Making the Grade: Comparing DC

Charter Schools to Other DC Public Schools

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Abstract

Across the United States, charter schools have become one of the most frequently used means of increasing choice among educational alternatives. In this paper we use data from a recent telephone survey of Washington D.C. parents to evaluate the success of the District's large and growing charter school program. We find that parents with children in charter schools rate their teachers, principals, facilities and schools higher than their traditional public counterparts. This finding is robust even when controlling for self-selection into charter schools. However, the charter school advantage fades over the course of the school year. Thus while the higher grades assigned to charter schools are not a function of self-selection, the durability of greater parental "satisfaction" with charter schools is a question that must be studied in the future.

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Making the Grade:

Comparing DC Charter Schools to Other DC Public Schools

In this paper we study parental evaluations of traditional public schools and charter schools in Washington DC, a city with a large and growing charter school population. Using survey data, we find that parents with children in charter schools rate their teachers, principals, facilities, and schools higher than their traditional public school counterparts. Using a propensity score technique, we show that this finding is robust even when controlling for self-selection into charter schools, but we also find that the charter school advantage diminishes over the course of the school year and in certain dimensions disappears altogether.

Charter Schools as a Tool of Reform

Across the United States, charter schools have become one of the most frequently used means of increasing choice among educational alternatives. Appearing first in the early 1990s and gathering momentum throughout the last decade, charter schools have played an increasingly prominent role in the nation's system of education. The number of parents, children and school staff involved with charter schools reached nearly one and a half million people at the opening of the 2001 school year. As of that date, a total of close to 2400 charter schools were serving more than 576,000 children, an increase of nearly 12 percent from September of 2000 (Center for Educational Reform 2002). The growth continues: there were 2,695 charter schools that are operating during the 2002-2003 school year, serving 684,495 students in 36 states and Washington, D.C. (Center for Educational Reform 2003)

One apparent reason for the growth in enrollments is that parents and students think charter schools are better than the traditional public schools. Finn et al. (1997) found that a large majority of parents felt that charter schools in which their children were enrolled were better than

the traditional public schools they left, with respect to class size, school size, teacher attentiveness, and the quality of instruction and curriculum. In contrast, less than 5 percent of parents found their new charter schools inferior. Finn et al. also found high levels of student satisfaction across the entire gamut of school attributes, including teachers, technology, class size, and curriculum. Teachers also seem to like charter schools, with high levels of satisfaction found among charter teachers (Koppich et al. 1998).

There are several possible foundations for this greater satisfaction with charter schools. Perhaps the strongest is that of "allocative efficiency"— education is a complex, multifaceted "good," and choice allows parents to select schools that deliver the kind of education they want for their children (Schneider, Teske, and Marschall 2000).[1] This link between choice and higher parent satisfaction dates at least as far back as Milton Friedman's original argument in favor of vouchers in the 1950s (Friedman 1955).

In his pioneering work, Friedman made a strong case for consumer sovereignty, arguing that higher levels of satisfaction with schools will flow from maximizing the freedom of parents to choose schools. From this perspective, choice leads to higher parental evaluation of choice schools because it increases the ability of parents to match their preferences for specific values, needs or pedagogical approaches with the school. As Goldring and Shapira put it: "The family sovereignty position suggests choice leads to greater satisfaction in that it accommodates individual family preferences, mainly in the areas of curricula, teaching philosophy, and religion. Parents will be satisfied in exercising their fundamental right of individual choice and freedom of belief about the best education for their children." (1993: 397. Also see Coons and Sugarman 1978 and Raywid 1989).

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[1] Many of the factors discussed here are associated with choice in general, and have not been developed specifically for charter schools as a form of choice—but clearly apply to the charter school option as well.

In addition to increasing this match between preferences and schools, choice may change the schools themselves—making better "products" available for parents to from which to choose. Indeed, fundamental to the push for choice is the idea that choice unleashes competitive pressure on the schools that will force them to improve—and charter schools are often seen as a central tool to leverage such change (see, e.g., Teske at al. 2000).

While debates still rage about the effect of choice on academic outcomes, there are other outcomes from choice that are less contested—any of which could increase parental evaluations of charter schools.

For example, many charter schools are designed to change the relationship between administrators, teachers, parents and students, creating what Coleman (1988) refers to as "functioning communities." In these communities, the tighter links from the school to parents, families, and students lead to better educational experiences and all parties, including teachers, are more satisfied (Driscoll 1993). This link underlies the basic findings developed in the research on "effective schools," which shows that good interpersonal relations between members of the school community and shared beliefs and values combine to promote good teaching and a positive learning environment (see especially Bryk and Schneider 2002).

Indeed, many charter schools have a culture (and sometimes even a written contract) that provides parents opportunities to influence school management and to become more involved with the processes of school governance and functioning (see, for example, Peterson and Campbell 2001; Finn et al. 1997). To the extent that this does occur, parental evaluations of their children's' schools should increase (Chubb and Moe 1990; Raywid 1989; Goldring and Shapira 1993).

It is also important to consider that choice seeks not only to empower parents but also to change the role of students, making them more integral to the design of education programs and in the functioning of the schools. In short, one goal of choice is to increase the attention paid by schools to student needs (Hill et al. 1997). In turn, choice seems to improve student-teacher relations. For example, in her study of the effects of choice, Driscoll (1993) found that choice students were more likely to report "they got along well with teachers, that the quality of teaching was high, and that teachers praised them and listened to them." (1993, 158) Similarly, Finn et al. (1997) found that large numbers of charter school students liked the "good teachers" in their schools, who, according to these students, teach until they learn the material and who don't let students fall behind. To the extent that this behavioral change strengthens the ties between students and teachers and increases the level of student satisfaction with the schools, parental satisfaction with the schools should in turn increase.

Finally, choice may put pressure on administrators, teachers and staff to be more "consumer friendly." As Hassel observes: "charter schools cannot take their 'customers' for granted. Their very survival depends on the degree to which families believe the schools are responding to family preferences and working hard to provide the education they demand." (1999: 6; also see Teske et al. 2000, Hill et al. 2001). Thus rather than being isolated from the demands of parents, the competitive pressures on charter schools should increase their responsiveness to parent demands—and responsiveness should lead to higher evaluations.

Is There Another Foundation for Better Evaluations?

While these are all strong reasons to believe that choice should lead to actual improvements in schools that in turn will lead to higher evaluation of schools by parents, there are several alternative possibilities that must be considered.

Rose Colored versus Grey Colored Glasses

First, the act of choice alone may increase satisfaction. For example, Erikson argues that parents "who actively choose the schools which their children attend, from among a variety of options, seem far more satisfied with their schools than are parents who simply do the 'normal' thing, with little thought." (Erikson 1986: 105; also see Goldring and Shapira 1993). For Erikson, the causal mechanism underlying this relationship between choice and satisfaction is related to the investment of energy and time that parents put into choice. Given this investment, even if there are no visible reasons for choice to increase satisfaction, many parents may seek to justify their choice and their investment of resources by selectively gathering and interpreting information about performance and by indicating increased satisfaction with their child's school—viewing the school through "rose colored glasses." (Erikson 1982).

Indeed, almost every study of schools of choice has found higher levels of parent satisfaction, regardless of type of choice and regardless of any changes in academic performance (see, for example, Bridge and Blackman 1978, Moe 2001, Peterson 1998, Witte, Bailey, and Thorn 1992 on vouchers; Bierlin 1997 on charter schools, and Schneider, Teske, and Marschall 2000 on public school choice). Moe also finds that parents who moved to enroll their children in good schools were more satisfied. Moe then argues that "residential choice—the choice of specific neighborhoods or specific schools—promotes greater satisfaction." (2001: 84).

While this is an important argument, using a Bayesian hierarchical model, Buckley (2002) finds empirical evidence that, in fact, parents who have opted for charter schools in Washington DC tend to be *tougher* critics of school quality than their traditional public school counterparts. Rather than wearing rose colored glasses, charter school parents may in fact be looking at their schools with grey colored ones. Indeed, Buckley's evidence suggests that the

quality choosers perceive in their children's schools would have to be substantial to overcome their tendency to be more critical than other parents.

Parents Have Limited Experience with Charter Schools

There is also the possibility of a "Hawthorne-type" effect caused by the newness of charter schools. It is well-known that the DC public school system is plagued by many problems. For example, about one-third of the students in the DC schools have reading skills that are below the basic level on the SAT-9 reading achievement tests and an even larger number are below basic in math skills. These academic failures are matched by an equally dismal record of administrative performance. Indeed, according to Henig et al. (2003), the *District of Columbia School Reform Act of 1995,* which placed the District in the forefront of the national experiment with charter schools, reflected the impatience of Congress with the never-ending problems in the District's schools.

Given that the number of charter schools in the district continues to grow and that new students are being enrolled in large numbers, it is not surprising that students have had less experience with the charter schools than with the traditional public schools. For example, in the Fall of 2001, 46 percent of charter school parents we interviewed said their child had been in the school one year of less, while only 37 percent of parents of DC public school students said the same thing. In terms of average tenure in the school, the average for DCPS students in our sample was 2.25 years, significantly higher than the 1.6 year average among charter school students.

Taken together, the general problems associated with the DC public schools, the fanfare attached to charter schools, and the more limited experience students and parents have with charter schools, make it possible that families like charter schools better because, quite frankly, they haven't had extensive experience with them and that their evaluations are being driven by

the "buzz" and expectations surrounding charter schools. To explore this possibility, we re-interviewed the parents at then end of the school year to see if any charter school advantage persists in the face of the "reality check" of a school year's worth of experience.

The Problem of Self-Selection

Another complicating factor affecting parental evaluations may be a selection bias in who chooses charter schools—a bias that may explain higher parental evaluations of charter schools independent of any of the other factors already noted. The possibility of selection bias is built into the very way in which charter schools are designed. Indeed, charter schools, like most current schools choice plans, are what Elmore (1991) calls "option demand" choice.

In contrast to a system of "universal choice" where all parents must choose a school for their child, option demand choice is a two-stage process. First, parents must "choose to choose"—that is, they must be dissatisfied enough with their existing schools or be sufficiently attracted to an alternative to their neighborhood school that they decide to exercise choice. Once they decide to choose, the parent then has to select among the alternatives to find a school in which to enroll her child.

Given this two-stage process, the possibility of bias due to self-selection must be taken into account when studying any outcomes of choice. That is, it is likely that the individuals who choose to choose are not representative of the entire population of parents (see, for example, Schneider, Teske, and Marschall 2000) and the characteristics that are motivating them to choose may affect their subsequent behavior and attitudes toward the schools. To the extent this is true, simple comparisons of choosers and non-choosers are biased and the higher evaluations of choice schools found among parents may be a function of the factors that led them to choose in the first place.

Clearly the conventional wisdom is that parents in charter schools will evaluate their child's school more positively than parents with children in traditional public schools. However, there may be problems underlying that relationship.

In the empirical analysis that follows we start with the "standard" hypotheses that has been verified in other studies:

- *Charter school parents evaluate their schools more highly than parents with children in the traditional public schools.*

However, we investigate two additional hypotheses that may complicate this oft-found relationship between choice and evaluation.

- *These higher evaluations endure over time.*

- *These higher evaluations are not a function of a self-selection bias resulting from the characteristics of parents who choose charter schools.*

Using Grades as an Evaluative Tool

To assess how parents evaluate their child's school, we asked parents to assign letter grades ranging from A to F for three different aspects of their child's school: their child's teacher, principal, and school facilities. We also asked them to assign an overall grade to their child's school. We investigate differences between the grades assigned by charter parents and DC public school parents, over time, and controlling for self-selection effects.[2]

Before proceeding with the analysis, we note that there is a well-known pattern when using grades as measures of parent evaluations of schools—parents almost inevitably give high grades to their children's schools. For example, Phi Delta Kappa regularly asks a sample of

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[2] While much of the research we reviewed earlier focuses on the expressed level of satisfaction parents express with their child's school (or components of it), we believe that asking parents to grade the schools reflects the same underlying attitudes.

parents to grade their children's schools. In 2001, 51 percent of parents gave their own children's schools either an A or a B—11 percent gave the grade of A, while 40 percent gave a B. Note that the grades parents give to their own children's school are higher than the grades they assign to the nation's schools as a whole (where only 23 percent gave grades of A or B). However, we believe that this pattern is not important for our analysis, since we are interested in comparing parents in the charter schools and the traditional public schools in the same city and ultimately we do control for conditions that could affect parents in the two sectors differently.

The same parents in our study were interviewed twice– in the Fall 2001 and again in the Spring 2002 – and we report results from each wave of the survey separately. See Appendix 1 for details on the surveys.[3]

How Do DC Parents Grade Their Schools?

In Table 1, we report the mean scores for charter school parents and traditional DC public school parents on each of the four aspects of schools (teachers, principals, facilities and overall) with which we are concerned. Note that in this table we are reporting the significance of observed differences prior to controlling for any factors that may affect these differences.

Using a straight-forward comparison of means and ignoring selection effects, our data confirm the pattern documented in virtually every other study of school choice: charter school parents in DC, like parents in other choice programs, evaluate their child's schools more highly than do parents in traditional public schools. At this point, we could end our analysis by confirming the prevailing wisdom—choice leads to higher evaluations and parental satisfaction.

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[3] Due to attrition, the sample for which we have information on all the variables in our analysis fell from 727 respondents in the first wave to 426 in the second wave. We used a weighted Heckman two-step method to examine whether attrition poses any problem for our analyses. The results for all dependent variables suggest that attrition and grades assigned by them are independent processes. Thus, attrition does not create any measurable biases in our conclusions.

But our panel data show something that would not be evident using a single cross section. Looking across the two waves, note first, that the mean grades assigned by parents in both sectors on all dimensions decrease over time and, that in each of these dimensions, the difference between the two groups of parents diminishes over time. In short, the charter school "advantage" evident in either wave may not be as robust when looked at over time.

Table 1: DC Charter School Parents Assign Higher Grades to Their Child's School Than Do Parents Whose Child is in a Traditional DC Public School

Dependent Variable	Wave 1			Wave 2		
	Charter Mean Grade	Non-Charter Mean Grade	Difference in Grade	Charter Mean Grade	Non-Charter Mean Grade	Difference in Grade
School Grade	3.32 (.04)	3.02 (.06)	.30** (.07)	2.92 (.07)	2.78 (.08)	.14 (.10)
Teacher Grade	3.37 (.04)	3.09 (.06)	.28** (.07)	2.99 (.08)	2.98 (.13)	.02 (.10)
Principal Grade	3.42 (.04)	3.21 (.06)	.21** (.07)	3.05 (.10)	2.94 (.09)	.12 (.13)
Facilities Grade	3.16 (.05)	2.79 (.06)	.37** (.08)	2.49 (.09)	2.82 (.11)	.33* (.11)

Number of observations: Wave 1: 727; Wave 2: 426
All differences are significant at p<.01

This leads to the next question: what happens when we control for the self-selection that is designed into option demand systems? Does the charter school advantage remain in either or both waves when we institute such controls?

Using Propensity Scores to Control Selection Effects

It is well-known that results from quasi-experimental studies of the effects of public policy (or other "treatments") are potentially biased when the factors predicting self-selection

into the program (here, charter schools) are correlated with the outcome measures (Maddala 1983). There are a variety of techniques that have been developed to deal with this problem.

One solution to this problem is the estimate of some form of parametric "treatment effects" model, usually by means of a consistent two-step or full-information maximum likelihood model (for a summary see Greene 2000; Maddala 1983). Instead we use a semiparametric estimator, *propensity score matching*, originally introduced by Rosenbaum and Rubin (1983; 1985) in a biometric context and recently applied in econometrics (Dehejia and Wahba 1998; Heckman, Ichimura, and Todd 1997; List et al. Forthcoming). The logic underlying this method is to construct, from quasi-experimental data, a new variable (the propensity score) that summarizes pre-treatment characteristics of each respondent (Becker, and Ichino 2002). Based on these propensity scores, a treatment group and a matched control group are created and the size and significance of the treatment effect can be estimated using these groups.

Propensity score matching has several advantages over more familiar "Heckman-type" treatment effects models, such as the relaxation of restrictive parametric assumptions. Moreover, as Dehejia and Wahba (1998) argue, matching provides estimates of the treatment effects more similar to randomized field trials than can be obtained using other corrections for self-selection.[4]

To implement this procedure, first a logit (probit) model is estimated to generate the propensity scores. The covariates we use to estimate the propensity score are:[5]

- charter school, coded 1 if the respondent's child is in a DC charter school;

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[4] We should note that we did estimate other methods for controlling self-selection, and the results we present are robust to alternative methods and to alternative selection equations. We also present results from one alternative method of controlling for self-selection below.

[5] The survey data are appropriately weighted for probability of inclusion and post-stratified on charter enrollment due to intentional over-sampling of this subpopulation. All the models estimated below use the same weights.

- a set of 3 dichotomous variables for self-reported race (Hispanic, white, other, with

  African-American the excluded—and modal—category);

- residential mobility (measured by two variables: the number of years the respondent

  has lived in DC and the number of years the person has lived in her current

  neighborhood);

- respondent's years of schooling;

- whether or not the respondent was married;

- whether or not the respondent was employed;

- the frequency of church attendance;

- respondent's gender, and

- the grade the respondent assigned to the DC public schools in general.[6]

The balancing property was satisfied for both waves.[7] This property ensures that

pretreatment characteristics of the respondents within equally spaced intervals of the propensity

score, independent of them being in the charter school,[8] have the same mean and variance.

As the propensity score is a continuous variable, it is unlikely that two respondents share

the exact same value; therefore, matching is based on some measure of proximity matching

parents receiving the "treatment" (charter schools) to parents who act as controls (parents in the

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[6] We include this measure as a control for general dissatisfaction with the schools, something that obviously could confound satisfaction with one's specific school. Since there is a possibility of endogeneity here (time as a charter parent, for example, may change one's overall rating of the system), we use an additional measure of the length of time that the child has been in the school to divide the respondents into several categories, then perform a Kruskal-Wallis (Kruskal and Wallis 1952) nonparametric test on the equality of distribution across these categories for both traditional and charter parents. Results suggest that the overall DC schools grade can be considered an exogenous variable.

[7] We present the results of our probit model in Appendix 2. While every variable in the equation is related to the propensity to choose, consistent with the demands of the propensity matching procedure, our concern with this probit model is not testing theory but rather to obtain as good a fit as possible. Also note that, due to the limited size of the control population, we sample with replacement, conditional on propensity score.

[8] Estimators based on propensity score matching have been used in the literature to estimate treatment effects. The treatment, charter school enrollment in our study, is random for a given propensity score (Becker, and Ichino 2002; Abadie, and Imbens 2002).

DC public schools). We chose the radius matching method and set a tight radius of .01, to improve the quality of the match (Becker and Ichino 2002).[9]

After matching on propensity scores, the differences between the grades assigned by charter school parents and their traditional public school counterparts are computed. We calculate two differences of means to measure the effect of charter schools.

First, we compute the effect of charter school enrollment on charter school parents (the average treatment effect on the treated or ATT). In the first stage of the analysis, we define enrollment in a charter school as the "treatment;" therefore, the ATT indicates the average effect of charter school enrollment on the evaluations offered by charter school parents. But we can also reverse the coding for the treatment variable, analytically designating traditional public school parents as the "treatment group" and charter school parents as the controls. We can then estimate the average treatment effect on the non-treated (ATNT). This estimate can be interpreted as the effect charter schools would have on traditional public school parents had their children been enrolled in charter schools.

As evident in Table 2, the patterns presented in the simple comparison of means in Wave 1 are robust in the face of control for self-selection. Most notably, we find that after controlling for self-selection, treatment effects are evident across all four specific measures: charter school parents rate their schools overall higher and they also assign higher grades to each of specific aspect of the schools we measure. [10] As evident in the ATT for Wave 1, the effect is statistically significant and non-trivial. Our data further suggest that the diffusion of charter schools to a broader population of DC students would also improve parental evaluation of their schools.

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[9] The results are virtually identical using the nearest neighbor matching process.
[10] Since the propensity scores are estimated quantities, we correct the standard errors via bootstrapping the entire estimation 200 times for each analysis.

Looking at the ATNT column, we see that if DCPS parents were somehow "turned into" charter school parents, their evaluation of their child's schools would increase significantly.

Based on only Wave 1 results, the charter schools are clear "winners," dominating the DC public schools on all dimensions. This finding is consistent with extant studies on charter schools and school choice in general. Indeed, the durability of these findings in the face of self-selection biases would move the conventional wisdom onto even stronger ground.

Table 2: The Effect of Charter Schools on Charter and Non-Charter School Parents

Dependent Variable	Charter Parents (ATT)	Non-Charter Parents (ATNT)	Charter Parents (ATT)	Non-Charter Parents (ATNT)
	Wave 1		**Wave 2**	
School Grade	.353** (.082)	.322** (.075)	.259** (.126)	.229** (.103)
Teacher Grade	.318** (.073)	.286 ** (.077)	.092 (.099)	.114 (.107)
Principal Grade	.290** (.084)	.249** (.077)	.027 (.116)	.108 (.127)
Facilities Grade	.383** (.087)	.409** (.089)	.457** (.125)	.514** (.116)

Number of observation: Wave 1: 727; Wave 2: 426
Bootstrapped standard errors in parentheses
$* p < .05$ $** p < .01$, two-tailed

But note that based on interviews comparing grades over time, the benefits of charter school enrollment are not so clear cut. While the charter school parents still rate their child's school overall and the school facilities higher than the matched set of DCPS parents, the charter school advantage for teachers and principals disappears. We should also note that the enduring differences in the facility grade may be explicable by the relatively newness of the charter

schools—remember none are more than 5 years old. In contrast the average age of the public schools in DC is over 50 years and about 10 percent of them are over 75 years old.

The overall pattern suggests that at least part of the appeal of charter schools may be ephemeral—the result of their newness and the lack of experience parents have with them. Even just a school year's experience with charter schools diminishes the positive light in which they are viewed.

How Strong is The Foundation for Higher Evaluations by Charter Parents?

At the beginning of the school year, on each aspect of schools we measured, parents in the DC charter schools evaluated their child's school more highly overall than did parents in the traditional DC public schools and they graded their child's teacher, principal and school facilities higher. These differences were robust when we controlled for the likelihood that parents who choose charter schools may be systematically different than parents whose children stay enrolled in traditional public schools and that such differences might account for the higher evaluation of charter schools.

But we also found that the differences eroded over time. Indeed, we found that a strong initial advantage of charter schools in grades assigned to their teachers and principals declined so steeply, that at the end of the school year the differences between parents in the two sectors on these two dimensions were no longer significantly different. However, differences in the overall school grade and in facilities in favor of charter schools remained.

We believe that our data show that the act of choice alone is not behind the higher evaluations we found for charter schools. This of course is good news for proponents of charter schools. However, the erosion of the charter school advantage over time should be disconcerting for them. One possible explanation for the pattern we find here is that charter school parents start

the school year with great expectations regarding their child's teachers and the school principal. In Washington DC, these expectations may be heightened by the frequent (and well deserved) criticisms of the traditional public schools and by advocates of charter schools extolling the virtues of the charter school alternative. But the realities of educating an inner-city population do not disappear with the simple act of creating a charter school and by enrolling a child in that school.

Despite the promise of charter schools to be laboratories for effective teaching techniques, teachers in these schools still face profound difficulties in educating their students. And despite the supposed freedom granted to charter school principals, they continue to be overburdened by administrative paperwork and enduring conflicts over funding and the other problems of running an urban school. As the school year progresses, fatigue affects students, parents, teachers, and staff alike, and the promise of the new school year erodes under the pressure of educating an urban inner city population—as witnessed by the declining grades all parents give on all dimensions of the schools we queried them about.

While charter school parents still grade their schools overall higher at both the beginning and the end of the year, reality clearly affects the way in which these parents view their schools and the high hopes and expectations these parents brought to charter schools suffer.

To use an evaluative standard common in policy analysis, charter schools are Pareto superior to the DC public schools. Parents in the DC charter schools never rate their schools lower than the DC public schools. And if we somehow moved the DCPS parents into charter schools, they would never be worse off (at least in terms of the grades we would expect parents to assign).

However, while charter schools meet this normative standard, they are not a panacea for the ills of urban education—and indeed over time parent may end up evaluating them no differently than the failing public schools that motivated their creation.

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Appendix 1: Sample Design and Response Information

Telephone interviews were conducted among parents with at least one child in a Washington DC charter or public school. For the first wave, interviews were conducted between September 12 and December 11, 2001. All interviews were conducted by the Center for Survey Research at the State University of New York at Stony Brook. As a quality control measure, up to 15 callbacks were made per number and an attempt was made to convert all initial refusals. Almost 52 percent of all interviews were validated on a subsequent call after the interview had been completed.

Sample Design

Parents were drawn from two distinct samples – an RDD sample of parents with children in charter and public schools and a sample of parents from a list of charter school parents provided by DC charter schools.

RDD Sample. A list-assisted method of random-digit-dialing (RDD) was used to obtain phone numbers in the main state sample. Numbers were purchased from Genesys. Under the list-assisted sampling method, random samples of telephone numbers are selected from blocks of 100 telephone numbers that are known to contain at least one *listed* residential telephone number. These blocks with at least one residential telephone number are referred to as "1-plus" working blocks. According to Survey Sampling Inc. roughly 40 percent of telephone numbers in 1-plus working blocks are residences, although percentages are as high as 54 percent when the blocks are screened for non-working and business numbers.

Charter School. A sample of charter school parents was drawn from a list of parents in 30 DC charter schools. Not all numbers provided by the schools were valid and numbers that lacked the appropriate number of digits were eliminated prior to sampling. This left a total of 7,389 valid phone numbers for charter school parents.

Response Rates

RDD Sample. A total of 24,000 numbers were drawn from 1-plus blocks for the main state sample. Of those, Genesys screened out 5,214 or 21.73 percent as numbers that it detected as non-working or listed in directories of known business numbers. This left 18,786 numbers that were actually dialed by the Center for Survey Research. Just over 46 percent of all these numbers (N=8,734) were coded as non-households. This includes all numbers coded as disconnected, a business, government office, fax, changed number or cell phone. It also includes 1,550 numbers estimated as non-households. These 1,550 numbers are drawn from all numbers that were called 15 times and at which there was ever only a busy signal or no answer (but no answering machine). Based on research by Westat, we estimate

that 75 percent of these numbers are non-households. This number is based on national estimates. There were 2,067 numbers in this category and 1,550 were estimated to be non-working numbers.

This left 9,956 possible households in the sample of phone numbers. Of the remaining households, 6,523 (a total of 941 parents plus 5,582 non-parents or non-DC parents) were successfully screened for the presence or absence of children in DC public or charter schools. This resulted in a screening rate of 62.81 percent for parenting status obtained by dividing the number of DC parent plus non-parent households by the total number of households in the sample. The total number of parenting households in DC is estimated at 922 or 14.13 percent of all screened households. This number omits 264 (245 non-parents and 19 not in DC) households that were coded in at least one contact attempt as parents in DC but were later recoded as non-parents. The status of these numbers is ambiguous and could reflect the actions of respondents to avoid an interview. If all of these numbers are included (probably an overestimate) the incidence of parents in the sample increases to 18.18 percent.

Of those households identified as obtaining a parent of a child in a DC school (N=922), interviews were completed in 504 resulting in a cooperation rate of 54.66 percent. This results in an overall response rate in the sample of 34.33 percent. This response rate is calculated by combining the screening rate for parenting households (62.81 percent) with the cooperation rate among households identified as parents of children in DC schools (54.66 percent).

Charter School Sample. Charter school parents were drawn from a list of names provided by 30 charter schools in the DC areas. The sample was self-weighting which means that unequal numbers of parents were drawn from each school. The number of parents selected form a school was directly proportional to the size of the school in relation to all charter school parents in DC. Thus more parents were chosen from large school and fewer from small schools. This ensures that the final sample represents parents in charter schools across the DC area. The sampling fraction was 29.63 percent or just under a third; parents were drawn in successive random waves from the lists. There were 7,389 parents listed (after bad numbers were culled from the lists) and 2,189 numbers were included in the sample.

Of the total 2,189 numbers, just over 23 percent of all numbers (N=522) were coded as non-households. This includes all numbers coded as disconnected, a business, government office, fax, changed number or cell phone. It also includes 6 numbers estimated as non-households. These 6 numbers are drawn from all numbers that were called 15 times and at which there was ever only a busy signal or no answer (but no answering machine). There were 24 numbers in this category and 18 (75 percent) were estimated to be non-working numbers.

This leaves 1,667 possible households in the sample of phone numbers. Of the remaining households, 1,321 (a total of 811 parents plus 441 non-parents and 69 non-DC parents) were successfully screened for the presence or absence of children in DC public or charter schools. Given the messy status

of the sample, we assumed that numbers were not associated with parents of students in charter schools until this had been verified by an interviewer. This resulted in a screening rate of 79.24 percent for parenting status, obtained by dividing the number of DC parent plus non-parent households by the total number of households in the sample.

Of those households identified as containing a parent of a child in a DC school (N=811), interviews were completed in 510 resulting in a cooperation rate of 62.89 percent. This results in an overall response rate in the main sample of 49.83 percent. This response rate is calculated by combining the screening rate for parenting households (79.24 percent) with the cooperation rate among households identified as parents of children in DC schools (49.83 percent).

Wave 2

A second stage of telephone interviews were conducted with parents of at least one child in a Washington, DC charter or public school, who were previously interviewed for the study in the Fall of 2001. Interviews were conducted between May 30 and July 8, 2002. All interviews were conducted by the Center for Survey Research at the State University of New York at Stony Brook. As a quality control measure, up to 15 callbacks were made per number and up to 3 attempts were made to convert all initial refusals.

Sample Design

The sample consisted of the list of 1014 respondents who completed the first stage of interviews.

Response Rate

Of the 1014 numbers attempted, just over 22% (N=225) were coded as non-households. The vast majority of the non-households (N=200) were either non-working/disconnected numbers, or a wrong number with no forwarding number given. A small number of cases (N=15) reported that they did not have children in the DC public/charter schools (these cases were validated for accuracy), and 5 numbers were reported to be consistently a fax or data line. (See table 1 for breakdown of disposition codes.) This left a total of 789 available working numbers. Respondents from the first stage study were located, and interviews were completed with 558 of these respondents, for a response rate of 70.7%.

TABLE 1 Final Disposition Codes for Stage 2 Interviews

Households	N (% of valid)
Completes	558 (71%)
Partial-not completed	0 (0%)
Refusals	32 (4%)
Hang-ups	14 (2%)
Incomplete call back	49 (6%)
Physically/mentally unable, deceased	5 (1%)
Non-contacts-Households	
Answering machine	81 (10%)
No Answer/Busy	50 (6%)
Total Valid	**789**
Non-households/Ineligible	**N (% of invalid)**
Fax or data line	5 (2%)
Non-working/Disconnected	128 (57%)
Wrong number/no new number given	72 (32%)
Business, government office	5 (2%)
Ineligible – No children in DC schools	15 (7%)
Total Invalid	**225**
TOTAL SAMPLE	**1014**

Appendix 2: Results of Probit Models Used for Estimation of Propensity Score

Wave I

Variable	Coefficient (s.e.)
White	-1.17 (.23)
Hispanic	-0.25 (.18)
Other Race	-0.28 (.18)
Years Lived in D.C.	.003 (.01)
Years Lived in Neighborhood	-.001 (.001)
Married	.08 (.1)
Years of Education	.04 (.02)
Employed	.11 (.01)
Church Attendance	.02 (.02)
Gender	.25 (.12)
DC School Grade	-.19 (.04)
Constant	-1.7 (.34)
Log-Likelihood	-232.34
Probability > Chi Square	>.000

Number of Observations = 727

Wave II

Variable	Coefficient (s.e.)
White	-1.41 (.30)
Hispanic	-0.40 (.24)
Other Race	-0.42 (.21)
Years Lived in D.C.	.02 (.01)
Years Lived in Neighborhood	-.004 (.01)
Married	.19 (.13)
Years of Education	.005 (.02)
Employed	-.07 (.14)
Church Attendance	.02 (.03)
Gender	.17 (.14)
DC School Grade	-.14 (.06)
Constant	-1.46 (.44)
Log-Likelihood	-136.91
Probability > Chi Square	>.000

Number of Observations = 426