

Abstract

Few topics in education inspire as much debate as charter schools, which first appeared on the educational landscape in 1992. One area of controversy is the effect of charter schools on the sorting of students across the system of public education as a whole. Critics of charter schools worry that they might “skim the cream,” enrolling high-ability students at the expense of lower achievers left in traditional public schools; and that charter schools may further stratify an already racially stratified system. We examine these issues empirically, using student level data from seven locations across the country. We follow students moving between traditional public schools and charter schools to examine the effect charter schools have on the distribution of students both by race/ethnicity and by ability. We do not find that charter schools are systematically skimming high achieving students or dramatically affecting the racial mix of schools.

Few topics in education inspire as much debate as charter schools, which are publicly funded schools of choice that operate autonomously, outside the direct control of traditional school districts, under the authority of a quasi-contract, or “charter,” granted by a public body. These schools first appeared on the educational landscape in 1992, and now include some 4,700 schools operating in 40 states. The Obama administration is now trying to extend the reach of charter schools by increasing federal funding for them and encouraging states to remove caps on their numbers.

Many studies have sought to assess the educational impact of charter schools on their students (Zimmer et al., 2009; CREDO, 2009; Abdulkadiroglu et al., 2009; Booker et al., 2007; Hanushek, et al., 2007; Hoxby and Murarka, 2007; Sass, 2006; Bifulco and Ladd, 2006; Zimmer and Buddin, 2006; Witte et al., 2007), but another key area of controversy—less often given careful empirical examination—is the effect of charter schools on the sorting of students across the system of public education as a whole. Critics of charter schools worry that they might “skim the cream,” enrolling high-ability students at the expense of lower achievers left in traditional public schools (TPSs); and that charter schools may further stratify an already racially stratified system (Fiske and Ladd, 2000; Cobb and Glass, 1999). Indeed, when the concept of charter schools was first introduced, some had concerns that charter schools would become enclaves of white students escaping the racial diversity of traditional public schools (Frankenberg and Lee, 2003). Critics also lament that charter schools’ skimming off of the best students from TPSs would reduce the peer interaction of high- and low-ability students within the traditional schools, pointing to a long and well-developed literature that highlights the benefits of the interaction of students with diverse backgrounds and ability levels

(Frankenberg and Lee, 2003; Zimmer, 2003; Zimmer and Toma, 2000; Summers and Wolfe, 1977; and Henderson, et al., 1978). These critics fear that charter schools might therefore have negative social and academic effects for students who remain in TPSs (Lee and Croninger, 1994; Wells, 1993). Supporters, in contrast, argue that charter schools will improve racial integration by letting families choose schools outside of neighborhoods where housing is racially segregated—and by promoting fuller and richer integration in classrooms *within* schools where all students have chosen to attend (Kolderie, 2004; Finn et al., 2000; Nathan, 1998).

Whether schools become more or less integrated under a school choice program may be a function of family characteristics. For instance, parents with greater economic means may have greater access to information and reliable transportation and, therefore, may be more likely to take advantage of choice; and because variance in income is related to race, school choice may lead to greater racial segregation (see Schneider et al, 1998; Lacireno-Paquet et al., 2002). In addition, if it is easier for parents to choose schools based on race and if parents have a preference for racially homogenous schools, then charter schools could create greater racial stratification (see Levin, 1998).

Particular charter school policies may also affect the impact charter schools have on the distribution of students by race and ability. For instance, lower income families may have greater access to charter schools if free transportation is provided. In addition, some states have tried to encourage the establishment of charter schools that serve at-risk students or require that schools be racially representative of the districts in which they are located. Other policies that regulate enrollment, charter authorizers, and charter types (e.g., conversions, startups, virtual schools), as well as the prevalence of school choice

options due to magnet schools, open-enrollment, vouchers, and NCLB², also may affect the distribution of students by race and ability.

In this study, we examine the distributional effects of charter schools on student populations across seven locations—the school districts of Chicago, Denver, Milwaukee, Philadelphia, and San Diego, as well as Ohio and Texas statewide. Collectively, the data include information from states that encompass about 45 percent of all charter schools in the nation. These locations provide some variation in terms of charter-school and other policies that may affect the distribution of students by race and ability, including policies regulating who may establish charter schools, the types of schools that may become charter schools, the types and number of students that charter schools may serve, and the provision of transportation.

In each location, we have student-level data over time with unique student identifiers, which allow us to follow students as they move between TPSs and charter schools. We assess how transferring students affect the racial and ability distributions in the schools that they leave and the schools that they enter. The results should inform debates about the broad impacts of charter schools during a time when the federal government and many states are seeking to expand their numbers.

Previous literature

Much of the previous literature on stratification used school-level data in an attempt to examine the effect charter schools are having on racial compositions. This

² Students attending schools that fail to make academic targets for two consecutive years are eligible to transfer to another school.

literature has generally compared the racial makeup of charter schools relative to state and district averages (Powell, et al., 1997; Fitzgerald, et al., 1998; RPP, 2000; Miron and Nelson, 2002), not taking into account the fact that charter schools are not randomly dispersed within a state or even a district. In fact, one could argue that charter schools generally locate where they can attract students, which would primarily be in low-performing school districts or in areas within a district in which TPSs have performed poorly. These low-performing districts and neighborhoods are likely to have high proportions of minority students, making it difficult for charter schools to be representative of statewide or districtwide populations.³

Moreover, comparisons have often been made sector-wide (all charters vs all TPSs in a community) rather than school-by-school. Sector-wide comparisons of the proportion of charter and TPS students in particular subgroups may be useful to describe the population being served, but they provide no information about the extent to which individual schools are integrated. In other words, the fact that the entire sector (charter or TPS) in a community serves a wide range of student populations does not tell us anything about integration. A community where the conventional public schools are one-third white, one-third black, and one-third Hispanic might have schools that are highly integrated (i.e., each school has a mix of students that looks like the district-wide average), or it might have schools that are fully segregated (i.e., one third of the schools are 100% white, one-third are 100% black, and one-third are 100% Hispanic).

³ For more information on the geographic distribution of charter schools, see the summary of special edition of articles in the August 2009 *American Journal of Education* (Lubienski and Dougherty, 2009)

A better way to examine the effect charter schools are having on the racial and ability distribution of students is to examine the actual movement of students from TPSs to charter schools using longitudinal student-level data. This method admittedly does not provide a comprehensive picture of the student sorting resulting from charter schools, because it includes only the charter students who enter charter schools after having previously been enrolled in TPSs; it does not identify a counterfactual for students who enroll in charter schools beginning in kindergarten. Nonetheless, a partial picture of the changing peer environments of individual students who move to charter schools is preferable to a high-level comparison of charter-school composition to district or state averages, which could mask enormous local variation in schools.

Only two studies—Bifulco and Ladd (2007) and Booker, Zimmer, and Buddin (2005)—have used longitudinal student-level data to examine sorting effects of students transferring into charter schools, and these have included charter schools in only three states. Bifulco and Ladd examined data from North Carolina focusing on racial distribution and found that charters have increased the racial isolation of black and white students. On average, black charter students left schools that were 53 percent black for charters that were 72 percent black. Similarly, white charter students left traditional schools that were 72 percent white to charters that were 82 percent white. Both black and white charter students had more peers from college educated parents than at their previous TPS, but the percentage increase in college educated parents was about 6 times larger for whites than for blacks. On net, black students transferred to charters with lower average test scores than their previous schools, while white students transferred to charters with higher average test scores than their previous public schools.

Booker, Zimmer, and Buddin (2005) examined the effect of charter schools on the stratification of students in terms of both ability and race using data from California and Texas. In both states, black charter students transferred to schools with higher concentrations of black students than the schools they attended previously. In Texas, white students also moved to schools with higher concentrations of whites than at their TPSs, but the opposite was true in California. Hispanic charter students in both states had fewer Hispanic peers than they had in their prior TPSs. In terms of measured ability, transfer students had lower test scores than the average student at their TPSs. In both states, charters attracted a disproportionate share of students with low test scores relative to the TPSs the students exited.

Data

We collected longitudinal student-level data statewide from two states and district-wide from five large, urban school districts. In total, seven states are represented in the data set. Table 1 lists each location, the years in which charter schools began operating, and the years for which we have data. For each student, the data include school identifiers, grade, race/ethnicity, and test scores in math and reading. As Table 1 illustrates, the years for which we were able to get data varied by location. The most recent year in which we collected test score data was generally 2006-07. We provide a more detailed description of each of the data sets in Appendix, which includes information about any exclusions we made in the data sets and how we classified schools.

Table 1

Data Included in the Analysis

Location	School Year Charter Schools Began Operating	Years of K-12 Data
Chicago	1997-98	1997-98 through 2006-07
Denver	1995-96	2001-02 through 2005-06
Milwaukee	1996-97	2000-01 through 2006-07
Philadelphia	1997-98	2000-01 through 2006-07
San Diego	1993-94	1997-98 through 2006-07
Ohio	1998-99	2004-05 through 2007-08
Texas	1996-97	1994-95 through 2003-04

Snapshot of Charter School Policies in the Seven Locations

Before delving into the data analysis, it is worth summarizing the charter school policies that might affect our results. Table 2 summarizes charter policies across the seven locations.⁴ As the table reveals, local school boards can authorize charter schools in all locations, but some states also allow other entities to authorize charter schools, including county boards of education, the state, and non-profit organizations. Ohio has the greatest range of entities authorizing charter schools.⁵ In terms of types of charter schools, all locations allow public conversion and startup charter schools; only Milwaukee and Texas allow private schools to convert to charter status. Most locations (with TX being the lone exception) allow “virtual” charter schools in which instruction is delivered primarily by telecommunications technology to the students’ homes. Despite being theoretically allowed in five of the seven locations, virtual charter schools are prevalent and identified as such only in Ohio, among our sites.

⁴ To construct the table, we relied on information found on Center for Education Reform website at <http://www.edreform.com/Home/>.

⁵ Initially the state of Ohio could authorize charter schools. But in 2005, new legislation prohibited the state from being the sponsor of charter schools. In addition, new limitations were placed on the number of charter schools that could be authorized by Education Service Centers (ESC). Because of these changes, a number of schools had to find new sponsors.

As noted previously, access to free transportation could be critical to the distribution of students. In most locations, transportation is not required by charter laws, but is generally specified in each charter contract. Only Philadelphia and Ohio require that transportation be provided. In addition, enrollment requirements may affect the distribution of students. In four out of the seven locations, enrollment may be restricted to district residents or students within certain geographic areas. In some cases, states have required charter schools to have racial balances similar to those of the districts in which they reside. Similarly, except for Philadelphia, each location gives, or has given, preferential treatment in the chartering process to schools that target at-risk or low-performing students.⁶

The prevalence of other school choice options and location-specific reforms also may affect the distribution of students by race and ability. For example, in addition to charter schools, students in Milwaukee have a wide array of choice options, including magnet schools, voucher private schools, non-voucher private schools, open-enrollment programs, and within-district options that result from NCLB. The types of students taking advantage of charter schools may be different than those who reside in districts with more limited choice options. In addition, each location has other ongoing reforms. For instance, in Philadelphia the state took over the district in 2002 and turned over 45 low performing schools to private managers. Some students may have exited these schools and enrolled in charter schools because they did not want to go through the transition to a new management structure.

⁶ Initially, all charter schools in Texas had to target at-risk students. However, this requirement eventually was phased out.

Together, these policies and environmental factors could affect the distribution of students by race and ability. One must keep in mind the policies listed in Table 2 when interpreting the results of our empirical analysis.

Insert Table 2 Here

(See the end of the document for table)

Prior achievement of students transferring to charter schools

First, we examine the prior achievement levels of students who enter charters, as compared with average district-wide achievement levels and with the achievement levels of other students in the TPSs from which they transferred. This analysis examines only students who switch into charter schools after they have been in TPSs. Because test scores are not available for students prior to Kindergarten, it is impossible for us to test whether charter elementary schools are attracting the best students at the entry point. In addition, the analysis removes students who are making “structural” moves—i.e., students who are switching from elementary to middle schools and middle to high schools—because for such students, their previous school is no longer the relevant counterfactual (and we do not have data to indicate the TPS they would have attended if they had not attended the charter school). But we also conducted alternative analyses that included structural movers (on the assumption that the average achievement levels in their previous schools might be unbiased, if noisy, proxies for average achievement levels

in the unknown counterfactual schools), and the results were quite consistent with those of Table 3, with no substantive differences in any of the sites.

The test scores in the analysis are based on scaled scores from state accountability tests or district administered tests. To make the results comparable across grades and subjects and across geographic locations, we standardized these scaled scores relative to the district-wide or statewide distribution in each grade and subject. Therefore, scores in Table 3 are standardized z-scores, with negative scores indicating below average scores and positive scores indicating above average scores. Using these scales, we present the average standardized prior math and reading scores of charter movers and of their peers at the TPSs the movers exited. Therefore, we not only know whether the average scores of students moving to charter schools are above or below the average test scores of their respective district or state, but we also know whether the average standardized test scores of students moving to charter schools are above or below the average standardized scores of students in the TPSs they exited.

Table 3 indicates that the results vary by location. For instance, in Milwaukee, test scores of students moving to charter schools are similar not only to district-wide averages, but also to those of their peers in the TPSs they exited. However, in Chicago and Philadelphia, students who switch to charter schools have prior test scores that are similar to or slightly lower than district averages (as evident by the negative z-scores), but slightly higher than the scores of their peers in the TPSs they exited. In Denver and San Diego, students transferring to charter schools have prior test scores that are not only below district-wide averages but also slightly lower than those of the students in the TPSs they exited.

In Ohio and Texas, these differences are more pronounced. In each of these locations, students transferring to charter schools have test scores that are substantially below state averages. In addition, the average gaps between the prior scores of students exiting TPSs for charter schools and those of their TPS peers are larger than those in the other locations.

Table 3

Average Prior Math and Reading Scores of Charter Movers and Other Students at the TPSs That They Leave

	Overall	White Students	African American Students	Hispanic Students
Chicago				
Prior Math Scores of Movers	-0.03	0.30	-0.05	0.06
Prior Math Scores of TPS Peers	-0.12	0.36	-0.17	0.03
Difference with TPS Peers	0.09	-0.06	0.12	0.03
Prior Reading Scores of Movers	0.02	0.35	0.01	0.02
Prior Reading Scores of TPS Peers	-0.09	0.36	-0.12	-0.03
Difference with TPS Peers	0.11	-0.01	0.13	0.05
Denver				
Prior Math Scores of Movers	-0.32	0.16	-0.45	-0.34
Prior Math Scores of TPS Peers	-0.16	0.13	-0.13	-0.25
Difference with TPS Peers	-0.16	0.03	-0.32	-0.09
Prior Reading Scores of Movers	-0.25	0.47	-0.18	-0.33
Prior Reading Scores of TPS Peers	-0.17	0.22	-0.04	-0.29
Difference with TPS Peers	-0.08	0.25	-0.14	-0.04
Milwaukee				
Prior Math Scores of Movers	-0.02	0.61	-0.33	0.10
Prior Math Scores of TPS Peers	-0.01	0.28	-0.15	0.05
Difference with TPS Peers	-0.01	0.33	-0.18	0.05
Prior Reading Scores of Movers	-0.04	0.52	-0.29	0.02
Prior Reading Scores of TPS Peers	-0.04	0.21	-0.16	-0.02
Difference with TPS Peers	0.00	0.31	-0.13	0.04
Philadelphia				
Prior Math Scores of Movers	-0.11	0.47	-0.16	-0.20
Prior Math Scores of TPS Peers	-0.17	0.26	-0.21	-0.20
Difference with TPS Peers	0.06	0.21	0.05	0.00

	Overall	White Students	African American Students	Hispanic Students
Peers				
Prior Reading Scores of Movers	-0.05	0.53	-0.08	-0.23
Prior Reading Scores of TPS Peers	-0.18	0.22	-0.19	-0.25
Difference with TPS Peers	0.13	0.31	0.11	0.02
San Diego				
Prior Math Scores of Movers	-0.29	0.11	-0.54	-0.43
Prior Math Scores of TPS Peers	-0.12	0.10	-0.22	-0.21
Difference with TPS Peers	-0.17	0.01	-0.32	-0.22
Prior Reading Scores of Movers	-0.20	0.28	-0.42	-0.41
Prior Reading Scores of TPS Peers	-0.11	0.14	-0.21	-0.23
Difference with TPS Peers	-0.09	0.14	-0.21	-0.18
Ohio⁷				
Prior Math Scores of Movers	-0.61	-0.33	-0.89	-0.60
Prior Math Scores of TPS Peers	-0.41	-0.13	-0.68	-0.51
Difference with TPS Peers	-0.20	-0.20	-0.21	-0.09
Prior Reading Scores of Movers	-0.56	-0.30	-0.80	-0.51
Prior Reading Scores of TPS Peers	-0.41	-0.14	-0.65	-0.49
Difference with TPS Peers	-0.15	-0.16	-0.15	-0.02
Texas				
Prior Math Scores of Movers	-0.46	-0.03	-0.83	-0.47
Prior Math Scores of TPS Peers	-0.24	0.02	-0.41	-0.27
Difference with TPS Peers	-0.22	-0.05	-0.42	-0.20
Prior Reading Scores of Movers	-0.38	0.11	-0.64	-0.47
Prior Reading Scores of TPS Peers	-0.21	0.07	-0.32	-0.31

⁷ Because Ohio has virtual schools, which are fairly unique, we also ran the analysis excluding virtual schools. The overall results, for African-Americans, and Hispanic students are very similar. For White students, the patterns are similar, but with slightly smaller differences.

	Overall	White Students	African American Students	Hispanic Students
Difference with TPS Peers	-0.17	0.04	-0.32	-0.16

In sum, in all but one case (Chicago reading scores, which are virtually identical to the district-wide average), students switching to charter schools have prior test scores that are below district-wide or statewide averages (though usually the difference is small). Compared to their immediate peers in the TPSs they exited, students transferring to charter schools had slightly higher test scores in two of seven locations, while in the other five locations the scores of the transferring students were identical to or lower than those of their TPS peers. Same-race comparisons indicate lower prior scores for charter students in five of seven sites among African-Americans and in four of seven sites among Hispanics. For white students the pattern was slightly different: In four of seven sites, white students entering charter schools had higher prior achievement than their white peers in both subjects, and in one other site they had higher scores in one of two subjects. These results for white students had little effect on the overall averages because white students constituted a minority of charter students in every location, and less than one-quarter of charter students in the four locations where their scores were consistently higher than those of their white peers (as we show in the next section).

Transfers to charters and racial and ethnic stratification

In this section we compare the racial composition of the sending (traditional public) and receiving (charter) schools of students transferring to charters. Before presenting the results, we first provide context with a descriptive breakdown of three

major groups of students in charter and TPSs in Table 4. African-American students are over-represented in charter schools in six of seven locations, which is consistent with previous research (Bifulco and Ladd, 2007, Booker, Zimmer, and Buddin, 2005). Patterns for white students and Hispanic students are more mixed, varying across sites.

Table 4

Charter and Traditional Public School Racial Representation Across All Years

Location	Charter School Racial Breakdown Across All Years			TPS Racial Breakdown Across All Years		
	Percent			Percent		
	Percent African American	Percent White	Percent Hispanic	Percent African American	Percent White	Percent Hispanic
Chicago	72.9	2.7	23.5	52.7	9.4	34.8
Denver	31.7	20.4	44.8	19.6	20.0	56.0
Milwaukee	40.7	23.0	27.1	63.8	14.1	14.4
Philadelphia	66.1	19.3	12.3	64.2	15.2	14.8
San Diego	22.9	20.4	40.4	14.5	27.1	39.4
Ohio	55.3	38.7	2.6	15.4	77.9	2.5
Texas	35.8	22.5	39.4	15.7	42.4	39.2

The data in Table 4 are useful for understanding aggregate representation of different racial groups across the charter and TPS sectors in the different locations, but they do not tell us about the relative levels of integration in charter schools and TPSs, because sector-wide numbers could mask enormous variation in the integration of individual schools. The 40-percent share of San Diego’s charter enrollment represented by Hispanic students, for example, could result from Hispanics constituting 40 percent of the enrollment of every charter school in San Diego, or it could result from Hispanics constituting 100 percent of the enrollment of 40 percent of the charter schools and zero in

the rest. Moreover, the data in Table 4 do not tell us about the effects on integration of students transferring into charter schools, because they do not tell us where the students would have been if they had not transferred.

Table 5 attempts to shed light on these issues by comparing the peer environments (in racial terms) for charter movers before and after moving to a charter school, separately for African-American students, Hispanic students, and white students. (Totals across rows may not add up to 100 percent because other racial categories are omitted, but they constituted only small minorities in most sites).

As is the case with Table 3, this analysis examines only students who switch into charter schools after they have been in TPSs. We do not have data that would allow an examination of what the racial composition would have been in a TPS for students who never attended TPSs—most importantly, students that begin in charter schools in kindergarten. Also, the analysis removes students who are making “structural” moves because the prior TPSs may not represent a strong counterfactual for the racial makeup of the school that the students would have attended in the later grade level, had they not chosen a charter.

In most cases, the results in Table 5 suggest that (on average) transferring students are moving to charter schools with racial compositions that do not differ dramatically from those of the TPSs they left behind. Across the sites, however, African-American transfer students are slightly more likely than white students or Hispanic students to move to charter schools with larger proportions of their own racial group. This does not necessarily indicate a preference for a same-race environment; it could result simply from a preference among African-Americans for charter schools (in which they tend to be

over-represented, as shown in Table 4). In five of the seven sites, African-American students transferred to charter schools with (on average) higher concentrations of African-Americans than were present in the TPSs they exited. Across the seven jurisdictions, the average increase in the African-American concentration experienced by an African-American transfer student was 3.8 percent, versus an average increase of 1.3 percent in the white concentration experienced by transferring white students, and an average decline of 5.9 percent in the Hispanic concentration experienced by transferring Hispanic students.⁸

Some differences are also evident across jurisdictions. Philadelphia is the only site where transferring students of all three groups tend to move to charter schools with higher concentrations of their own race. In Chicago, in contrast, transferring students of all three groups tend to move to charter schools with *lower* concentrations of their own race. In all of the other sites, the results vary for different racial groups. Across 21 comparisons (seven sites with three racial groups each), we find only two cases in which the average difference between the sending TPS and the receiving charter school is greater than ten percentage points in the concentration of the transferring student's race.

⁸ These averages give equal weight to each jurisdiction rather than weighting by the number of students or schools.

Table 5

Traditional Public and Charter Peer Environments for Charter Movers by Racial and Ethnic Background of Student

	Percent African American	Percent White	Percent Hispanic
Chicago			
Charter School African American Students Attend	84.3	2.1	13.2
TPS School African American Students Attended	89.9	2.3	7.0
Difference	-5.6	-0.2	6.2
Charter School White Students Attend	55.7	11.8	29.8
TPS School White Students Attended	26.3	20.1	40.6
Difference	29.4	-8.3	-10.8
Charter School Hispanic Students Attend	44.0	5.3	49.3
TPS School Hispanic Students Attended	18.2	8.6	70.1
Difference	25.8	-3.3	-20.8
Denver#			
Charter School African American Students Attend	51.0	14.6	31.0
TPS School African American Students Attended	42.2	15.3	41.9
Difference	8.8	-0.7	-8.8
Charter School White Students Attend	32.1	31.0	31.6
TPS School White Students Attended	25.2	28.7	38.9
Difference	6.9	2.3	-7.3
Charter School Hispanic Students Attend	21.9	11.6	64.0
TPS School Hispanic Students Attended	15.7	9.0	72.1
Difference	6.2	2.6	-8.1
Milwaukee			
Charter School African American Students Attend	65.5	13.2	13.8
TPS School African American Students Attended	73.0	10.5	9.7
Difference	-7.5	2.7	4.1
Charter School White Students Attend	27.4	38.9	23.0
TPS School White Students Attended	29.2	38.3	21.5
Difference	-1.8	0.6	1.5
Charter School Hispanic Students Attend	26.2	23.9	40.0
TPS School Hispanic Students Attended	25.5	19.2	47.0
Difference	0.7	4.7	-7.0
Philadelphia			
Charter School African American Students Attend	87.0	4.6	6.9
TPS School African American Students Attended	84.2	5.5	7.0
Difference	2.8	-0.9	-0.1
Charter School White Students Attend	36.1	48.7	10.9

	Percent African American	Percent White	Percent Hispanic
TPS School White Students Attended	39.5	39.7	12.3
Difference	-3.4	9.0	-1.4
Charter School Hispanic Students Attend	35.5	6.9	55.9
TPS School Hispanic Students Attended	38.1	12.0	45.4
Difference	-2.6	-5.1	10.5
San Diego			
Charter School African American Students Attend	33.7	20.0	32.1
TPS School African American Students Attended	25.3	16.1	39.2
Difference	8.4	3.9	-7.1
Charter School White Students Attend	15.8	42.1	30.2
TPS School White Students Attended	12.5	39.0	32.3
Difference	3.3	3.1	-2.1
Charter School Hispanic Students Attend	17.2	22.2	50.5
TPS School Hispanic Students Attended	15.8	19.0	49.4
Difference	1.4	3.2	-1.1
Ohio⁹			
Charter School African American Students Attend	78.9	16.5	2.1
TPS School African American Students Attended	74.1	20.0	3.0
Difference	4.8	-3.5	-0.9
Charter School White Students Attend	17.0	77.0	2.4
TPS School White Students Attended	14.9	79.0	3.1
Difference	2.1	-2.0	-0.6
Charter School Hispanic Students Attend	38.5	40.9	14.8
TPS School Hispanic Students Attended	31.8	42.1	21.6
Difference	6.7	-1.3	-6.8
Texas			
Charter School African American Students Attend	67.1	12.3	19.8
TPS School African American Students Attended	52.4	14.4	31.7
Difference	14.7	-2.1	-11.9
Charter School White Students Attend	17.3	54.8	24.2
TPS School White Students Attended	15.6	50.4	30.3
Difference	1.7	4.4	-6.1
Charter School Hispanic Students Attend	19.7	13.7	63.2
TPS School Hispanic Students Attended	15.1	12.4	71.4
Difference	4.6	1.3	-8.2

Examining the relationship between charter policies and distributional patterns

⁹ Because Ohio has virtual schools, which are fairly unique, we also ran the analysis excluding virtual schools. The results show similar patterns, but are slightly more pronounced.

Comparing the results in Tables 3 and 5 to the policies described in Table 1 reveals no clear relationship between charter policies and distributional outcomes across locations. For instance, both Milwaukee and Ohio have fairly unique authorizing structures, but students switching out of Milwaukee's TPSs have similar prior test scores to the rest of the district and the peers of the TPSs they exited, while Ohio students exiting TPSs for charter schools are below average students both from the perspective of statewide averages and the TPSs they exited. Similarly, African American students in Milwaukee tend to transfer to charter schools with a higher portion of African American students, while the opposite is true in Ohio.

We also speculated that other policies, such as transportation and enrollment requirements, could be important in determining the types of students who enroll in charter schools. Again, however, we find no obvious relationship. For instance, while charter schools in Ohio and Texas are both attracting below average students and African American students in both locations are more likely to transfer to schools with a higher share of African American students, only Ohio requires transportation. Texas does not. Similarly, while both Chicago and Texas have provisions favoring charter schools focused on at-risk students, Texas charter schools are attracting students with below average test scores, while Chicago charter schools are not. In addition, students transferring to Chicago charter schools transfer to schools with a smaller share of their own race, which is only true for Hispanics in Texas.

Finally, the presence of choice options also seems unrelated to the effect charter schools have on the distribution of students. For example, while Ohio and Texas have

similar outcomes both by race and ability, Ohio provides more choice options—including a voucher program.

The above analysis is admittedly informal and represents only a first attempt in examining the relationship between charter policies and distributional outcomes. Estimating this relationship quantitatively would be preferable, but coding the policies for each location is difficult, especially because one must account for policy variations within the seven locations both geographically and over time. In addition, it would be difficult to tease out effects empirically with only seven locations. This initial, informal attempt reveals no obvious relationship between policies and the distribution of students in terms of race and ability.

Conclusions

In this study, we examine whether charter schools are “cream skimming” the best students from TPSs and whether students transferring to charter schools are transferring to schools with a greater share of their own race, thereby creating greater racial stratification. Much of the previous research has ignored the cream skimming questions altogether and examined the racial distribution question using school-level data. Our study goes beyond much of the literature by using longitudinal student-level data across seven locations to track students from TPSs to charter schools, which creates better understanding of both their previous and subsequent peer environments.

Overall, it does not appear that charter schools are systematically skimming high achieving students or dramatically affecting the racial mix of schools for transferring

students. Students transferring to charter schools had prior achievement levels that were generally similar to or lower than those of their TPS peers. And transfers had surprisingly little effect on racial distributions across the sites: Typically, students transferring to charter schools moved to schools with similar racial distributions as the TPSs from which they came. There is some evidence, however, that African-American students transferring to charters are more likely to end up in schools with higher percentages of students of their own race, a finding that is consistent with prior results in North Carolina (Bifulco and Ladd, 2007; Booker, Zimmer, and Buddin, 2005).

We also examined whether any distributional differences across locations can be explained by charter policies and environments across locations. However, we unable to identify a systematic relationship between distributional outcomes and policies, suggesting that any differences across locations may be a function of nuanced characteristics of charter schools or their district and states.

In sum, the results suggest that the worst fears of charter opponents regarding student sorting have not been realized: charters are not “cream skimming” the best students, nor are they creating the white enclaves. But, by the same token, we find little evidence that they are systematically reducing stratification by race or ability.

Appendix

Below, we describe location-by-location data provided to us.

Chicago

Chicago Public Schools provided the project team with student-level race/ethnicity information, test score data, as well as the school of attendance and grade enrolled for each year 1997-98 through 2006-07 school years. The grade range of test scores provided varied by year. For the 1997-98 through 2000-01 school years, math and reading test scores were provided for students in grades 1-8. For 2001-02 through 2006-07, math and reading test scores were provided for students in grades 3-8.

Denver

Denver Public School District provided the project team with student-level race/ethnicity information, test score data, as well as the school of attendance and grade enrolled for each year from 2000–01 through 2005–06 school years. In addition, the district provided a list of school identifiers of each charter school and the year in which the school was established. Using this list combined with the school identifiers for each student, we were not only able to indicate whether a student attended a charter school for each year. However, it should be noted that because of substantial portion of students did not have school identifiers included in the 2000-01 school year, we deleted this year from our analysis and examined data from the 2001-02 through 2006-07 school years only.

The grade range of test scores provided varied across reading and math. For reading, test scores were provided for grades 3 through 10 for each of these years. For math, in the 2001–02 through 2003–04 school years, test scores were provided in grades 5 through 10. In the 2005–06 school year, test scores were provided in grades 3 through 10. We are therefore able to track the student achievement progress more completely in reading than in math.

Milwaukee

The Milwaukee public school district provided student-level test and demographic data from the 1997-98 through 2006-07 school years. During the course of the panel, state tests switched from the Terra Nova to the Wisconsin Knowledge and Concepts Examination (WKCE) assessment, which over the last few years has incorporated ever more state-developed items. Therefore, to enable us to measure student gain scores, we created z-scores using scale scores by year, grade level, and test subject.

We could not use all of the data that the district provided for a number of reasons, however. First, the data from 1997-1999 were too sparse to estimate gain scores, so we limited the analyses to the 2000-01 through 2006-07 school years. Second, although the district provided test data for students in grades 2-10 in math and reading, there were too many missing scores in grade 2 to estimate the models. Therefore, we focused the analyses on math and reading achievement in grades 3-10, which provides us with gain

scores for grades 4-10. Third, we obtained data for only those charter schools that the Milwaukee Public School system chartered (which comprise the majority of charter schools in Milwaukee) and therefore were unable to incorporate into this study schools chartered by other entities (i.e., "independent" charter schools). Finally, it is important to note that the data we analyzed are on tested students only.

Ohio

State of Ohio provided the project team with student-level race/ethnicity information, test score data, as well as school of attendance and grade enrolled from year 2003-04 through 2007-08. However, these variables were not provided for all students for each year, but the subset of students tested in the particular year. In addition, which grades were tested varied by year and in some years, students were tested in the fall. Because a small portion of students were actually tested in the fall and because it would have meant that we would not have consistent intervals of testing periods for all students, we eliminated fall test. Furthermore, in 2003-04 school year, only 3rd graders were tested in reading and no students were tested in math. Also, only a portion of 3rd graders were tested in reading in 2003-04 school year. Therefore, we also eliminated all 2003-04 school year data from our analysis.

We also performed several checks on the data and dropped records outside of our population as well as records that had conflicting information. In the first cut of the data, we removed all records for subjects other than Math and Reading. We dropped all records for a student within Math and Reading if the student had more than two records for a single subject. In total, we dropped less than two percent of students in each year by selecting out our population and discarding student records with conflicting data. As noted above, in some cases, the research team was given both spring and fall tests for an individual student. Of the students with two records in a subject in a year, we kept a single student record for each subject when information on the student was consistent and dropped both student records when the data were incongruent. We dropped both records if: (1) gender, race, or school were discrepant; we had two different spring scores or two different fall scores for a student; or (3) neither record had school data. We dropped inconsistent student records across Math and Reading within a year—when gender, race, or school did not match, and we dropped student records with inconsistent gender data across years.

In the 2004-05 school year, the state provided math test scores in grades 3, 7, and 8 and reading math test scores in grades 3, 4, 5, and 8. In the 2005-06 through 2007-08 school years, the state provided reading test scores for grades 3 through 8. It should also be noted, that for many students, the state provided both raw scores and scaled scores. However, we only had either the raw or scaled scores (not both) for a small subset of students. To maximize the scores, we normalized the raw and scaled scores by year and grade. For students missing scaled normalized scores, we used the raw normalized values. It should be noted that the raw and scaled scores had a high correlation of 0.87 across students that had both scores.

Philadelphia

Philadelphia Public School District provided the project team with student-level race/ethnicity information, test score data, as well as the school of attendance and grade enrolled for each year from 2000–01 through 2006–07 school years. In addition, the district provided a list of school identifiers of each charter school and the year in which the school was established. Using this list combined with the school identifiers for each student, we were not only able to identify whether a student attended a charter school for each year. In the period under examination (2000-01 through 2006-07), students in Philadelphia took three kinds of annual achievement tests in reading and math, varying with the school year and grade as listed below:

- Pennsylvania System of School Assessment (PSSA) tests for math and reading for grades 5, 8, and 11 annually beginning in spring 2001 and grades 3 through 8 and 11 in spring 2006 and 2007;
- Stanford 9 tests in math and reading in grades 3, 4, 7, and 10 in spring 2001 and spring 2002.¹⁰
- Terra Nova tests in math in grades 2 through 10 annually in the springs of 2003 through 2005 and in grades 2, 9, and 10 in spring 2006.
- Terra Nova tests in reading in grades 1 through 10 annually in the springs of 2003 through 2005 and in grades 1, 2, 9, and 10 in spring 2006.

Although we were able to get the Stanford 9 test results for non-charter students in 2001 and 2002, we were unable to get these data for charter students. However, it is still valuable to have these data in these years because it can help track the performance of students who later enrolled in charter schools.

Because there is no consistent scale across the various tests on which to gauge absolute changes in student achievement over time, we convert all scaled test-score results into rank-based z-scores, by year and grade, with a mean of zero and a standard deviation of one. Specifically, we sort all student scores by rank and then convert them to z-scores that are normed across the entire district-wide population of tested students in that subject and grade. This conversion does not require that students have the same rank on one test as on another, but it assumes that differences in the distribution of students on different tests are not correlated with charter status. Random differences in student ranks across different tests would introduce noise, but not bias, to the analysis. The conversion of scaled scores to rank-based z-scores means that we cannot make claims about the absolute amount of learning in one school or another (lacking a psychometrically valid developmental scale), but it permits an examination of changes in rank with fewer

¹⁰ In the spring of 2002, the Stanford 9 4th grade test was only administered to K-4 schools and not to K-5 or K-8 schools (email correspondence with Philadelphia School District Director of Accountability Mike Schlesinger, February 16, 2008).

assumptions than would be needed under other kinds of scaling.¹¹ In cases in which students took both the Terra Nova (TN) and PSSA, we used the PSSA because it is the state accountability measure and, in recent years, has been administered in more grades.

San Diego

San Diego School District provided the project team with student-level race/ethnicity information, test score data, an indicator of whether the student attends a charter schools, as well as the school of attendance and grade enrolled for each year from 1997-98 through 2006–07 school years. For each school year and for both reading and math, test scores of students were provided in grades 2 through 11.

Texas

State of Texas provided the project team with student-level race/ethnicity information, test score data, and school of attendance and grade enrolled from year 1995-96 through 2003-04. This data includes math and reading test scores for students in grades 3-8 in all years for all public school students, including students in Texas charter schools. Using this data along with school identifiers, we were able to follow each student over time as they transitioned between schools. For 2001-02 and prior school years the test scores were the math and reading scaled scores on the Texas Assessment of Academic Skills (TAAS), and for 2002-03 and 2003-04 the test scores were the math and reading scaled scores on the Texas Assessment of Knowledge and Skills (TAKS). Because these tests are on different scales, we converted all scores to rank-based z-scores, by year, test, and grade.

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¹¹ For further discussion of the use of rank-based z-scores, see Gill et al. (2005).

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Table 2. Description of Charter Policies and Environments Across Locations

DIMENSIONS	Chicago	Denver	Milwaukee¹²	Philadelphia	San Diego	Ohio	Texas¹³
Number of charter schools in the most recent year of our data	33	21	42	57	35	231	198
Types of Chartering Authorities	Local school board	Local school boards; state Charter School Institute in districts that have not retained exclusive authority to grant charters;	Local school board, city of Milwaukee, University of Wisconsin-Milwaukee, and Milwaukee Area Technical College.	Local school boards; state department of education for virtual schools.	Local School Board, County School Board, or State	For conversion charter schools, local school boards. For start-up charter schools in "big eight" school districts, "academic emergency" school districts, "academic watch" school districts and districts part of the pilot project area: local school boards; boards of joint vocational school districts; boards of educational service centers; state universities, as approved by the state department of education; federally tax-exempt entities, as approved by the state department of education; or, when another authorizer fails to comply with its obligation as a sponsor, the state department of education.	Local school board for conversions and state board of education for open-enrollments (new starts).
Types of Charter	Public conversion, startups, virtual	Public conversion,	Public conversion, private conversion,	Public conversion, startups, virtual	Public conversion, startups,	Public conversion, startups, virtual	Public conversion, private conversion,

¹² We do not have data for independent charter schools in Milwaukee.

¹³ We observe only charter schools authorized by startup charter schools in our data set.

Schools		startups, virtual	startup, virtual, instrumentality, non- instrumentality, independent		nonclassroom based (virtual)		startups
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Table 2, continued

DIMENSIONS	Chicago	Denver	Milwaukee	Philadelphia	San Diego	Ohio	Texas
Transportation	Specified in charters	Specified in charters	Not addressed. Charters may coordinate transportation with existing traditional public schools with which they may share facilities.	Students who attend a charter school located in their school district of residence, a regional charter school of which the school district is a part, or a charter school located outside district boundaries at a distance not exceeding 10 miles by the nearest highway shall be provided free transportation by their school district of residence.	Specified in charter (however, the Department of Education interpretation is that charter school students are entitled to transportation)	School districts must provide transportation to and from a charter school located within the district or within another district, but districts are not required to provide transportation if student lives more than 30 minutes away from school.	Neither regular public schools nor charter schools are required to provide transportation for students, though many do.
Preferences for enrollment & enrollment requirements	Students enrolled prior and siblings	District residents	Students enrolled before the school became a charter school. Racial balance of charter school may not differ from district. Charter schools may not use academic ability criteria; they may, however, define certain other criteria for enrollment, such as at-risk criteria.	District residents, children of parents who actively participated in the development of the school, and siblings. Charter school may limit enrollment to a particular grade level or area of concentration and may set reasonable criteria to evaluate prospective students, consistent with the charter.	District residents and siblings. Charter must specify means by which school's students body will reflect racial and ethnic balance of the general population living in the school district.	Students enrolled prior, district residents, and siblings. Racial balance of charter school may not differ from district, and charter school must comply with any desegregation order/regulations. School may choose to limit enrollment to students in a particular geographic area, or at-risk students; school must enroll at least 25 students.	District residents if local charter
At-risk provisions	Preference in approval process is given to schools designed to serve substantial proportion of at-risk children	Priority in the approval process must be given to schools designed to serve low-achieving students	Local school boards must give preference in awarding charters to schools designed to serve at-risk children.	None	Priority is given designated to serve low-achieving students	School may restrict enrollment to at-risk students.	Initially gave preference to at-risk charter, but currently there are no preferences

Table 2, continued

DIMENSIONS	Chicago	Denver	Milwaukee	Philadelphia	San Diego	Ohio	Texas
Other choice programs	The district has magnet schools, open-enrollment, and NCLB school choice option	Colorado has a fairly liberal open enrollment policy that allows students to enroll across district lines.	Wisconsin has a liberal and growing open enrollment policy to allow students to enroll across district lines. Milwaukee has the largest voucher program in America (over 19,000 students); a number of magnet schools; and an inter district program to allow minority students to enroll in Milwaukee suburbs and white suburban students to enroll in MPS.	The district also has magnet school and NCLB school choice option.	The district also have magnet schools and intra-district open enrollment as well as NCLB school choice option	Varies by district, but many districts have magnet programs and NCLB school choice option. In addition, the state has a voucher program.	Varies by district, most districts have magnet programs, some districts have open-enrollment and NCLB choice options.
Miscellaneous district policies and environments	Over last few years, Chicago has initiated the Renaissance 2010 initiative, which includes closing TPS and opening new charter schools	Unlike other states Colorado charter schools have been used by suburban districts to deal with increasing enrollment	In recent years MPS has initiated a small schools program that has used many charter schools to reorganize large middle and high schools.	In 2001, the state took over control of the school district and initiated a number of reforms, including turning over the management of low-performing schools to private management groups. However, these schools are not charter schools, but may affect the schooling choice families make.	San Diego has limited non-classroom based schools	In many districts, charter schools consume a significant percentage of students and have created some fiscal challenges and results in some tension between districts and charter schools.	In 2006, the state initiated the Governor's Educator Excellence Award program, a grant program paying bonuses to school employees (including charter schools) who have performed above expectations in raising student performance levels.

