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Choices, Choices: Determining Significant Predictors of Choosing a School and Choosing Charters in Denver's Universal School Enrollment Program

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Background

For decades, educational leaders, researchers, policy makers, and pundits have discussed the importance of parental involvement, and one of the most critical forms of involvement is choosing the school children will attend (Goldring & Phillip, 2008). Until the advent of modern school choice programs in the 1990s, most parents chose their children's school primarily by selecting the neighborhood in which they lived. That began to change, however, with the widespread adoption of tax credit and voucher programs, open enrollment policies, the expansion of magnet schools, and, the subject of this paper, charter schools.

The first charter law was adopted in 1991 in Minnesota (Carpenter & Noller, 2010), and as of this writing, more than 6,000 charter schools operate in 40 states and the District of Columbia (http://dashboard.publiccharters.org/dashboard/schools/year/2014). Early in the growth of charter laws and schools, critics feared that this form of school choice might lead to further racial, ethnic, and income segregation, as white and comparatively wealthier parents would leave traditional public schools (TPS) and disproportionately enroll in charters (Bosetti & Pyrt, 2007; Cobb & Glass, 1999; Eckes & Rapp, 2005; Green, 2001; Hocschild & Scovronick, 2003; Horn & Miron, 2000; Howe, Eisenhart, & Betebenner, 2001; Metcalf, Theobald, & Gonzalez, 2003). The theory of how this would occur is, by now, well known—parents in higher status groups possess greater cultural capital, wider social networks, and more access to information, making them more likely to participate in the choice process (Goldring & Phillip, 2008).

Despite these fears, however, statistical evidence generally does not support such a concern (for exceptions, see Renzulli, 2006; Renzulli & Evans, 2005). Few charter schools have a disproportionately high percentage of white students (Eckes & Rapp, 2005; Rapp & Eckes, 2007). On the contrary, analyses of enrollment data indicate many charter schools have a disproportionately high percentage of racial minorities, leading some to question if charter laws have resulted in greater segregation (Rapp & Eckes, 2007), albeit in a way opposite of what early critics asserted. Data regarding the question of segregation, however, remain mixed.

Among those who have found charters highly segregated, some have compared the racial/ethnic composition of charter schools to the TPS charter students left (Bifulco & Ladd, 2007; Garcia, 2007, 2008; Weiher & Tedin, 2002; Zimmer et al., 2009). Such studies find students enter schools that are less integrated than those they left. Other studies compare the enrollment characteristics of charter schools to neighboring TPS (Erica Frankenberg & Lee, 2003; Frankenberg, Siegel-Hawley, & Wang, 2010; Rickles, Ong, & Houston, 2002). Results indicate charter schools appear to be more racially isolated than TPS, particularly for black students.

Ritter, Jensen, Kisida, and Bowen (In Press), on the other hand, found charter schools in the Little Rock, Arkansas, area were less hyper-segregated. Moreover, the authors found student transfers out of TPS and into charters improved integration levels at schools students left. Ni (2007) likewise found Michigan charter schools overall were more racially diverse than TPS,

although results varied based on whether charters drew students primarily from neighboring district schools or institutions outside of district boundaries.

Further complicating the picture is that results may vary based on student characteristics. The percentages of students classified as English Language Learners (ELL), those who qualify for free and reduced lunch (FRL), or those with IEPs for special education services, for example, may be enrolled in charters at rates less than those of TPS (Buckley & Sattin-Bajaj, 2011; Lacireno-Paquet, Holyoke, Moser, & Henig, 2002; Wamba & Ascher, 2003; Winters, 2013, 2014, 2015). Such characteristics often represent the most frequently studied in this literature, but Corcoran, Jennings, and Thomas (2009) added a unique analysis by studying differences in charter enrollment based on gender. Results indicated girls were over-represented in charters compared to boys, an imbalance that was most prevalent in secondary grades.

Finally, Garcia, McIlroy, and Barber (2008) examined the academic achievement of students who left TPS to enroll in charter schools. Results indicated students who transferred from district to charter schools had low levels of prior academic achievement, particularly compared to students who went from charters to TPS, those who switched between TPS, or those who remained in their prior schools. Cowen and Winters (2013) similarly found that lower performing students in Florida were more likely to exit TPS for the charter sector.

Although such analyses contribute important findings to the understanding of the composition of students enrolled in charter schools, they tell only part of the story concerning parental choice. Another important element sometimes obscured by a focus on enrollment is the choice preference of parents. Obviously, preferences and enrollment overlap, but they do not correlate perfectly. Enrollments are determined in part by who applies, but also by the type of student who exits a charter school (Winters, Carpenter, & Clayton, 2015), the type of student who accepts the randomly generated offer for charter enrollment, and also by enrollment policies and practices within a particular school system, city, or state.

Some state laws, such as in Texas, for example, emphasize the recruitment of at-risk students by charter schools (Rapp & Eckes, 2007). Other states encourage the creation of ethnocentric charters to serve specific populations of students. Logically, such schools appeal to and enroll almost entirely students that identify with the schools' curricular foci (Eckes & Trotter, 2007). Still other schools offer programs specifically for gifted and talented students, which often results in another type of homogenous population (Eckes & Trotter, 2007).

Enrollment policies adopted by schools impose additional limits on or preferences in enrollment. These include first come-first served, court or social service referrals (Wamba & Ascher, 2003), lotteries in circumstances of over-subscription, parental involvement contracts, and preference given to children of employees or founders, siblings of those already enrolled, and students from the authorizing district (Eckes & Trotter, 2007). Enrollment patterns are also affected by recruiting strategies used by charter schools. Some charter leaders recruit for their schools by word of mouth, local advertising, or attending community events, effectively tightening the scope of students seeking admission (Eckes & Trotter, 2007).

Taken together, such policies and practices mean parents' preferred choices do not translate directly into enrollment. This also means research on predictors of who enrolls in charter schools may not be the same as who *prefers* to enroll in them.[1] Although enrollment analyses dominate the literature, some have examined the choice preferences of parents as it relates to charter schools.

Among these, two methods prevail. The first is surveys of parents asking about their school choice preferences (Bosetti & Pyrt, 2007; Davies & Aurini, 2011; Kleitz, Matland, Tedin, & Weiher, 2000; Stein, Goldring, & Cravens, 2010). Such studies tend to focus on differences in characteristics of those who express choice preferences and in reasons given for stated choices. General findings from such studies indicate race and class differences among households correspond to differences in preferences for schools (Kleitz et al., 2000). Specifically, less educated respondents, those in non-dominant groups, and disadvantaged families are more likely to express pro-choice attitudes (Davies & Aurini, 2011). Although helpful in discerning choice preferences among parents, surveys like this suffer from well-known limitations, such as social desirability bias or differences between how people respond to a survey and actual behaviors.

The second method present in this literature—examinations of choice applications—overcomes such biases by examining parents' revealed preferences (Varian, 2006) rather than expressed preferences. Hoxby and Murarka (2009) studied charter school applications in the New York City school district, paying particular attention to characteristics of those who applied to enroll in charter schools versus TPS. They found that applicants to charter schools tended to be more disadvantaged and black and less likely to be ELLs but otherwise fairly similar on characteristics such as socioeconomic status and IEP classification to those who would have remained in TPS.

Nonetheless, the structure of the application process in most school systems presents a potentially important limitation for the analysis of parental preference of attending a charter school through applications—structures that may be more easily overcome by more involved and informed parents than others. One important such barrier to applying to charter schools is the burden placed on parents in the application process itself. Historically, the process for applying to a charter school is different than the process of enrolling a child in a TPS, adding an additional layer of bureaucracy through which parents must maneuver. Further complicating matters, in most school systems across the country parents must individually apply to each charter school in which they would like to enroll. We might suspect that these additional steps would be more easily taken by parents with greater informational resources and bureaucratic acumen.

This paper contributes to the existing literature by describing the characteristics of students who apply to attend charter schools in a large urban school system with an effective and expanding charter sector that has recently adopted a common enrollment system. Such an analysis is important both because of the recent expansion of common enrollment systems and

also because it provides further insights into parental preferences for charter schooling under a less restrictive system than has historically existed.

Several school systems have recently adopted centralized common enrollment systems in hopes of making charter schools and other high quality TPS more accessible to parents. These systems are currently used to match students to both TPS and charter schools in Washington D.C., Denver, New Orleans, and Newark. Both New York City and Boston currently use this system to match students to TPS but do not include charter schools. A variety of other school systems are reportedly considering adopting the policy.

In short, each spring parents are asked to state in rank order of preference up to five schools—including both charter and TPS—that they would prefer their child attend in the fall. Parents are able to keep their children within their current school if that is their preference. Among those changing schools, a statistical algorithm matches children to schools based on their preferences. These enrollment systems are based on the process first developed by Alvin Roth for assigning applicants to medical residencies (Abdulkadiroğlu, Pathak, & Roth, 2009).

The common enrollment system can be expected to significantly reduce the existing barriers to applying to attend a charter school. Instead of visiting and applying to each charter school separately, parents can instead apply to up to five charter schools by filling out a simple form. Further, because the same process is used to state preferences for TPS and charter schools, the common enrollment system could help to assure parents that charter schools are available options for them, thus reducing a potentially important information barrier.

Our analysis is aided by the fact that the common enrollment system produces a centrally collected dataset with which we observe parental preferences. For many, likely most charter schools, the application process is coordinated entirely at the individual schools, making the study of applications cumbersome and difficult to acquire. In comparison, Denver Public Schools (DPS) centrally collects and maintains data on parental preferences for student enrollment, allowing the analysis to include the universe of students seeking enrollment in the system's traditional public or charter schools.

Study Context

Charter schools in Colorado first formed in 1993, after the state legislature adopted its charter law in the same year (Carpenter & Kafer, 2013). More than 80,000 students attend around 200 charter schools in Colorado, which represents approximately 10% of the state's public school enrollment. Charter school authorizers in Colorado include local school districts, such as DPS, and the Charter School Institute, a non-district, statewide organization. For its part, DPS encourages the formation of charters through its Office of School Reform and Innovation (http://osri.dpsk12.org/), fulfills its authorizer role by holding charter schools accountable to performance metrics and their contracts (http://osri.dpsk12.org/quality-assurance-accountability/), and promotes charter schools among its other schools when enabling parents to choose their children's schools (http://osri.dpsk12.org/about-osri/parent-resources/).

DPS adopted a common enrollment system in which parents can choose either a TPS or a charter school through a single online or paper application (Gross & Denice, 2015). The process is designed to optimally match students to their preferred school in a way that is efficient, equitable, and transparent. Each spring, parents are given an opportunity to state their preference for where their child attends school in the fall. Parents can select up to five choices in which they want their child to be enrolled the following year, including both charter schools and TPS (Klute, 2012). They fill out a common form that is returned to the central administration office.

Schools also list preference categories, for instance for siblings of current students or for students who reside within a targeted neighborhood. Students are matched to schools according to where they fall within the school's preference categories. If there are more available seats after filling all students classified within the first preference level, then the algorithm matches students in the second school preference category, and so on. When there are more students within the school preference category being matched then there are available seats within the school, students within that preference category are assigned randomly. The student is assigned to attend his highest preferred school to which the process matches him.

Parents can use the system in any grade level, or they can forego the system entirely and allow their child to be assigned to a school, usually based on neighborhood. Once enrolled in a school, parents do not have to use the system again for their child to remain in that school (i.e., reapply to the same school each year).

Importantly for our purposes, students with disabilities represent a special case. Students with IEPs that indicate that they have a mild or moderate disability are treated as any other student by the common enrollment process. However, during the years analyzed in this paper, students with more severe disabilities were assigned directly to schools that the district determined were able to provide the necessary services.[2] In addition, if transportation is part of the student's IEP, then the student is still eligible to participate in the common enrollment process but only under the understanding that transportation may be relinquished if they choose a school outside of a particular area.[3]

Studies of the system have found families have responded to DPS's universal enrollment system with broad participation, particularly in grades with structured transitions (kindergarten, sixth grade, and ninth grade). Up to 80% of students enrolling in transition years participate in the universal enrollment process (Gross & Denice, 2015). Although this paper focuses exclusively on the choices made in the application—detailed analyses about the mechanics and efficacy of the process can be found in Gross and Denice (2015) and Klute (2012)—it is nonetheless interesting to note what happens after choices are made. In general, the vast majority of families receive one of their identified choices. Among all grade levels, approximately 83%, on average, are matched to one of their five choices (Gross & Denice, 2015). Moreover, most students at similarly high percentages are matched to their first choice (Gross & Denice, 2015).

Although such results are generally seen as positive, questions nevertheless remain: What do parents choose? Are there differences in what they choose based on personal characteristics or academic performance? Do families already in charters tend to choose to remain in charters when compelled to change schools (through structured transitions)? These are the questions that guided this study.

In brief, the results indicate the most consistent predictor of affirmatively choosing a school and choosing a charter school is race/ethnicity. In particular, black families are almost always more likely than White families to choose and to choose charters. The same is also usually true for Hispanic families. Beyond race/ethnicity, few other variables demonstrate consistent patterns of relationships or significance across dependent measures or grades. ELL students, those with IEPs, and students who quality for free or reduced lunch sometimes choose or choose charters at significantly greater or lesser rates, but not consistently so. Finally, actual prior academic performance and prior enrollment in a charter school appear to play only a trivial role in predicting whether parents choose or choose charters.

Methods

Sample

To arrive at these results, we examined the characteristics of students who chose charter schools as part of the common enrollment system for the 2012-13 and 2013-14 school years. Consistent with Gross and Denice (2015), we limited the sample frame only to common structured transition grades (those entering kindergarten, sixth, and ninth grades), when most families would be compelled to affirmatively choose a school. Moreover, the analysis only includes students who were enrolled in their school's highest offered grade the year before. For example, a student entering the sixth grade who in the previous year attended a school that includes grades K-8— of which DPS has a relatively high number—would not be included in the analysis, but a student attending a K-8 school the prior year who is entering the ninth grade would be included in that analysis.

Table 1: Sample Descriptive Statistics

	Percentage
Other race	3.82
Black	13.29
White	22.13
Hispanic	58.85
Male	51.30
In ELL program	23.13
Free/reduced lunch qualifier	73.37
Student has IEP	9.95

The sample included 29,465 students. As Table 1 indicates, almost 60% of those were Hispanic, followed by white, black, and students of another race/ethnicity. A little more than half were males. As for programmatic status, almost 75% qualified for FRL, about 10% had IEPs, and a little more than 20% were classified as ELL.

Variables

All data were provided to the researchers by Denver Public Schools. In general, the study's dependent variable (DV) was an indicator for whether a student's parent(s) chose a charter school or a TPS on the universal enrollment application. As described in greater detail below, several models were run with variations on the DV, which included:

(a) whether a student made any choice at all,

(b) whether a charter school appears as any of the five choices in a student's application, and

(c) whether a charter school appears as a first or second choice in a student's application.

Note that letter (b) was analyzed with a sample that included all students (non-choosers and choosers) and then with another sample composed only of choosers. Letter (c) was analyzed with samples that included all students—choosers and non-choosers. In these analyses, the latter are coded the same as students who affirmatively chose TPS, since that is where they will enroll by default.

The independent variables in the study included student race/ethnicity (dummy coded); gender (1=male, 0=female); status as an English language learner (1=ELL, 0=non-ELL); IEP status (i.e., whether a student receives special education services; 1=yes, 0=no); qualification for the federal free and reduced lunch program as an indicator of family economic status (1=FRL eligible, 0=not eligible); whether a student was enrolled in a charter the year prior to choosing (1=yes, 0=no); and the academic performance of each student in the prior year in reading and math, measured as a scale score on the state assessment and as an indicator variable for whether the score was above or below the district average (1=below average, 0=above average).

Analysis

Our primary analysis used a linear probability model to measure the relationship between observed student characteristics and the likelihood of (a) choosing at all and (b) choosing a charter school in the iterations described above. Formally, we use OLS to estimate the general model:

(1) $Apply = \beta_0 + \beta_1 X + \varepsilon$

where Apply is an indicator for whether the student stated a particular application preference under consideration, X is a vector of observed characteristics about the student, ε is a stochastic term, and the βs are parameters to be estimated. To be clear, the analyses in this paper are entirely descriptive. The goal for this paper is to describe the observed characteristics of students who state a preference to attend a charter school. We make no causal claims.

Results

The consideration of results begins with an analysis of the relationship between observed characteristics and the probability that students participate in the choice process. Tables 2, 3, and 4 report the results of regressions where the dependent variable is an indicator for whether the student stated any preference–for a charter or TPS–in the choice process. We run separate analyses for kindergarten, sixth, and ninth grades.

There are few consistent patterns to the results across grade levels. Black and Hispanic students are significantly less likely to participate in the choice process in kindergarten, significantly more likely to submit a preference in high school, and are no more likely to submit a preference in middle school. Students eligible for FRL are less likely than wealthier students to submit a preference in kindergarten and sixth grade, but not in the ninth grade. Those previously enrolled in a charter school are more likely to submit a preference in the sixth grade but less likely to submit a preference in the ninth grade.

Table 2: Likelihood of Choosing among Kindergartners, Coefficients [standard errors]

	Chooses
Race Other	-0.142***
	[0.0225]
Black	-0.156***
	[0.0151]
Hispanic	-0.0594***
	[0.0114]
Male	-0.0169**
	[0.00754]
ELL	0.0585***
	[0.00996]
IEP	0.0165
	[0.0149]
FRL	-0.149***
	[0.0109]
Constant	0.825***
	[0.00816]
n	14,941
R^2	0.043

***p<0.01, **p<0.05, *p<0.1

In addition, students for whom English is a second language are significantly more likely to submit a preference than are native English speakers. Students with disabilities appear less likely to submit a preference in the sixth and ninth grades, and parents with boys appear less likely to affirmatively choose, particularly in the younger grades. Finally, lower performing students are significantly less likely than are higher performing students to submit a preference. Results are similar whether considering scores in math or reading.

Table 3: Likelihood of Choosing among Sixth Graders, Coefficients [standard errors]

	Models						
	1	2	3	4	5	6	7
Race Other	-0.0345 [0.0268]	-0.0533** [0.0271]	-0.0488* [0.0270]	-0.0497* [0.0269]	-0.0449* [0.0268]	0.0105 [0.0374]	0.0156 [0.0373]
Black	-0.0180 [0.0187]	-0.00546 [0.0187]	-0.0122 [0.0187]	0.0130 [0.0192]	0.000498 [0.0188]	0.229*** [0.0258]	0.222*** [0.0257]
Hispanic	-0.0171 [0.0152]	-0.0124 [0.0150]	-0.0152 [0.0151]	-0.000415 [0.0152]	-0.00437 [0.0152]	0.172*** [0.0212]	0.172*** [0.0213]
Male	-0.0223** [0.00915]	-0.0213** [0.00902]	-0.0192** [0.00906]	-0.0220** [0.00900]	-0.0138 [0.00905]	-0.0295** [0.0123]	-0.0282** [0.0124]
ELL	0.0374*** [0.0115]	0.0476*** [0.0117]	0.0540*** [0.0123]	0.0543*** [0.0117]	0.0633*** [0.0120]	0.0289* [0.0150]	0.0290* [0.0155]
IEP	-0.146*** [0.0162]	-0.0736*** [0.0166]	-0.0782*** [0.0168]	-0.0421** [0.0174]	-0.0357** [0.0179]	-0.0759*** [0.0219]	-0.0758*** [0.0218]
FRL	-0.104*** [0.0139]	-0.0849*** [0.0138]	-0.0847*** [0.0139]	-0.0729*** [0.0139]	-0.0708*** [0.0141]	0.027 [0.0200]	0.0253 [0.0201]
Charter School Prior Year	0.124*** [0.0364]	0.169*** [0.0241]	0.167*** [0.0239]	0.180*** [0.0241]	0.169*** [0.0238]	0.269*** [0.0530]	0.262*** [0.0525]
Below Average Math		-0.0601*** [0.0108]					
Below Average Reading			-0.0570*** [0.0116]				
Prior Math Score				0.000586*** [0.0000733]		0.00107* [0.000644]	
Prior Reading Score					0.000655*** [0.0000865]		0.000661 [0.000532]
Prior Math Score Squared						-0.000000815 [0.000000645]	

Table 3 continued

	Models						
	1	2	3	4	5	6	7
Prior Reading Score Squared							-0.000000 [0.000001]
Constant	0.955*** [0.0102]	0.961*** [0.0100]	0.958*** [0.00999]	0.614*** [0.0449]	0.517*** [0.0596]	0.124 [0.161]	0.185 [0.144]
n	6,483	6,350	6,328	6,350	6,328	6,350	6,328
R^2	0.038	0.032	0.032	0.037	0.039	0.037	0.036

***p<0.01, **p<0.05, *p<0.1

Table 4: Likelihood of Choosing among Ninth Graders, Coefficients [standard errors]

	Models						
	1	2	3	4	5	6	7
Race Other	0.0459 [0.0282]	0.0557* [0.0284]	0.0567** [0.0285]	0.0639** [0.0284]	0.0671** [0.0288]	0.107*** [0.0253]	0.0983*** [0.0255]
Black	0.0519*** [0.0196]	0.0830*** [0.0202]	0.0709*** [0.0201]	0.113*** [0.0206]	0.0851*** [0.0204]	0.216*** [0.0202]	0.194*** [0.0200]
Hispanic	0.0517*** [0.0172]	0.0764*** [0.0175]	0.0728*** [0.0176]	0.0958*** [0.0176]	0.0841*** [0.0178]	0.239*** [0.0161]	0.219*** [0.0163]
Male	-0.0205** [0.0103]	-0.0216** [0.0104]	-0.0177* [0.0104]	-0.0213** [0.0103]	-0.0140 [0.0104]	-0.00364 [0.0103]	-0.00424 [0.0104]
ELL	0.0309** [0.0131]	0.0466*** [0.0135]	0.0432*** [0.0139]	0.0606*** [0.0136]	0.0519*** [0.0141]	0.0276* [0.0141]	0.0203 [0.0145]
IEP	-0.128*** [0.0172]	-0.0600*** [0.0186]	-0.0693*** [0.0185]	-0.0189 [0.0193]	-0.0477** [0.0193]	-0.0724*** [0.0178]	-0.0800*** [0.0180]
FRL	0.0180 [0.0149]	0.0240 [0.0151]	0.0214 [0.0151]	0.0377** [0.0152]	0.0298* [0.0153]	0.0508*** [0.0151]	0.0399*** [0.0153]
Charter School Prior Year	-0.0534*** [0.0134]	-0.0807*** [0.0137]	-0.0703*** [0.0135]	-0.0928*** [0.0137]	-0.0736*** [0.0136]	0.225*** [0.0140]	0.231*** [0.0138]
Below Average Math		-0.0663*** [0.0119]					
Below Average Reading			-0.0430*** [0.0122]				
Prior Math Score				0.000802*** [0.0000859]		0.000160 [0.000656]	

Table 4 continued

	Models						
	1	2	3	4	5	6	7
Prior Reading Score					0.000544*** [0.000109]		0.00281*** [0.00078]
Prior Math Score Squared						0.00000009 [0.0000005]	
Prior Reading Score Squared							-0.0000*** [0.000001]
Constant	0.650*** [0.0151]	0.666*** [0.0154]	0.659*** [0.0153]	0.156*** [0.0564]	0.276*** [0.0783]	-0.0635 [0.179]	-0.779*** [0.238]
n	8,041	7,781	7,800	7,781	7,800	7,781	7,800
R^2	0.014	0.016	0.013	0.023	0.015	0.094	0.093

***p<0.01, **p<0.05, *p<0.1

Table 5: Likelihood of Choosing a Charter for Kindergartners, Coefficients [standard errors]

	Charter Among Any Choice
Race Other	-0.0434** [0.0177]
Black	0.101*** [0.0128]
Hispanic	-0.0128 [0.00891]
Male	0.00467 [0.00612]
ELL	0.0628*** [0.00818]
IEP	-0.0307*** [0.0108]
FRL	-0.0904*** [0.00889]
Constant	0.220*** [0.00801]
n	14,941
R^2	0.022

***p<0.01, **p<0.05, *p<0.1

Tables 5, 6, and 7 report the results of regressions where the dependent variable indicates whether the student included at least one charter school among his preferences. These results differ meaningfully from those concerning whether the student submits any choice preference.

Black and Hispanic students are significantly and substantially more likely to list a charter school as one of their five preferences than are white students in sixth and ninth grade, though not in kindergarten. Similarly, students eligible for FRL are more likely to choose a charter in ninth grade than are students from families with higher incomes, while those in kindergarten appear less so, and among sixth grade families there appears to be little difference.

The results show little difference in the likelihood that students for whom English is a second language list a preference for a charter school. However, students with disabilities are significantly and substantially less likely than other students to choose a charter school.

Table 6: Likelihood of Choosing a Charter for Sixth Graders, Coefficients [standard errors]

	Models						
	1	2	3	4	5	6	7
Race Other	0.0141 [0.0371]	0.00988 [0.0374]	0.0149 [0.0373]	0.0115 [0.0375]	0.0164 [0.0373]	0.0105 [0.0374]	0.0156 [0.0373]
Black	0.215*** [0.0247]	0.223*** [0.0253]	0.224*** [0.0253]	0.231*** [0.0257]	0.225*** [0.0254]	0.229*** [0.0258]	0.222*** [0.0257]
Hispanic	0.163*** [0.0205]	0.169*** [0.0209]	0.172*** [0.0209]	0.175*** [0.0211]	0.175*** [0.0210]	0.172*** [0.0212]	0.172*** [0.0213]
Male	-0.0314** [0.0122]	-0.0297** [0.0123]	-0.0295** [0.0124]	-0.0301** [0.0123]	-0.0279** [0.0124]	-0.0295** [0.0123]	-0.0282** [0.0124]
ELL	0.0207 [0.0145]	0.0259* [0.0149]	0.0314** [0.0155]	0.0289* [0.0150]	0.0305** [0.0153]	0.0289* [0.0150]	0.0290* [0.0155]
IEP	-0.141*** [0.0181]	-0.0973*** [0.0198]	-0.0890*** [0.0199]	-0.0832*** [0.0211]	-0.0762*** [0.0217]	-0.0759*** [0.0219]	-0.075*** [0.0218]
FRL	0.0150 [0.0193]	0.0244 [0.0197]	0.0240 [0.0197]	0.0297 [0.0199]	0.0275 [0.0199]	0.0270 [0.0200]	0.0253 [0.0201]
Charter School Prior Year	0.227*** [0.0578]	0.263*** [0.0538]	0.267*** [0.0535]	0.267*** [0.0533]	0.263*** [0.0526]	0.269*** [0.0530]	0.262*** [0.0525]
Below Average Math		-0.0270* [0.0141]					
Below Average Reading			-0.0416*** [0.0148]				
Prior Math Score				0.000263*** [0.0000971]		0.00107* [0.000644]	

Table 6 continued

	Models						
	1	2	3	4	5	6	7
Prior Reading Score					0.000295*** [0.000105]		0.000661 [0.00053]
Prior Math Score Squared						-0.0000008 [0.000001]	
Prior Reading Score Squared							-0.000000 [0.00000]
Constant	0.470*** [0.0167]	0.469*** [0.0169]	0.470*** [0.0168]	0.313*** [0.0590]	0.271*** [0.0724]	0.124 [0.161]	0.185 [0.144]
n	6,483	6,350	6,328	6,350	6,328	6,350	6,328
R^2	0.038	0.036	0.036	0.037	0.036	0.037	0.036

***p<0.01, **p<0.05, *p<0.1

Students who had attended a charter school in the prior year are much more likely to state a preference for a charter school than are those who were previously in a TPS. Note that the analysis only includes those making a structured move because they were enrolled in their school's maximum grade level in the prior year, meaning this result does not reflect students who want to remain within their current charter school. Rather, this result suggests that students who were previously enrolled in a charter school are looking to stay within the charter sector.

Table 7: Likelihood of Choosing a Charter for Ninth Graders, Coefficients [standard errors]

	Models						
	1	2	3	4	5	6	7
Race Other	0.0951*** [0.0247]	0.104*** [0.0253]	0.102*** [0.0253]	0.107*** [0.0253]	0.105*** [0.0254]	0.107*** [0.0253]	0.0983*** [0.0255]
Black	0.194*** [0.0186]	0.210*** [0.0197]	0.200*** [0.0194]	0.216*** [0.0201]	0.204*** [0.0198]	0.216*** [0.0202]	0.194*** [0.0200]
Hispanic	0.216*** [0.0150]	0.235*** [0.0157]	0.227*** [0.0158]	0.239*** [0.0159]	0.230*** [0.0160]	0.239*** [0.0161]	0.219*** [0.0163]
Male	-0.00333 [0.0101]	-0.00390 [0.0103]	-0.00343 [0.0103]	-0.00354 [0.0103]	-0.00253 [0.0103]	-0.00364 [0.0103]	-0.00424 [0.0104]
ELL	0.0200 [0.0134]	0.0265* [0.0141]	0.0180 [0.0145]	0.0276* [0.0141]	0.0210 [0.0145]	0.0276* [0.0141]	0.0203 [0.0145]
IEP	-0.112*** [0.0147]	-0.0803*** [0.0168]	-0.092*** [0.0170]	-0.0719*** [0.0176]	-0.0867*** [0.0179]	-0.0724*** [0.0178]	-0.0800*** [0.0180]

Table 7 continued

	Models						
	1	2	3	4	5	6	7
FRL	0.0442*** [0.0143]	0.0482*** [0.0148]	0.0445*** [0.0149]	0.0506*** [0.0150]	0.0467*** [0.0152]	0.0508*** [0.0151]	0.0399*** [0.0153]
Charter School Prior Year	0.236*** [0.0136]	0.226*** [0.0140]	0.233*** [0.0138]	0.225*** [0.0140]	0.232*** [0.0138]	0.225*** [0.0140]	0.231*** [0.0138]
Below Average Math		-0.0354*** [0.0122]					
Below Average Reading			-0.00413 [0.0128]				
Prior Math Score				0.000265*** [0.0000855]		0.000160 [0.000656]	
Prior Reading Score					0.0000995 [0.000105]		0.00281*** [0.000784]
Prior Math Score Squared						0.0000001 [0.000001]	
Prior Reading Score Squared							-0.0000*** [0.000000]
Constant	0.0788*** [0.0115]	0.0796*** [0.0117]	0.0752*** [0.0116]	-0.0908 [0.0552]	0.00541 [0.0752]	-0.0635 [0.179]	-0.779*** [0.238]
n	8,041	7,781	7,800	7,781	7,800	7,781	7,800
R^2	0.092	0.094	0.092	0.094	0.092	0.094	0.093

***p<0.01, **p<0.05, *p<0.1

Turning to academic performance indicators, the results show little relationship between prior test score performance and statement of a charter school preference. Students with lower math scores are somewhat less likely to list a charter school as one of their preferences, but the relationship is modest.

As a robustness check to the results concerning the choice of a charter school, Appendix tables A1 through A3 report results from regressions similar to those reported in Tables 5-7 but that restrict the sample to include only students who submitted at least one school preference. We find very similar results for the relationship between observed characteristics and the

probability of listing a charter school as a preference when the sample is restricted to include only those who participate in the choice process.

Finally, Tables 8, 9, and 10 report the results from regressions where the dependent variable is an indicator for whether the student listed a charter school as either her first or second preference. In most cases, the results are similar for the model that looks at including a charter preference as any of the student's five choices.

Table 8: Likelihood of Choosing a Charter among the Top Two Schools for Kindergartners, Coefficients [standard errors]

	Charter Among 1 or 2
Race Other	-0.00774 [0.00550]
Black	0.0270*** [0.00415]
Hispanic	-0.00422 [0.00290]
Male	0.000224 [0.00189]
ELL	0.0251*** [0.00292]
Has an IEP	-0.00648* [0.00349]
FRL	-0.0268*** [0.00291]
Constant	0.0146*** [0.00204]
n	40,848
R^2	0.081

***p<0.01, **p<0.05, *p<0.1

Black and Hispanic students are significantly and substantially more likely to list a charter school as a first or second choice than are white students in sixth and ninth grade; this was so for black but not Hispanic students in kindergarten. Conversely, students with disabilities are significantly and substantially less likely than other students to choose a charter school as a first or second.

ELL and FRL status indicated some inconsistencies across grades. Among ELL students, families with children in younger grades are more likely to list a charter school as a first or second choice, but the difference in ninth grade is not significant. Specific to students eligible for FRL, those who qualify are less likely in kindergarten to list a charter school as first or second, more likely in sixth grade, and in ninth grade there is little difference.

Table 9: Likelihood of Choosing a Charter among the Top Two Schools for Sixth Graders, Coefficients [standard errors]

Models							
	1	2	3	4	5	6	7
Race Other	0.0315 [0.0362]	0.0280 [0.0365]	0.0331 [0.0364]	0.0295 [0.0365]	0.0343 [0.0364]	0.0285 [0.0365]	0.0327 [0.0364]
Black	0.175*** [0.0252]	0.186*** [0.0259]	0.184*** [0.0259]	0.196*** [0.0263]	0.186*** [0.0260]	0.194*** [0.0263]	0.180*** [0.0262]
Hispanic	0.171*** [0.0201]	0.178*** [0.0206]	0.178*** [0.0206]	0.184*** [0.0208]	0.181*** [0.0208]	0.181*** [0.0209]	0.176*** [0.0210]
Male	-0.00160 [0.0123]	-0.000642 [0.0124]	-0.00135 [0.0124]	-0.00107 [0.0124]	4.79e-05 [0.0125]	-0.000522 [0.0124]	-0.000488 [0.0125]
ELL	0.0449*** [0.0147]	0.0497*** [0.0152]	0.0517*** [0.0157]	0.0535*** [0.0152]	0.0519*** [0.0156]	0.0535*** [0.0152]	0.0491*** [0.0157]
IEP	-0.131*** [0.0177]	-0.0935*** [0.0197]	-0.0908*** [0.0198]	-0.0775*** [0.0210]	-0.079*** [0.0216]	-0.0707*** [0.0218]	-0.0790*** [0.0216]
FRL	0.0443** [0.0193]	0.0518*** [0.0197]	0.0508** [0.0197]	0.0580*** [0.0200]	0.0540*** [0.0199]	0.0554*** [0.0201]	0.0496** [0.0202]
Charter School Prior Year	0.0564 [0.0756]	0.0810 [0.0766]	0.0831 [0.0766]	0.0870 [0.0763]	0.0813 [0.0762]	0.0881 [0.0760]	0.0789 [0.0760]
Below Average Math		-0.0241* [0.0145]					
Below Average Reading			-0.0290* [0.0152]				
Prior Math Score				0.00027*** [0.000097]		0.00102 [0.00063]	
Prior Reading Score					0.0002** [0.00010]		0.00092* [0.00051]
Prior Math Score Squared						-0.000000 [0.00000]	
Prior Reading Score Squared							-0.000000 [0.00000]
Constant	0.324*** [0.0157]	0.323*** [0.0159]	0.324*** [0.0158]	0.163*** [0.0590]	0.172** [0.0718]	-0.0127 [0.158]	0.00577 [0.137]
n	6,483	6,350	6,328	6,350	6,328	6,350	6,328
R^2	0.042	0.041	0.041	0.042	0.041	0.042	0.041

***p<0.01, **p<0.05, *p<0.1

Among academic performance indicators, the results do not show a consistent relationship between prior test score performance and listing a charter school as a first or second choice. Sixth grade students with lower reading scores are somewhat less likely to list a charter school as one of their top preferences, but this is not so in ninth grade. Results for math are generally not consistently significant.

Table 10: Likelihood of Choosing a Charter among the Top Two Schools for Ninth Graders, Coefficients [standard errors]

	Models						
	1	2	3	4	5	6	7
Race Other	0.0579*** [0.0196]	0.0655*** [0.0201]	0.0649*** [0.0201]	0.0678*** [0.0202]	0.0665*** [0.0202]	0.0678*** [0.0202]	0.0639*** [0.0203]
Black	0.120*** [0.0162]	0.142*** [0.0172]	0.129*** [0.0169]	0.144*** [0.0175]	0.131*** [0.0173]	0.144*** [0.0175]	0.126*** [0.0174]
Hispanic	0.161*** [0.0126]	0.179*** [0.0133]	0.172*** [0.0134]	0.181*** [0.0135]	0.173*** [0.0136]	0.181*** [0.0136]	0.168*** [0.0139]
Male	0.00975 [0.00879]	0.00970 [0.00897]	0.0105 [0.00900]	0.0103 [0.00897]	0.0109 [0.00906]	0.0102 [0.00898]	0.0102 [0.00908]
ELL	0.00773 [0.0117]	0.0184 [0.0122]	0.0112 [0.0126]	0.0168 [0.0123]	0.0110 [0.0126]	0.0168 [0.0123]	0.0107 [0.0126]
IEP	-0.0671*** [0.0126]	-0.0355** [0.0147]	-0.0482*** [0.0148]	-0.0307** [0.0153]	-0.0458*** [0.0155]	-0.0313** [0.0154]	-0.043*** [0.0157]
FRL	0.0165 [0.0125]	0.0223* [0.0130]	0.0182 [0.0131]	0.0231* [0.0132]	0.0190 [0.0133]	0.0234* [0.0133]	0.0162 [0.0135]
Charter School Prior Year	0.296*** [0.0133]	0.287*** [0.0136]	0.295*** [0.0135]	0.288*** [0.0136]	0.295*** [0.0135]	0.288*** [0.0136]	0.294*** [0.0135]
Below Average Math		-0.0456*** [0.0108]					
Below Average Reading			-0.0144 [0.0114]				
Prior Math Score				0.000267*** [0.0000747]		0.000157 [0.000563]	
Prior Reading Score					0.000113 [0.0000917]		0.00122* [0.000673]
Prior Math Score Squared						0.0000001 [0.0000005]	

Table 10 continued

	Models						
	1	2	3	4	5	6	7
Prior Reading Score Squared							-0.00000* [0.000001]
Constant	0.0298*** [0.00979]	0.0307*** [0.00990]	0.0259*** [0.00987]	-0.143*** [0.0484]	-0.0535 [0.0660]	-0.114 [0.154]	-0.373* [0.205]
n	8,041	7,781	7,800	7,781	7,800	7,781	7,800
R^2	0.113	0.117	0.114	0.116	0.114	0.116	0.114

***p<0.01, **p<0.05, *p<0.1

The tables above report estimated relationships between prior test score performance and the likelihood that students state a particular preference under consideration. We can further consider this important relationship by comparing the distribution of the previous year's test score among those who applied and did not apply to a charter school.

Figures 1 and 2 illustrate the previous test scores of students who did and did not include a charter school as one of their five preferences for enrollment in sixth grade in math and reading, respectively. Consistent with the regression results, the distribution of those students who listed a charter school preference is slightly below the distribution for those who did not submit a preference for a charter school. However, across the distribution these differences are very modest. Though statistically significant, the differences in the prior tests score distributions of students who did and did not list a preference for a charter school are not of a meaningful magnitude.

Figure 1. Kernel densities for mathematics scores for grade 6 comparing students showing a charter preference and those who did not.

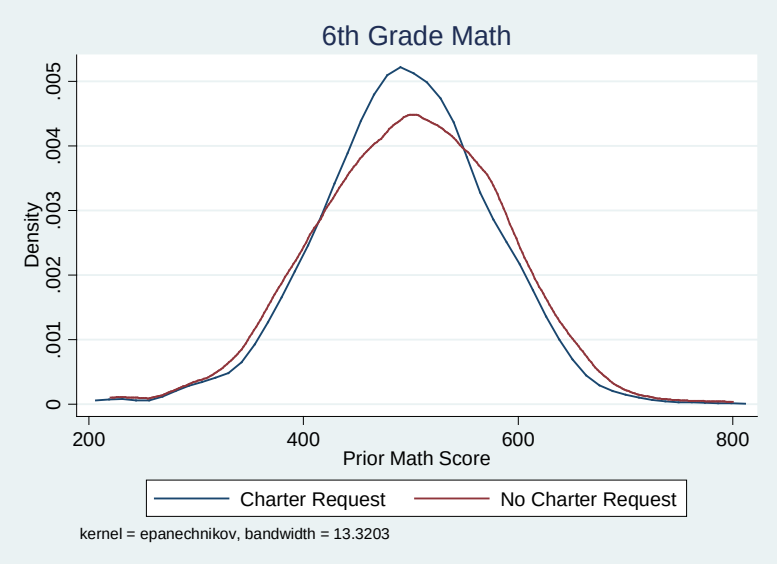
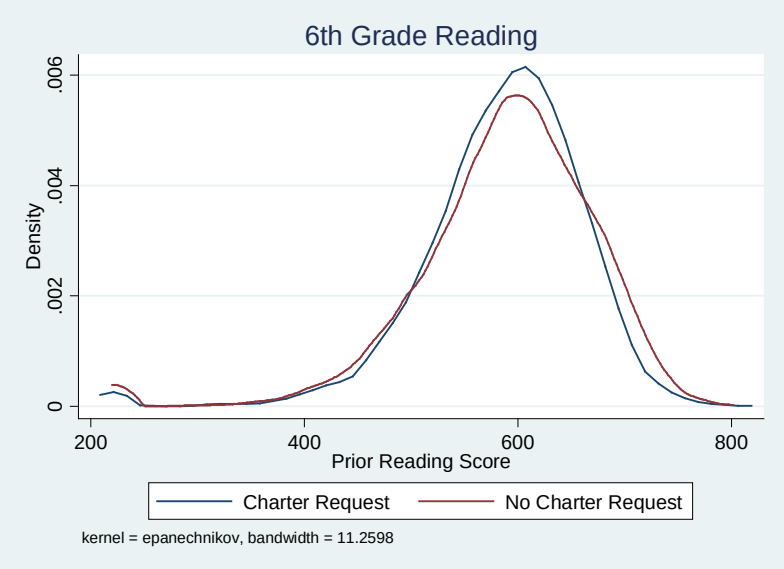


Figure 2. Kernel densities for reading scores for grade 6 comparing students showing a charter preference and those who did not.



Figures 3 and 4 illustrate some more meaningful distributional differences in the ninth grade, though as in the regression results these differences can be classified as significant but modest, particularly in math.

Figure 3. Kernel densities for mathematics scores for grade 9 comparing students showing a charter preference and those who did not.

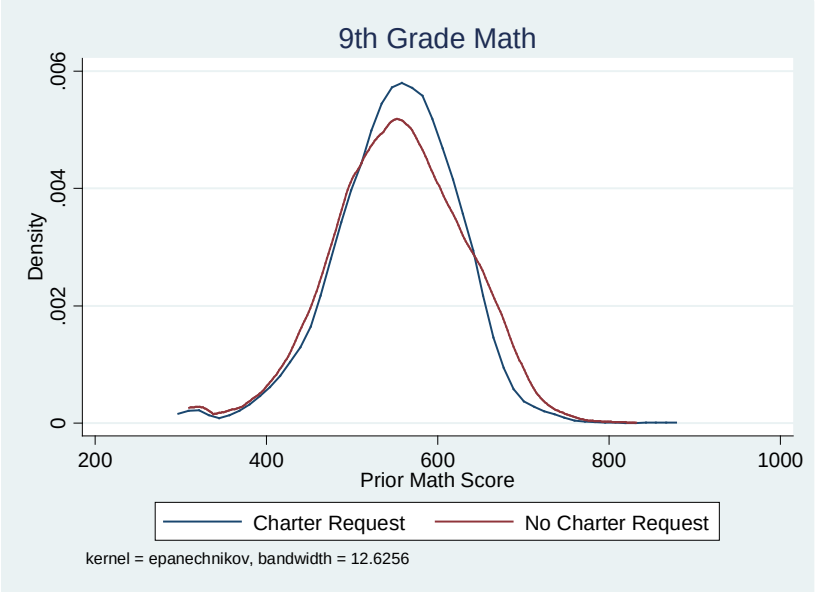
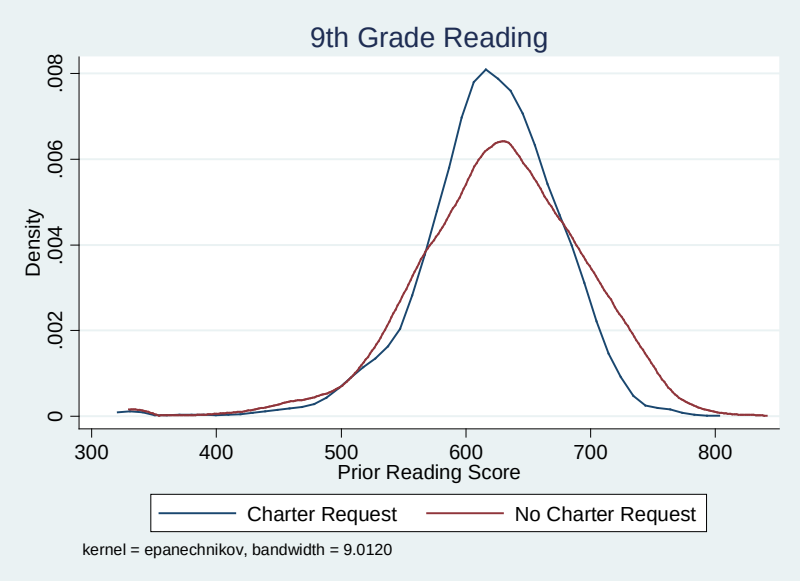


Figure 4. Kernel densities for reading scores for grade 9 comparing students showing a charter preference and those who did not.



Discussion and Conclusion

This study examined school choice applications made by parents of kindergartners, sixth graders, and ninth graders in Denver Public Schools to determine the type of parent who prefers their child attend a charter school. We paid particular attention to personal characteristics of students and their prior academic performance and prior school enrollment type (i.e., charter or traditional public school).

Our results are particularly policy relevant because we focus on a large urban school system with an effective charter school sector that operates a common enrollment system. Our data and the structure of the choice process potentially allow us to more accurately view parental preferences than prior analyses that looked at parent applications in a system where they must individually apply to each charter school. Further, our results speak to an important policy conversation as common enrollment systems expand across the country.

Results across all grade levels and all dependent measures indicate the most consistent predictor of affirmatively choosing a school and choosing a charter school is race/ethnicity. In particular, black and Hispanic families are significantly and substantially more likely than white families to state a preference for a charter school.

The advantage of examining applications, as we have here, is that it is a direct measure of parental preferences, unlike surveys (which do not measure behavior and suffer from response bias) and enrollment patterns (which are mediated by enrollment policies). Thus, these results indicate parents of color express a greater propensity to choose and a greater preference for schools not run by the district. Such findings are consistent with survey studies that examine

parental preferences (Davies & Aurini, 2011; Kleitz et al., 2000) and analyses of school applications in New York City (Hoxby & Murarka, 2009).

Although our data do not answer "why," other research indicates greater dissatisfaction among minority families with neighborhood public schools, which can lead to greater choice activities (Hanushek, Kain, Rivkin, & Branch, 2007). As Kleitz et al. (2000) note, the choices parents make are likely conditioned by their previous educational experiences. The fact that black and Hispanic parents more than white parents prefer something other than their neighborhood schools may reflect their experience with, or at least perception of, said schools penetrated by weapons, drugs, and social pathologies. Indeed, in studies of why minority parents choose vouchers when presented the opportunity, safety perpetually ranks among the top choices (Stewart, Wolf, & Cornman, 2005; Wolf, Eissa, & Gutmann, 2006).

Students with disabilities are consistently less likely to state a preference to attend a charter school under Denver's common enrollment system. However, our analysis is not able to discern the extent to which this result is influenced by the fact that students with relatively severe disabilities did not truly participate in the common enrollment process during the time period considered.

A somewhat surprising result is that in most model specifications students for whom English is a second language are more likely to apply. This is contrary to enrollment studies indicating comparably smaller percentages of ELL students served by charter schools (Buckley & Sattin-Bajaj, 2011; Garcia et al., 2008)—a disparity worth further research.

Finally, actual prior academic performance appears to play only a trivial role in predicting whether parents choose or choose charters. This is striking in so much as prior research has demonstrated parents routinely list academic quality as one of the primary reasons for choosing (Bosetti, 2004; Goldring & Hausman, 1999), and students transferring into charters can have lower test scores (Bettinger, 2005; Garcia et al., 2008). Yet, to the extent DPS parents are influenced in their choices by their families' prior experiences in schools, it appears their child's actual academic performance may not be one of the most significant factors.

The most significant and consistent finding from this study is the role race/ethnicity plays in predicting parental choice and a preference for charter schools. As noted earlier, some have expressed concern that charters may be too segregated by serving disproportionately greater percentages of minority students (Rapp & Eckes, 2007). Our findings suggest that to the extent this is so, it is likely not a consequence of biases inherent in choice enrollment policies or structures but of actual preferences by parents of color.

The inevitable next question is, "why?" If prior academic performance or ELL status among students appear only inconsistently related to choosing, the choices may not be a function of students as much as perceptions held by parents. For example, Cooper (2007) describes how black mothers see school choice as a means of exerting power and resistance in educational systems freighted with norms and values ill-suited, if not adversarial to black families' pursuits

of education as a means to escape poverty and isolation and to achieve individual and collective dignity on their own terms. Whether this is true in the context studied here is an open question, as are motivations Hispanic parents may hold, since, as Cooper acknowledges, aggregating all parents' perspectives together is not particularly helpful or insightful. Thus, our study would benefit from complementary research that examines the nuances of why black and Hispanic parents tend to choose and choose charter schools at greater rates—research that, given our findings about math and reading performance or ELL status, transcends the conventional wisdom of academic quality and characteristics associated with students.

Related to that would be research that examines differences between perceptions and measurable realities with respect to choice. Howell and West (2008), for example, have examined perceptions citizens have concerning school spending and comparing those to actual costs. Results show vast disparities between perceptions and measured realities. Applied to the present context, research could likewise examine the relationship between perceptions and realities about not only traditional public schools but also about charter schools.

Endnotes

1. Research by Gross and Denise (2015) suggests the stated preferences measured by the application process in a common enrollment process may not be an unbiased measure of true preferences for charter schools. The preference may be moderated by school location. That is, a parent may want to send her child to a charter school but chooses instead a TPS because its location is more amenable to her family's circumstances.

2. The process was expanded to include students with more severe disabilities in 2014. However, though they are able to participate in the process, students with more severe disabilities are only able to state a preference for schools that the district has determined has the ability to provide them with adequate services.

3. Email correspondence with Denver Public Schools, Choice and Enrollment office.

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Appendix

Table A1: Likelihood of Listing a Charter School among any Choice, Limited only to Those Who Affirmatively Choose, Kindergarten, Coefficients [standard errors]

	Charter Any Choice
Race Other	-0.0168***
	[0.00611]
Black	0.0362***
	[0.00476]
Hispanic	-0.00419
	[0.00336]
Male	0.00170
	[0.00225]
ELL	0.0246***
	[0.00335]
IEP	-0.0129***
	[0.00414]
FRL	-0.0321***
	[0.00332]
Constant	0.0172***
	[0.00242]
n	40,848
R^2	0.122

***p<0.01, **p<0.05, *p<0.1

Table A2: Likelihood of Listing a Charter School among any Choice, Limited only to Those Who Affirmatively Choose, Sixth Graders, Coefficients [standard errors]

	Models						
	1	2	3	4	5	6	7
Race Other	0.0334 [0.0404]	0.0406 [0.0407]	0.0430 [0.0406]	0.0395 [0.0406]	0.0416 [0.0405]	0.0387 [0.0406]	0.0400 [0.0405]
Black	0.269*** [0.0249]	0.264*** [0.0254]	0.270*** [0.0253]	0.259*** [0.0260]	0.262*** [0.0255]	0.257*** [0.0260]	0.257*** [0.0259]
Hispanic	0.203*** [0.0219]	0.202*** [0.0221]	0.208*** [0.0221]	0.200*** [0.0223]	0.202*** [0.0222]	0.197*** [0.0225]	0.198*** [0.0225]
Male	-0.0189 [0.0123]	-0.0174 [0.0124]	-0.0188 [0.0124]	-0.0172 [0.0124]	-0.0210* [0.0125]	-0.0166 [0.0124]	-0.0215* [0.0125]
ELL	-0.00691 [0.0147]	-0.0103 [0.0151]	-0.00916 [0.0158]	-0.0114 [0.0152]	-0.0179 [0.0156]	-0.0111 [0.0152]	-0.0202 [0.0157]
IEP	-0.053*** [0.0202]	-0.0593*** [0.0211]	-0.0453** [0.0212]	-0.0658*** [0.0223]	-0.0641*** [0.0232]	-0.0571** [0.0232]	-0.0627*** [0.0233]
FRL	0.0892*** [0.0202]	0.0850*** [0.0204]	0.0844*** [0.0204]	0.0827*** [0.0206]	0.0776*** [0.0206]	0.0798*** [0.0207]	0.0737*** [0.0208]
Charter School Prior Yr	0.148*** [0.0514]	0.142*** [0.0516]	0.149*** [0.0514]	0.140*** [0.0518]	0.143*** [0.0521]	0.142*** [0.0514]	0.141*** [0.0516]
Below Average Math		0.0192 [0.0141]					
Below Average Reading			-0.000443 [0.0147]				
Prior Math Score				-0.000152 [0.0001]		0.000770 [0.000664]	
Prior Reading Score					-0.000199* [0.000111]		0.000499 [0.000601]
Prior Math Score^2						-0.000001 [0.0000001]	
Prior Reading Score^2							-0.0000001 [0.000001]
Constant	0.485*** [0.0174]	0.481*** [0.0174]	0.484*** [0.0174]	0.571*** [0.0605]	0.618*** [0.0768]	0.350** [0.167]	0.446*** [0.165]
n	5,382	5,345	5,325	5,345	5,325	5,345	5,325
R^2	0.069	0.070	0.068	0.070	0.069	0.070	0.069

***p<0.01, **p<0.05, *p<0.1

Table A3: Likelihood of Listing a Charter School among any Choice, Limited only to Those Who Affirmatively Choose, Ninth Graders, Coefficients [standard errors]

	Models						
	1	2	3	4	5	6	7
Race Other	0.121*** [0.0327]	0.129*** [0.0329]	0.125*** [0.0330]	0.128*** [0.0329]	0.122*** [0.0333]	0.128*** [0.0330]	0.114*** [0.0333]
Black	0.284*** [0.0240]	0.287*** [0.0249]	0.281*** [0.0245]	0.280*** [0.0255]	0.278*** [0.0251]	0.284*** [0.0257]	0.265*** [0.0254]
Hispanic	0.283*** [0.0204]	0.291*** [0.0207]	0.284*** [0.0208]	0.288*** [0.0211]	0.281*** [0.0212]	0.293*** [0.0214]	0.268*** [0.0217]
Male	0.00678 [0.0124]	0.00710 [0.0124]	0.00582 [0.0124]	0.00731 [0.0124]	0.00484 [0.0125]	0.00634 [0.0125]	0.00340 [0.0125]
ELL	0.0122 [0.0160]	0.00976 [0.0165]	0.00236 [0.0170]	0.00572 [0.0167]	0.000398 [0.0172]	0.00511 [0.0167]	0.000731 [0.0172]
IEP	-0.0902*** [0.0209]	-0.0792*** [0.0224]	-0.085*** [0.0224]	-0.0862*** [0.0231]	-0.0907*** [0.0232]	-0.0922*** [0.0234]	-0.0839*** [0.0233]
FRL	0.0461** [0.0182]	0.0473** [0.0184]	0.0457** [0.0184]	0.0446** [0.0186]	0.0436** [0.0187]	0.0466** [0.0186]	0.0362* [0.0188]
Charter School Prior Yr	0.389*** [0.0141]	0.392*** [0.0148]	0.394*** [0.0142]	0.395*** [0.0147]	0.394*** [0.0143]	0.395*** [0.0147]	0.393*** [0.0143]
Below Average Math		-0.00499 [0.0148]					
Below Average Reading			0.0161 [0.0151]				
Prior Math Score				-0.0000631 [0.000108]		-0.00123 [0.000898]	
Prior Reading Score					-0.000171 [0.00013]		0.0031*** [0.00111]
Prior Math Score^2						0.0000011 [0.000001]	
Prior Reading Score^2							-0.0000*** [0.000001]
Constant	0.135*** [0.0156]	0.128*** [0.0157]	0.127*** [0.0156]	0.167** [0.0705]	0.248*** [0.0958]	0.478* [0.250]	-0.707** [0.339]
n	5,534	5,458	5,469	5,458	5,469	5,458	5,469
R^2	0.163	0.167	0.166	0.167	0.166	0.167	0.167

***p<0.01, **p<0.05, *p<0.1

Table A4: Likelihood of Listing a Charter School as First, Second, Third, or Fourth Choice among Kindergartners, Coefficients [standard errors]

	Charter Among 1, 2, 3, or 4
Race Other	-0.0383**
	[0.0174]
Black	0.0978***
	[0.0125]
Hispanic	-0.0116
	[0.00868]
Male	0.00409
	[0.00592]
ELL	0.0666***
	[0.00800]
IEP	-0.0286***
	[0.0104]
FRL	-0.0883***
	[0.00869]
Constant	0.202***
	[0.00773]
n	14,941
R^2	0.023

***p<0.01, **p<0.05, *p<0.1

Table A5: Likelihood of Listing a Charter School as First, Second, Third, or Fourth Choice among Sixth Graders, Coefficients [standard errors]

	Model						
	1	2	3	4	5	6	7
Race Other	0.00650 [0.0370]	0.00241 [0.0373]	0.00738 [0.0372]	0.00402 [0.0374]	0.00878 [0.0373]	0.00316 [0.0374]	0.00789 [0.0373]
Black	0.220*** [0.0248]	0.229*** [0.0254]	0.229*** [0.0254]	0.237*** [0.0258]	0.230*** [0.0255]	0.235*** [0.0259]	0.227*** [0.0258]
Hispanic	0.170*** [0.0205]	0.176*** [0.0209]	0.178*** [0.0209]	0.181*** [0.0211]	0.180*** [0.0210]	0.179*** [0.0212]	0.178*** [0.0213]
Male	-0.0258** [0.0122]	-0.0241* [0.0123]	-0.0240* [0.0124]	-0.0244** [0.0123]	-0.0224* [0.0124]	-0.0239* [0.0123]	-0.0227* [0.0124]
ELL	0.0203 [0.0145]	0.0254* [0.0150]	0.0299* [0.0155]	0.0282* [0.0150]	0.0293* [0.0154]	0.0282* [0.0150]	0.0277* [0.0155]
IEP	-0.140*** [0.0181]	-0.097*** [0.0198]	-0.089*** [0.0199]	-0.0836*** [0.0211]	-0.0777*** [0.0218]	-0.0776*** [0.0219]	-0.0772*** [0.0218]
FRL	0.0211 [0.0194]	0.0302 [0.0197]	0.0295 [0.0197]	0.0354* [0.0199]	0.0329* [0.0199]	0.0331* [0.0201]	0.0304 [0.0202]
Charter School Prior Year	0.212*** [0.0604]	0.247*** [0.0571]	0.250*** [0.0567]	0.251*** [0.0568]	0.247*** [0.0560]	0.252*** [0.0566]	0.246*** [0.0559]
Below Average Math		-0.0264* [0.0142]					
Below Average Reading			0.0386*** [0.0148]				
Prior Math Score				0.000255*** [0.0000973]		0.000910 [0.000644]	
Prior Reading Score					0.000277*** [0.000105]		0.000673 [0.000531]
Prior Math Score^2						-0.000001 [0.000001]	
Prior Reading Score^2							-0.0000003 [0.000001]
Constant	0.449*** [0.0166]	0.448*** [0.0168]	0.449*** [0.0168]	0.297*** [0.0590]	0.262*** [0.0725]	0.142 [0.161]	0.169 [0.143]
n	6,483	6,350	6,328	6,350	6,328	6,350	6,328
R^2	0.040	0.038	0.038	0.039	0.038	0.039	0.038

***p<0.01, **p<0.05, *p<0.1

Table A6: Likelihood of Listing a Charter School as First, Second, Third, or Fourth Choice among Ninth Graders, Coefficients [standard errors]

	Model						
	1	2	3	4	5	6	7
Race Other	0.0459 [0.0282]	0.0994*** [0.0245]	0.0979*** [0.0246]	0.102*** [0.0246]	0.102*** [0.0247]	0.102*** [0.0246]	0.0957*** [0.0248]
Black	0.0519*** [0.0196]	0.196*** [0.0192]	0.186*** [0.0190]	0.204*** [0.0196]	0.193*** [0.0194]	0.204*** [0.0197]	0.183*** [0.0195]
Hispanic	0.0517*** [0.0172]	0.231*** [0.0153]	0.224*** [0.0154]	0.236*** [0.0155]	0.229*** [0.0156]	0.236*** [0.0157]	0.219*** [0.0159]
Male	-0.0205** [0.0103]	0.000324 [0.0101]	0.00110 [0.0101]	0.000636 [0.0101]	0.00261 [0.0102]	0.000631 [0.0101]	0.000974 [0.0102]
ELL	0.0309** [0.0131]	0.0181 [0.0138]	0.0105 [0.0142]	0.0204 [0.0139]	0.0157 [0.0142]	0.0204 [0.0139]	0.0150 [0.0142]
IEP	-0.128*** [0.0172]	-0.0696*** [0.0166]	-0.0801*** [0.0167]	-0.0586*** [0.0173]	-0.0710*** [0.0176]	-0.0587*** [0.0175]	-0.0645*** [0.0177]
FRL	0.0180 [0.0149]	0.0407*** [0.0146]	0.0372** [0.0147]	0.0440*** [0.0147]	0.0409*** [0.0150]	0.0440*** [0.0149]	0.0345** [0.0151]
Charter School Prior Year	-0.0534*** [0.0134]	0.237*** [0.0139]	0.244*** [0.0137]	0.235*** [0.0140]	0.242*** [0.0137]	0.235*** [0.0140]	0.241*** [0.0137]
Below Average Math		-0.0345*** [0.0120]					
Below Average Reading			-0.00579 [0.0126]				
Prior Math Score				0.00029*** [0.0000841]		0.000286 [0.000645]	
Prior Reading Score					0.000162 [0.000103]		0.0027*** [0.000766]
Prior Math Score^2						0.0000000 [0.000001]	
Prior Reading Score^2							-0.0000*** [0.000001]
Constant	0.650*** [0.0151]	0.0704*** [0.0114]	0.0661*** [0.0113]	-0.116** [0.0542]	-0.0475 [0.0738]	-0.115 [0.177]	-0.803*** [0.232]
n	8,041	7,781	7,800	7,781	7,800	7,781	7,800
R^2	0.014	0.095	0.094	0.096	0.094	0.096	0.095

***p<0.01, **p<0.05, *p<0.1