohort, we compared the proportion of groups, varying by race or ethnicity and parent education, naming more than one public high school.

Table 2 shows that with respect to ethnicity, there is no difference between the proportion of students in the Base Year and First Follow Up panel who indicated that they were considering more than one high school.² Similarly, Table 3 shows that there are no major differences with respect to parents' education when comparing these two samples. These findings show that the relationship between these student background characteristics and high school nominations are not significantly different for the Base Year sample and First Follow Up panel when samples are weighted to be representative of the cohort.

Insert Table 2 about here

Insert Table 3 about here

Our earlier work left open the question of whether students who were considering more than one public school were more likely to attend a public school of choice. The longitudinal nature of NELS:88 and the rich information about the high schools makes it possible to answer this question. We used the information from the high school to categorized public high schools into two groups, assigned public schools, and public schools of choice. Assigned public high schools are those schools which enroll nearly all their students on the basis of residence and whose administrators indicate that they are regular comprehensive high schools. Public schools of choice are schools for which administrators identified their schools as either choice, magnet, or

vocational/technical, and report that they enroll a proportion of students from outside their assigned attendance area.³

Table 4 shows that students who had reported they were considering two or more public high schools were more likely to attend a public school of choice two years later. Over 75 percent of eighth graders who listed only one high school were attending an assigned public school as sophomores. Over a third of those who listed two high schools were attending public schools of choice -- that is, a "choice," magnet, or vocational school.

Insert Table 4 about here

Estimating The Propensity to Choose

Our analysis is designed to assess what the propensity to exercise choice is for various minority groups and for students from differing parental education backgrounds, controlling on the varying opportunities for choice of high school due to availability of schools and district policy. For this paper, we undertook two parallel analyses. Both begin by finding the opportunity for choice of a high school for each of the groups under consideration, given the

Base Year elementary schools they attended. The two analyses differ in that the first uses a measure of opportunity based on eighth graders' reports that they were considering more than one high school.⁴ The second estimates opportunity to choose based on the type of public high schools attended by students who had been in the same Base Year school.

Because of the diversity of choice programs nationwide, this analysis required a measure of "opportunity to choose" which estimated actual behaviors and was uniformly derived using the same methodological procedures for all schools. This allows comparisons of schools with the same opportunities for choice regardless of the particular choice program at a school. For example, depending on how they are structured, between-district and within-district programs may provide similar opportunities to exercise choice. The goal of this analysis is to determine which groups on a national level have a greater propensity to take advantage of school choice where it is provided.

The procedures to make our initial estimates (formulae given in Endnote 5) are as follows: First, the opportunity for choice in each public eighth grade school is estimated using the proportion of students in the school who are considering more than one public school (based on those who named only

public schools). This proportion must be standardized for the characteristics of the students in that school--that is, it should take into account the special tendencies toward or away from exercising choice due to the particular characteristics of students in that school.⁵ (This estimate of opportunity in a school will differ slightly for each student, because for each individual student the estimate is based on the other students in the same school excluding that student's own actions. This estimate for student h in school j is labelled d_{hj} in Endnote 5). Then the opportunity for choice for each racial/ethnic and parental education group under consideration is calculated by finding the average opportunity in the schools these students attend, weighted by the number of students in that group in those schools (this is labelled d_k for group k in Endnote 5).⁶

Table 5 gives the proportion of students from different social backgrounds who are considering more than one public high school relative to the opportunity for choice in their 8th grade school. The numbers in each of the columns are calculated as follows. Column 1, "actual choice," indicates the actual proportion of eighth graders with a given background who are considering more than one high school in 1988 (See Endnote 4, equation 7).

In Column 2, "expected choice" is the proportion of students in the

schools attended by each group who would be expected to consider more than one school, standardized for student composition of that school. (See Endnote 5, equation 6.) For example, in Table 5, the number .238 in the first row, second column indicates that almost 24 percent of students in schools attended by African Americans would be expected to cite that they were considering more than one public school as the one they would attend. The numbers generated in column 2 represents our measure of the "opportunity" to consider more than one school.

Column 3 is the difference between the actual and the expected proportion considering more than one school for the given group (Column 1 minus Column 2). In Column 4, the overall mean (.195) is added back in to give the expected proportion of students from the group in question considering more than one school, standardized for the opportunity provided by the schools they attend. Thus, Column 4 is an opportunity-standardized measure of the exercise of choice by each of the groups shown in the table. (See Endnote 5, equation 8.)

Insert Table 5 about here

As we found in our earlier work, white students and those students whose parents have college degrees exercise the lowest levels of public school choice.⁷ The level of actual choice (.158 for whites and .171 for parents with college degrees) is in both cases below the expected choice (the student-body-standardized level of choice exercised in the schools they attend, as shown in Column 2). When adjusted for opportunity in the schools they attend, as shown in Column 4, they are still considerably below the other groups shown in the table. At the other extreme are the African American eighth graders with 37.1 percent (Column 1) considering more than one public high school. This percentage remains high even when standardized with 32.8 percent of the African Americans mentioning more than one public high school (see Column 4).

We then carried out a comparable analysis to determine actual attendance at public schools of choice. For these analyses the sample includes students who were in public schools in eighth and tenth grade. Essentially, our procedures were similar to the analysis for Table 5, except that attendance at a high school of choice replaces mentioning more than one high school as an eighth grader in the calculations: Column 1 in Table 6 is the *actual* proportion of students in those groups attending a FFU school of choice, rather than the

proportion considering two high schools at eighth grade. Column 2 is the estimated proportion who would have been expected to attend a school of choice in FFU standardized for the composition of the eighth grade school. Column 3 is the proportion of students actually attending minus what we would have expected. And finally, Column 4 is the proportion of students in that group attending a public school of choice standardized for the opportunity in their Base Year schools.

Insert Table 6 about here

Again we find that white students and those students whose parents have college degrees are least likely to attend public high schools of choice, compared to other racial/ethnic or parental education groups. Comparing the results from Table 5 with Table 6, the findings for whites are consistent. However, the results for the African Americans and Hispanics are reversed. Hispanics are the most overrepresented in public high schools of choice, 39.1 percent, and remain the highest at 32.5 percent when standardized in relation to their eighth grade opportunity. African Americans are the second highest

group with 34.1 percent in public schools of choice.

Comparing students with different parent-education backgrounds, students whose parents have a high school education or less are the most likely to be in high schools of choice (26.3 percent) followed by students whose parents have some college and then those whose parents are college graduates. When these percentages are standardized, the order for parent education remains the same.

In summary, these results indicate that, controlling on the availability of opportunities for choice in their school districts, Hispanics and African Americans show a greater propensity to take advantage of those opportunities than whites and Asian Americans. Students whose parents have lower levels of education are also more likely than those with more education to take advantage of choice. This is the case when comparing students on whether they are considering more than one public high school as an eighth grader or whether they actually attend a school of choice as a sophomore.

Exercising Choice

Parents can influence their children's education in two quite different ways: by having some voice in what goes on within the school or by choosing which school their child will attend (Hirschman, 1970). Parents with more

education, with greater experience in affecting the institutions that surround them, or parents who live in small districts are probably the parents who are most able to exercise voice. That is, they are able to raise concerns about the school and influence policy decisions. Some parents, if not satisfied with the results from exercising voice, also have the option to exit. Parents with greater income, and those unconstrained by racial or ethnic barriers in neighborhoods can exercise choice among schools by choosing where to live. In addition, parents with sufficient income can consider private schools.

The parents least able to exercise voice in their children's education are probably those who have little education, few economic resources, are disadvantaged by reason of race or ethnicity, and reside in a large school district. The creation in many school districts of options which allow choice among the district's public schools should be of special benefit to those families who by reason of race, education, or income are least able to exercise effective voice in the school to which their children are assigned, and are least able to choose another school by choosing where to live. But these are just the families that are often portrayed as most apathetic, and least interested in their children's education, thus least likely to exercise choice.

The NELS:88 data presented in this paper provide strong evidence that

this is not the case. Disadvantaged families, whether disadvantaged by reason of race, ethnicity, or education, do exercise choice of high school when it is available. Also they do so to a greater degree than do whites or families with higher education. They are not only more likely to consider more than one high school, but also attend high schools of choice. This indicates that families who are often regarded as least likely to take action to aid their children's education will take advantage of the opportunity to exercise choice of a school, which more advantaged families are already able to do. The finding that minority and parents with low levels of education do have a high propensity to choose seriously challenges claims that expanded choice would be taken advantage of primarily by white and highly educated parents.

Many of the families who exercise choice in the public sector may have limited knowledge of educational systems. Thus, it seems critical that they receive help in acquiring information to make informed decisions. The amounts of assistance schools offer parents vary greatly between choice programs, with many placing the burden of gathering information on the shoulders of parents. However, schools may find it in their best interest to assume the role of information disseminators (Schiller, 1995). In the process of helping families make "better decisions," schools increase their certainty of

attracting students who fit their particular mission, focus, or style. School parent information centers and concerted efforts to disseminate information have been shown to provide disadvantaged families with the information they seek (Glenn et al., 1993; Bridge & Blackman, 1978). These families are already making choices. By providing them with information, schools can only help them make those decisions more wisely.

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Footnotes

¹We completed and submitted this paper to EEPA early in the 1994-95 academic year. The request for revisions was received a few days prior to James S. Coleman's death. In this revised paper we have tried to keep intact the argument as originally conceived.

²A z-test for a proportion was used to test whether the proportion in the FFU panel was significantly different from that of the Base Year sample.

³To create public high school categories we used items from the NELS:88 school questionnaire, F1C4, F1C4B, F1C4C, F1C4E, and F1C54A to G.

⁴In our earlier work we estimated who would take advantage of school choice in the public sector (Coleman, Schiller, & Schneider, 1993; Schiller, Coleman, & Schneider, 1991). We made these estimates using the Base Year sample. For the following analyses we replicated the analyses using the FFU panel.

⁵The separation of constraints on public school choice that are alike for all students in the same school from the differential tendency of students from varying social backgrounds to consider more than one public high school can be carried out as follows:

Let s = number of schools

n_j = number of students in school j who name one public school or two public schools (categories 1 and 3 below)

$$n = \sum_{j=1}^s n_j = \text{total number of students in categories 1 and 3.}$$

The measure of choice is, as indicated in the text, based on the number and sector of high schools named as high schools that might be attended. Eighth grade students were classified into five categories:

1. Those considering one public high school
2. Those considering one private high school
3. Those considering two public high schools
4. Those considering one public high school and one private high school
5. Those considering two private high schools.

For public school choice, a categorical variable y_{ij} is created, using those in category 1 and those in category 3.

$y_{ij} = 1$ if two public high schools are being considered by student i (category 3);

$= 0$ if only one public school is being considered (category 1).

$$m = \sum_{j=1}^s \sum_{i=1}^{n_j} y_{ij} = \text{number of students considering two schools}$$

X_{ij} = a vector of demographic characteristics of student i that best predict y_{ij} with $X_{oij} = 1$.

(Characteristics of the student that are predictors of choice and are not influenced by the opportunities for choice are included. Those social characteristics, such

as race/ethnicity and parents' education, for which the tendency to exercise choice will be measured are included.)

In a logistic regression of y on X , we find the vector B which minimizes the sum of squared errors, e_{ij} in eq. (1):

$$\log \frac{y_{ij}}{1-y_{ij}} = BX_{ij} + e_{ij} \quad (1)$$

The predicted value of y_{ij} , y_{ij}^* , is given by

$$y_{ij}^* = \frac{1}{1+\exp(-BX_{ij})} \quad (2)$$

The quantity y_{ij}^* is the predicted probability that student i in school j names more than one school.

Then for student h in school j , it is possible to calculate both the expected and the actual proportion of students in that school who were exercising public school choice.

The actual proportion is

$$y_{hj} = \frac{1}{n_j - 1} \sum_{\substack{i=1 \\ i \neq h}}^{n_j} y_{ij} \quad (3)$$

The expected proportion is

$$y_{hj}^* = \frac{1}{n_j - 1} \sum_{\substack{i=1 \\ i \neq h}}^{n_j} y_{ij}^* \quad (4)$$

The difference, $y_{hj} - y_{hj}^*$, between the actual number choosing and the

expected number choosing is a measure of the extra or deficient opportunity for choice in school j , independent of the action of student h . Then the opportunity for choice in school j as estimated for student h is given by the overall proportion of choice, m/n , plus this deviation from expected in school j :

$$d_{hj} = \frac{m}{n} + (y_{hj} - y_{hj}^*) \quad (5)$$

The average opportunity for choice for all students of a particular racial/ethnic or educational background is obtained by finding the average of d_{hj} over all students h with background k . First, define δ_{hjk} as 1 if student h in school j is in group k and 0 otherwise. Then the average opportunity for students from background k , d_k , is given by

$$d_k = \frac{\sum_{j=1}^s \sum_{h=1}^{n_j} d_{jh} \delta_{h/k}}{\sum_{j=1}^s \sum_{h=1}^{n_j} \delta_{h/k}} \quad (6)$$

where d_k is the average opportunity for students from background k to consider more than one school, based on the proportion of students in their schools who consider more than one public high school, standardized by student body characteristics.

Then it is possible to determine the added or deficient proportion of students from different social backgrounds (that is different racial and ethnic backgrounds or different educational levels) who are considering more than one high school, relative to the opportunity in the school, by the following calculations:

$$c_k = \frac{\sum_{j=1}^s \sum_{h=1}^{n_j} y_{hj} \delta_{h/k}}{\sum_{j=1}^s \sum_{h=1}^{n_j} \delta_{h/k}} \quad (7)$$

where c_k is the proportion of students with background k who consider more than one school.

Then $c_k - d_k$ is the additional or deficient probability of students from background k to exercise choice, relative to the opportunity in their schools, and

$$r_k = c_k - d_k + \frac{m}{n} \quad (8)$$

is the probability of students from background k to exercise choice (i.e., consider more than one school), standardized for the opportunity provided by the schools they are in.

The quantity r_k gives a measure of the existing choice probability for students from background k , standardized for the schools they are in, which are themselves standardized for the propensity of students in those schools to exercise choice. Comparison of these quantities between different groups k and k' indicates the relative responsiveness of groups k and k' to the existing opportunities for choice. It does not, however, show what the responsiveness of

these groups to expanded choice would be if public school choice were universal.

⁶The background characteristics controlled for in the logistic regressions are: race and ethnicity, parents' education, family income, family composition, number of siblings, gender, parents' expectations for students' educational attainment, and being Catholic. A description of the construction of these variables can be found in Coleman, Schiller, and Schneider (1993).

⁷Results using the FFU panel are similar to the findings we estimated for the Base Year sample (Coleman, Schiller, & Schneider, 1993).

Table 1

Eighth Grade Public School Students Exercising Public School Choice

	One high school named	Two high schools named
In FFU panel	76.5%	52.0%
Not in FFU panel	23.5%	48.0%
Total	100%	100%
	(15,254)	(3,375)

Table 2

Comparisons of Percentage of Eighth Graders by Race or Ethnicity

Listing More than One Public High School

Sample	Race/Ethnicity			
	African American	Asian American	Hispanic	White
Base Year				
List More Than One	36.6	25.4	25.4	15.2
First Follow Up				
List More Than One	37.9	23.0	24.8	15.7

Note. Weighted to be representative of the 1988 eighth grade cohort.

Table 3

Comparisons of Percentage of Eighth Graders by Parents' Education for
Students Listing More than One Public High School

Sample	Parents' education		
	High school or less	Some college	College graduate
Base Year			
List More than One	20.3	21.2	15.0
First Follow-Up			
List More than One	20.2	20.8	17.3

Note. Weighted to be representative of the 1988 eighth grade cohort.

Table 4

Percentages of First Follow-Up Panel Attending Assigned or School of Choice
by Number of High Schools Nominated in Eighth Grade

Type of high school attended in 1990	Listed one public school at eighth grade	Listed two public schools at eighth grade
Assigned Public	75.6	64.6
Public School of Choice	24.4	35.4

Table 5

Opportunity-Standardized Choice for Citing Two Public High Schools

Student background characteristics	(1) Actual choice	(2) Expected choice	(3)=(1)-(2) Actual- expected	(4)=(3)+.195 Opportunity- standardized
Race/Ethnicity				
African American	.371	.238	.133	.328
Asian American	.234	.246	-.012	.183
Hispanic	.238	.224	.014	.209
White	.158	.183	-.025	.170
Parents' Education				
High School or Less	.199	.200	-.001	.194
Some College	.205	.190	.015	.210
College Graduate	.171	.198	-.027	.168

Table 6

Opportunity-Standardized Choice for Being in a Public High School of Choice

Student background characteristics	(1) Actual choice	(2) Expected choice	(3)=(1)-(2) Actual expected	(4)=(3)+.254 Opportunity- standardized
Race/Ethnicity				
African American	.341	.312	.029	.283
Asian American	.290	.282	.008	.262
Hispanic	.391	.320	.071	.325
White	.226	.237	-.011	.243
Parents' Education				
High School or Less	.263	.256	.007	.261
Some College	.252	.252	-.000	.254
College Graduate	.249	.255	-.006	.248