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## Introduction

This chapter discusses how and why students enrolling in charter schools are likely to be unrepresentative of students in their district. This question holds great political and policy relevance. It is relevant to charter school politics because simple snapshot comparisons of test scores at charter schools and traditional public schools have dominated the debate about whether charters are faring well. But if the students in charter schools are quite different from students in traditional public schools, then naïve comparisons of test scores are almost meaningless.

For instance, if parents are more likely to switch their students into charter schools if they are having trouble at school, then average test scores of charter enrollees would necessarily be lower than in regular public schools. But this would say nothing about the quality of charter schools. This is an example of students self-selecting into charter schools in non-random ways. Conversely, charter school operators may indirectly select students through their decisions about where to locate their schools. Critics of charter schools sometimes claim that charter schools are “skimming off” high achieving students, but others claim that charters tend to locate in less affluent areas, and therefore primarily enroll disadvantaged students who arrive at school less ready to learn.

The question of who attends charter schools has policy relevance for two reasons. First, policymakers do care about how the quality of charter schools compares to that of traditional public schools, as it may influence the number of charter schools that

are allowed to renew their charters, or the number or type of new charter schools that receive charter agreements. It is impossible to know the answer to this “quality” question unless researchers understand the initial achievement of students before they enter charter schools. Second, charter schools, as a new form of choice, have the potential to alter the distribution of educational outcomes among types of students, whether defined by family income, socioeconomic status, or race and ethnicity. Are charters primarily serving underserved populations, or are they merely providing services to affluent students who already had more choices among schools by virtue of choosing a school by moving into an area, or by paying to attend a private school?

This chapter will survey both the theory and the empirical evidence on who attends charter schools. The main text will discuss the theoretical issues in fairly non-technical terms, but with the goal of showing that even the simplest models yield ambiguous results concerning who self-selects to attend charter schools. This ambiguity is compounded by the additional uncertainty about where charter school operators decide to locate their schools. The upshot is that the question of who attends charter schools is ultimately an empirical question, the answer to which could vary from location to location.

### Two Simple Models of How the Decision to Attend a Charter School Could Depend on Family Income

A family’s income has been shown by many studies to predict student achievement quite well. For example, Coley (2002) documents large differences in cognitive development between kindergarten students from affluent and less affluent

families. This matters for analysis of charter schools because differences in test scores between students at charter schools and traditional public schools could largely reflect differences in family income that are typically only poorly measured by researchers.

We now consider two simple models. Mathematical versions of the models appear in the appendix. One of the main lessons from these models is that we must think about both the demand for charter schools and the supply of charter schools. The latter is an important point – the decisions charter operators make about where to locate their schools could profoundly affect who applies.

#### Model 1

Suppose that two parents are thinking of sending their child to a charter school. In comparing the value of this choice relative to sending their child to the local neighborhood school, they might be weighing two countervailing factors. On the one hand, they may perceive the charter school to have higher quality, but on the other hand they would rather not send their child to a distant school. If the value of the gain in school quality outweighs the perceived costs of having to transport their child across town, the parents may decide to apply to the charter school.

Now, consider how variations in family income might affect these calculations. Suppose that low- and high-income families value the academic quality of a school equally.<sup>2</sup> Similarly, we assume for now that family income does not influence the relative importance of school quality versus distance. However, a lower income family might perceive a greater gain in quality from attending a given charter school, simply because its local school was as not as good as the local school for more affluent families.

This difference suggests that charter schools will primarily attract lower-income families, which have more to gain in relative terms.

Non-academic aspects of charter schools provide a second reason why charter schools may appeal to low-income families for non-academic reasons. For instance, if a charter school offers a violence-free environment, and low-income families are more likely to feel that their local neighborhood school is violence-prone, again, they would be more apt to apply to the charter school than a high-income family.<sup>3</sup>

Now, what about the negative effect of the extra distance between a student's home and the charter, relative to his local school? How would family income affect this cost? This depends crucially on where charter school operators decide to open a school. If charter schools are more likely to locate in less affluent areas of a city, then the distance to the charter school may in fact be lower for the low-income family. If this holds, then the lower-income family will have higher benefits from attending *and* less distance to travel. Together, both factors suggest that low-income families will be more likely to attend the charter school.

But on the other hand, if charters tend to locate in more affluent areas, then low-income families could be less likely to apply because they would have to travel a greater distance. This works in the opposite direction to the differential effects of gains in school quality, which overall makes it uncertain whether low-income families would gain more or less from switching.

We conclude that the decision by charter school operators about where to locate has the potential to decide whether low-income students are over- or under-represented in

charter schools. But lower-income families may perceive bigger quality gains from switching their child to a charter school.

## Model 2

Model 2 is only slightly more complex than model 1. Again, we assume that family income is the source cause of all selection of students into charter schools. We add two sensible complications to the above model. The relative importance of distance relative to school quality, may be higher for low-income families than for high-income families. To see this, suppose that a low-income and a high-income family would both have to transport their child 15 miles to attend a given charter school, compared to 1 mile to their respective neighborhood schools. The low-income family may lack the private transportation to get their child half way across town, making this a much more costly move for this family. This wrinkle in the model suggests that, if the other factors were equal, then there would be “positive selection” into charter schools, meaning that high-income students would be over-represented in charter schools.

Kleitz et al. (2000) report on a survey of 1100 parents who had enrolled their children in Texas charter schools. The paper, which seeks to test whether demographic groups differ in the factors that they consider when choosing a school, provides direct evidence that low-income families may be particularly sensitive to sending their children to distant schools. The authors find that non-white and low-income charter school parents place higher than average importance on the location of the charter school, with 79% of low-income parents listing school location as important or very important compared to only 63% of high-income parents.

The second complication we add is to consider the costs to families of volunteering in charter schools or otherwise participating in activities such as the Parent-Teacher Association. If low-income families lack the private transportation needed for parents to attend school activities, or if they lack the time to attend, then they will gain less from switching their child to the charter school than will a high-income family. Low-income families may lack the time to participate in these activities if, for instance, the low-income family is a single-parent family, or if adults in the low-income family must hold multiple jobs to make ends meet. High-income families could be more likely to have one spouse voluntarily staying at home. They may also view the charter school's requests that parents become involved in the school as a *relatively* small imposition, because their default local school, which happens to be in an affluent area, itself makes quite high demands on parental time, at least compared to local schools serving low-income families. On the other hand, if some of these school activities would require parents to come to the school during working hours, it could be that high-income parents would be less likely to want to participate due to higher wages forgone.

Overall, we are left with four different factors influencing a family's decision to send its child to a charter school. The first factor, the gain in perceived quality between the charter school and the local school, suggests that low-income families will dominate. The second factor, the extra distance to the charter school, will increase or decrease the relative probability of low-income versus high-income students attending the charter, depending on whether charter school operators tend to locate in low-income or high-income areas. The third factor, the relative cost of transporting one's child to a charter school, probably favors high-income students being over-represented in charter schools.

The final factor, the relative costs to parents of participating in school activities, could favor either type of family, but probably favors high-income students becoming over-represented in charter schools.

There is no way to know which of these four competing factors will dominate.

There are additional sources of ambiguity that we have yet to discuss. For example, we have assumed that low-income and high-income parents make decisions based on the same information sets. If low-income parents lack contacts with other parents whose children attend schools of choice, they may know less about quality differences between the default local school and the schools of choice. It therefore becomes possible that low-income parents are less sensitive than high-income parents to differences between local schools and charter schools. Schneider, Teske and Marschall (2000) provide indirect evidence that information sets can indeed vary demographically. These authors report that parents from disadvantaged backgrounds are relatively more likely to use official sources of information when choosing schools for their children, while advantaged parents are more likely to rely on information obtained from other parents. The implication is that affluent parents benefit from relatively abundant information networks.

Yet another source of ambiguity stems from the possibility that the academic quality of a given charter or local school could vary depending on the characteristics of the given student. An obvious example of this is that if schools group students by ability, and if the quality of instruction varies by ability group, then a given school might be quite attractive for students in one part of the achievement distribution and rather unattractive for students from another part of the achievement distribution.



There are three essential lessons we distill from this analysis. First, it becomes an empirical question as to whether low-income families will be over- or under-represented in charter schools. Second, the locational choices made by charter school operators could prove to be decisive in practice. Third, even though we have considered student selection that relates to a single variable, family income, even this apparently simple modeling exercise reveals a complex set of countervailing factors.

The question of selection of students into charter schools is important because selectivity might bias simple analyses of charter school quality that are based on comparisons of average test scores at charters and non-charters.

#### *Selection Based on Variables Apart from Income*

The above section assumes that one variable, family income, is the sole dimension along which students self-select into charter schools. It seems likely that other characteristics, such as parental education, race and ethnicity, and attitudes about multicultural mixing, could influence parents' choice of schools for their children. Social scientists have yet to make much headway at assessing multiple sources of selection into charter schools. But it seems reasonable to conclude that the overall determinants of selectivity bias could be even more complex than painted above. Moreover, the direction of bias could vary from city to city and indeed from school to school within a district.

Another strong possibility, almost a certainty, is that students self-select into schools based upon *unobservable* factors. These might include the student's own motivation and the parents' attitudes about education. It is quite unlikely that any sort of survey-based data set that social scientists would collect would capture these influences

particularly well. The combination of selection on multiple variables and the fact that some of these are unobservable makes it very uncertain whether those who select into charter schools will be academically stronger or weaker than those who remain in regular public schools.

### Do Charter Schools Cream Skim in Practice?

It should be clear that observations of the relative racial or income mix of charter and regular public schools alone cannot tell us whether there is going to be positive or negative selection into charter schools in an academic sense. But it remains important as a first step to study this question.

The evidence appears to be that charter school students are more likely to be economically disadvantaged and more likely to be non-white than students in regular public schools. An AFT study of National Assessment of Educational Progress data makes this point clearly. The study, by Nelson et al. (2004), purported to show that charter schools were underperforming regular public schools, but was widely criticized for having failed to control for selection into charter schools. What the report did achieve accurately was a portrayal of who attends the two types of schools. Figures 5.1 and 5.2 show that charter school students at the grade 4 level in 2003 were about 15% less likely to be white, and 8% more likely to be eligible for free/reduced-price meal assistance, relative to their counterparts in regular public schools.

[Insert Figures 5.1 and 5.2 about here.]

Many studies of achievement in the two types of schools have also reported demographic breakdowns of students in charters and regular public schools, and the

results are broadly similar but often vary in details. For instance, in their Texas study, Booker et al. (2004) report that charter school students were far more likely to be black, and very slightly less likely to be Hispanic, than students at traditional public schools. Overall, 78% of charter students were black or Hispanic compared to 55.8% of students in traditional public schools. However, the percentage of students who were Limited English proficient at charter schools was 6.7% versus 14.6% in traditional public schools. Bifulco and Ladd (2006) report that in North Carolina charter school students were more likely to be non-white, but were less likely to have parents who had a high school diploma or less. Sass (2006) finds a mixed picture in Florida, where charter school students were more likely to be black, about equally likely to be Hispanic, but less likely to be receiving free/reduced-price meal assistance, and slightly less likely to be Limited English Proficient, in special education *or* gifted education.

In California Zimmer et al. (2003) find that “charter school students are more likely to be black and less likely to be Hispanic or Asian, but no more or less likely to be white”. A study of school choice in San Diego by Betts et al. (2006) finds that charter school students are less likely to be white or Asian, but more likely to be black or Hispanic, compared to students at traditional public schools. Additionally, 66% of charter students were eligible for free/reduced-priced meals, compared to 56% of students in regular schools.

Ross (2005) performs a panel analysis of the locational decisions of charter schools in Michigan, and concludes that charter schools are more likely to locate in predominantly black neighborhoods. Fully 49% of charter students in her Michigan sample were black, compared to 20% in traditional public schools; figures for Hispanic

students were 3.3% and 3.8% respectively. On the other hand, just over 25% of charter school students were eligible for meal assistance, compared to 34% in regular public schools.

Many of these studies are consistent with the possibility that charter schools attract relatively high concentrations of non-white students but that this is partly counterbalanced by some positive or at least neutral socioeconomic sorting into charter schools. Henig and MacDonald (2002) model the locational decisions of charter school operators in Washington D.C. They find that charters are much more likely to open in areas with above average shares of blacks and Hispanics. However, within these neighborhoods D.C. charters are most likely to open up in areas with relatively high home ownership rates and middle incomes rather than low or high incomes.

I interviewed Larry Rosenstock, CEO of High Tech High (HTH) School and HTH Learning, in San Diego about how the High Tech High family of charter schools has made locational decisions in California. The schools currently enroll 2700 students in seven schools. The management of HTH schools has earned California's only statewide charter from the state Board of Education, and now intends to open up several "villages" of charter schools throughout the state in the next few years. CEO Rosenstock told me that the ideal location for a new HTH charter school is "on the cusp" of at least one low-income area, but not so far away from more affluent areas that the location would preclude interest from middle- and high-income families as well.

One federal program that may encourage charter school operators to open up charter schools in less affluent areas is the New Markets Tax Credit (NMTC), which pays investors a cumulative 39% in tax credits over a seven year period in return for

investments in lower-income areas that meet certain criteria. One possible use of NMTC's is as a tax break for philanthropists to buy land for a charter school. High Tech High School in San Diego is using NMTC's to pay for new campuses.

Beyond locating near or in lower income areas, HTH schools have implemented other practices to promote demand from lower-income families. At High Tech High in San Diego for instance, students from lower income families receive free passes for the city's public transportation system. Admission lotteries are performed on a zip code by zip code basis to ensure representation from all parts of the city, and in cases in which the number of applications from a given zip code exceeds the allotment for the zip code, students who are eligible for meal assistance receive preferences in the lottery.

High Tech High and its affiliated charter schools provide examples of charter operators that have intentionally chosen a location designed to attract lower-income students, and which supplement this locational emphasis by other means.

The Green Dot Public Schools, a charter school operation in Los Angeles, provides another example of a charter school operator which has focused on areas serving relatively disadvantaged families. This pattern became even more clear in January 2007 when Green Dot applied to Los Angeles Unified School District to directly take over failing schools in some of the district's most impoverished neighborhoods. (Boghossian, 2007)

None of the studies or anecdotal examples can show conclusively that charters overall attract students who have lower test scores than do students at regular public schools, but the weight of evidence points clearly in that direction, at least when we consider race. But we must be very careful here not to equate race and test scores. Within

racial groups, for instance, there could be positive test score selection in the sense that families with relatively high achievement could be the most likely to apply.

Indeed, another notable pattern in the papers listed above is that in some cases charter schools enrolled relatively few whites, but appeared to have attracted students with relatively high socioeconomic status, defined either in terms of meal assistance eligibility or parental education. This is suggestive of quite complex forms of selection into charter schools where different measures suggest both negative and positive selection of students into charter schools. As another example, the fact that typically charter school students are disproportionately non-white suggests negative selection, but the mix of non-white students in some cases implies fewer of these students are Limited English Proficient.

### Implications for Research Design

The simplest models of the effect of charter schools that simply compare means or that use linear regression models do not attempt to correct for selectivity bias. None of these approaches is likely to yield reliable results. But there are clear shades of gray among the types of research that could be attempted here. Models of gains in achievement are likely to tell us more about the causal effects of charter schools than simple snapshots of test score levels, because they implicitly net out of the equation the student's past academic history. Similarly, models that control for observable student characteristics are likely to get us closer to understanding the causal effect of charter schools on achievement. But neither method should be viewed as anything close to foolproof, due to the possibility of nonlinear interactions among observables, and the role

of both observables and unobservable variables in determining who decides to attend a charter school.

Two commonly used methods of controlling for selectivity bias are Heckman's method and propensity score matching. Both methods are two-step approaches in which the researcher estimates the probability of a student switching into a charter school in step 1. If the decision to attend a charter depends on unobservable variables, as seems likely, then neither method will produce unbiased estimates of the causal effect of attending a charter school. Additional challenges to these methods are the occasionally cross-cutting forms of selection related to different measures of socioeconomic status, and the variations from one geographic area to another.

Two methods that do hold out greater hope of handling selectivity bias are experimental methods that use lotteries to create treatment and comparison groups, and student fixed-effect models that compare individual students before and after switching between charter and regular public schools. Chapter 2 in this volume by Betts et al. covers in great detail the relative strengths and weaknesses of these two methods. But it is worth pointing out here the different ways in which these approaches the problem of selectivity.

The experimental method relies on the random process through which applicants to a charter school are assigned to the admitted pool and the rejected pool. There will still be selectivity bias but on average it should be balanced between the pools of lottery winners and losers, and so a simple difference in achievement between these two groups will remove the selectivity bias. MacEwan and Olsen (in this volume) discuss in great

detail lotteries and potential problems that could bias estimated effects of charter schools even in this research design.

The student fixed-effect method is tantamount to mean-differencing the data, so that the coefficient on charter schools is identified by switches between charter and regular public schools by each student, obviating the need to make comparisons across students. This method completely removes selectivity bias if the factors that determine whether a student attends a charter school do not change over time. This may or may not hold true. For instance, if a student has an unusually bad year academically it may prompt his parents to switch him from traditional public schools into a charter school or vice versa. This can lead to biased estimates. For example, suppose that students are likely to move into charter schools if parents mistake a random one-year drop in achievement gains for a long-term problem with the student's current school. Any recovery in test scores the next year through "regression to the mean" may wrongly attributed to be a positive effect of charter schools on achievement. Conversely, if parents of a charter school student mistakenly react to a temporary drop in achievement gains by moving their student to a regular public school, this would downwardly bias the estimated effect of charter schools.

Bifulco and Ladd (2006) test for the possibility that negative test score trends induce shifts into charter schools using data from North Carolina, and do not find evidence that this is a problem. Using panel data from San Diego, Tang and Betts (2006) test for negative shocks inducing flows of students both into and out of charter schools. They do not find consistent evidence of transitory dips in performance immediately before either switches into or out of charter schools.



## Implications for Policymakers

The models we discussed earlier in this chapter established that lower-income families might have a stronger preference for charter schools than would higher-income families, although if charter operators locate schools in more affluent areas, it could be more affluent parents who express stronger demand for charter schools. Overall, both theory and evidence suggest that the self-selection of students into charter schools is an ambiguous and complex process.

This self-selection of students matters a great deal for researchers for reasons stated above.

But do we care about self-selection of students from a more policy-oriented perspective? The answer is almost surely yes.

In a very real sense, the foregoing advice to researchers to avoid doing research on “charter school quality” that ignores student selection is very important for policymakers and charter school operators as well. These latter actors operate on a different and more public stage, and it is incumbent upon them to educate the public that comparing the levels of test scores across schools says little about the relative quality of instruction provided at different schools.

One prominent example is the requirement in the federal No Child Left Behind (NCLB) law that states create standards for proficiency in math and reading, test students’ mastery of these standards, and then report to the public the percentage of students in each school who are proficient. The strong tendency of charter school operators to open schools in areas serving relatively non-white populations will tend to

lead to relatively low “percentage proficient” scores for these schools. It would be careless at best, and dishonest at worst, to claim that low levels of student proficiency in such cases pointed to a failing school.

There are other reasons why policymakers should care about the issue of selectivity bias.

Consider first the opposite type of selectivity bias: Suppose that in some school districts we found that charter schools enroll more than a fair share of high-income students. This could be interpreted as the charter movement acting to re-segregate the nation’s schools along socioeconomic, and perhaps even racial, lines. Second, to the extent that a student’s peers at a school influence that student’s learning, if high-income students are flocking to charter schools, it could leave the lower-income students who remain behind worse off academically.

So, if society values integrated schools for the sake of integration alone or because integration will benefit low-income students academically, we need to consider some policies that might encourage low-income students to apply to charter schools. Five types of policies come to mind, each of which could encourage negative income selection into charter schools:

- 1) Charter schools could adopt an academic focus that makes allowances for underperforming students, such as remediation programs, special education programs, and programs for English Learners.
- 2) Charter schools could adapt a cultural focus that appeals to low-income families, for instance by emphasizing multicultural activities.

3) Convenient, safe, and cheap public transportation could make attending a distant charter school more attractive to low-income students. More directly, provision of free school buses to and from charter schools could level the playing field. Indeed, the demand from less affluent families for a spot in a charter schools could mushroom if public transportation to that school is subsidized.

4) A low cost of living in the local area could free up parent time for school-related activities including transporting their children to the school and volunteering at the school. Thus, public policies that on the surface have nothing to do with education could have important effects on who attends charter schools. For instance, housing subsidies targeted at the poor might achieve some of these goals.

5) Policies that induce charter schools to locate in less affluent areas could be quite influential in determining the overall income mix of students in charter schools. Betts (2005) discusses the potential of differential student vouchers that pay higher subsidies for students with lower socioeconomic status as a way of encouraging *all* schools to seek out and enroll under-served students.

Another possibility that could encourage charter operators to open up in low-income areas are grants to adapt buildings in low-income areas into school sites. One important example of such a program is the aforementioned NMTC, which High Tech High School in San Diego is using to pay for new campuses.

States could implement similar programs, and could target the tax credits more specifically to educational facilities than does the NMTC program.

More radically, both states and districts could alter school funding formulae to provide charter schools, or indeed *all* schools, with relatively more funding if they serve relatively educationally disadvantaged populations.

### Concluding Remarks

The issue of how students select into charter schools is crucial both for research and for policymaking. Both politicians and policymakers want to know how the quality of education provided by charter schools compares to that in traditional public schools.

Naïve comparisons of average test scores at charter schools and traditional public schools are likely to yield quite misleading information about the relative quality of instruction provided at the two types of schools. Better models will look at gains in achievement while controlling for observable student characteristics. But neither of these additional design elements is likely to remove selectivity bias.

To illustrate the complexities, we developed two simple models in which family income was the sole variable determining selection. But even here, although the preponderance of evidence suggests that low-income and low-scoring students are more likely to switch into a charter school, the overall direction of selectivity bias is theoretically uncertain. Selection is an even more complex process than intimated by these models, because many characteristics of students and their families in addition to family income, only some of which social scientists can observe, likely influence the decision to attend a charter school.

This complexity is compounded by the endogenous decisions of charter school operators about where to locate. In Michigan, D.C. and elsewhere, we have clear

evidence that charter operators seek out neighborhoods that are disproportionately black. But Henig and MacDonald (2002) and others also find evidence of cross-cutting selection that makes it hard to predict whether charter schools will tend to attract students who have lower or higher achievement than that of students who remain in traditional public schools.

Lessons for researchers are fairly apparent. Researchers should model gains, not level of test scores. They should also include observable characteristics of students and their families as explanatory variables. But neither of these steps will fully remove selectivity bias. Student fixed-effect models and, better yet, experimental evidence, are likely to reduce selectivity bias from estimates of the effects of charter schools.

These ideals may not always be met, especially when a government body wants a quick answer to the question of charter schools' effects on achievement, but is not able to provide researchers with ideal data. At this point, it becomes incumbent upon researchers to state clearly and repeatedly that their analyses may not come close to establishing the causal effect of charters on achievement.

For policymakers, they would be wise to have a keen awareness of the pitfalls of overly simple comparisons between charter and traditional public schools. As for policy reforms, attention should be focused squarely on incentives. The dual challenge is to design stronger financial incentives for charter school operators to open up in relatively disadvantaged areas, and incentives for families from across the socioeconomic spectrum to send their children to charter schools.

## Appendix

The main text presents two models of the decision to attend a charter school, and then examines how changes in family income might alter the desirability to the family of moving a child to the charter school. Here we present these simple models mathematically and derive the comparative statics.

Parents must counterbalance their wish to put their child into a school they perceive as better than their local school against the additional distance that their child must travel to and from school. We can represent this tradeoff with the following equation, which shows the perceived gain in family well-being should the student switch from the local school to the charter school, where the term  $\Delta$  refers to the change in the given variable if the student switches to the given charter school from his or her default local school:

$$(5.1) \quad \Delta \text{Wellbeing} = \Delta \text{Quality} - \alpha \Delta \text{Distance}$$

Here,  $\alpha$  is a number indicating the relative importance of distance versus school quality.

The larger is  $\alpha$ , the more important is distance relative to school quality.

Suppose that we normalize the utility of attending the local neighborhood school to zero. Then the family will switch to the charter school if the (relative) utility of attending the charter,  $U_{\text{charter}} > 0$ . This utility depends on the gain in school quality perceived by the family from a switch to a charter, less a weighting factor  $\alpha (> 0)$  times the change in distance from the family's home to the charter school relative to the distance to the local neighborhood school.

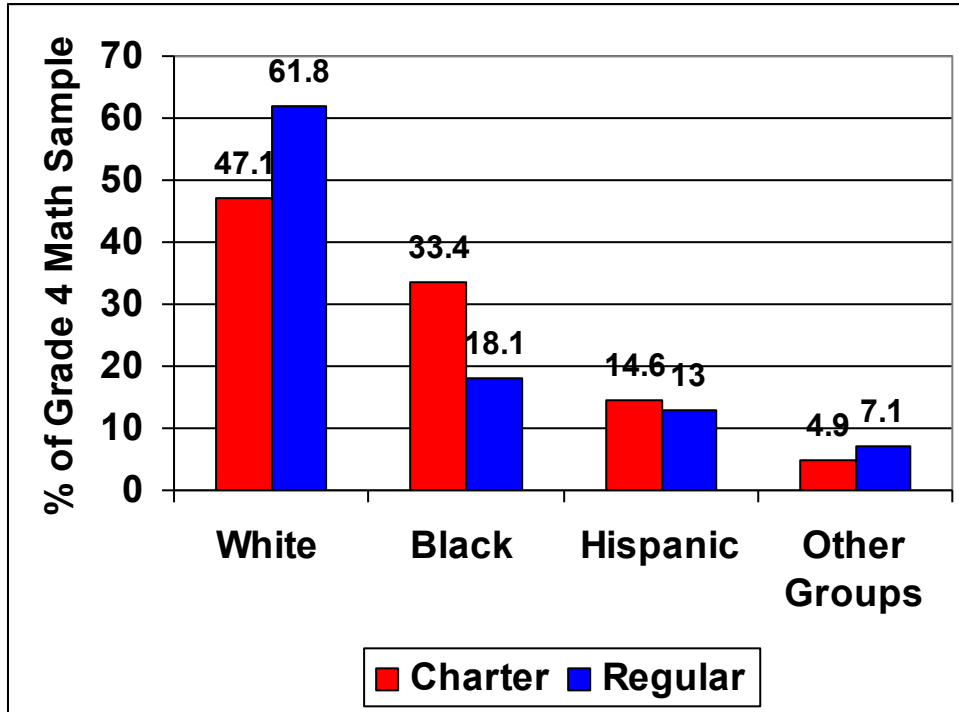
$$(5.2) \quad \begin{aligned} U_{\text{charter}} &= \Delta \text{Qual} - \alpha \Delta D \\ &\equiv \text{Qual}_{\text{charter}} - \text{Qual}_{\text{local}}(I) - \alpha(D_{\text{charter}} - D_{\text{local}}(I)) \end{aligned}$$



We have explained why the first term is likely to be negative. The second term is likely to be positive because distance is less of a barrier to high-income families. The third term could be positive or negative depending on whether the charter school is more closely situated to the high-income or low-income family respectively. The sign of the fourth term is uncertain because high-income families may be more or less sensitive to an increase in required parent volunteer time. Unless high-income families are sensitive to the higher opportunity cost of taking time off working, their resources probably make them less sensitive to a demand to increase time away from work, and so this fourth term would be positive. The final term will be positive if the local school serving the high-income family has higher parent volunteer requirements than the local school serving the low-income family, and will be zero if the two schools had identical requirements.

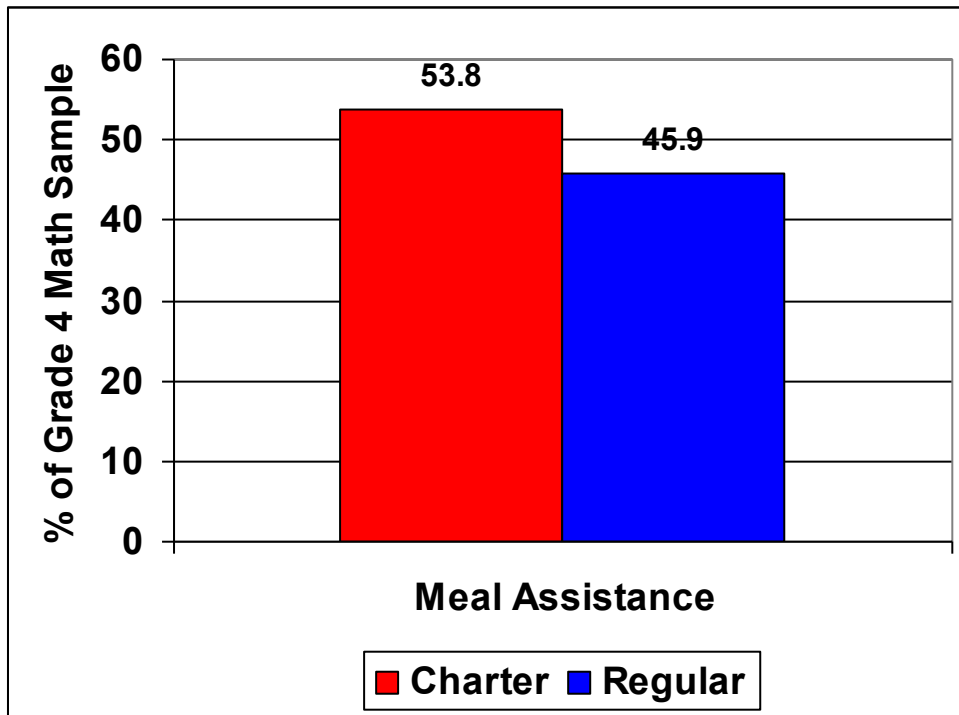


Figure 5.1 Racial/Ethnic Composition of Grade 4 Schools Participating in 2003 National Assessment of Educational Progress Math Test



Source: Nelson et al. (2004), page 11.

Figure 5.2 Percentage of Students Eligible for Free/Reduced-Price Meals in Schools Participating in 2003 National Assessment of Educational Progress Math Test



Source: Nelson et al. (2004), page 7.

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## Endnotes

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<sup>1</sup> The author would like to thank the members of the Charter School Achievement Consensus Panel, Paul Hill and Larry Rosenstock for many helpful conversations.

<sup>2</sup> Several studies of parental preferences suggest that demographic groups vary little in that they typically list school quality as the most important factor parents are looking for in school choice programs. See Kleitz et al. (2000) for evidence based on a survey of charter school parents in Texas. Similarly, Schneider, Teske and Marschall (2000) report on a survey that asked parents what thing they thought were most important for their child's education. High teacher quality was far and away the most commonly chosen response among demographic groups.

<sup>3</sup> Kleitz et al. (2000) and Schneider, Teske and Marschall (2000) both report evidence that disadvantaged families place higher weight on safety when choosing schools. For instance, the former report that 81% of low-income parents rated safety as important or very important in a survey of Texas charter school families, compared to 68% of high-income parents. This gap probably does not reflect a difference in underlying preferences so much as a reaction to differences in the safety at these parents' local schools. Notably, this same survey finds almost no difference in the percentage of low-income and high-income parents who identified educational quality as important or very important (96% and 95% respectively).