The Effects of Charter Schools on Neighborhood and School Segregation Evidence from New York City

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A well-known feature of the United States' education system is the heavy reliance on attendance zones to determine children's school assignments. Access to high quality schools is often limited to middle and upper income families while poor children are "stuck" in poor neighborhoods with low quality schools. In addition to their impact on schools, attendance zone policies may also serve to reinforce patterns of residential segregation if families factor perceived school quality or demographic composition into their residential location decisions. Thus, the idea of increasing neighborhood integration through policies that decouple home and school, such as school choice, has strong intuitive appeal. As school choice, and particularly charter schools continue to expand, it is important to understand the possible unintended consequences of increased choice on *both* residential and school segregation.

In this paper, we combine multiple datasets to examine the effects of charter schools on neighborhood and school segregation in an urban context. We focus on charter schools as they are the fastest growing form of school choice in the U.S. We focus on an urban context for two primary reasons. First, because comparatively more charter schools are located in urban districts. Second, the effects of charter schools on neighborhood and school segregation are likely to be largest in urban environments, where transportation costs for attending charter schools are likely to be lower due to geographic density and access to public transportation. We specifically focus on New York City, which is an appealing setting to study this phenomenon given its historically high levels of residential segregation, rapidly expanding charter sector, and ongoing discussions about school integration taking place in the district.

We use four sources of data: administrative data from the New York City Department of Education (NYCDOE), school zone boundary files, the U.S. Census, and Geolytics annual estimates. Data from the NYCDOE contain detailed student-level demographic and program information such as eligibility for special education services and free and reduced-price lunch participation, school attended, unique student identifiers, and in later years, student addresses, which allow us to construct a panel of elementary school students from AY 1999-2000 until 2009-2010. These data, in combination with elementary school zone boundaries, allow us to attach each student to his or her zoned school. Using student demographic and program characteristics, we are able to construct two sets of information about each school: the composition of schools students actually attend, and the composition of schools that we would

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observe if every student attended his or her zoned school. Our sample for the school segregation analyses consists of all NYC public school students in grades 1-5 from AY 2007 to 2010, with the exception of Staten Island where no elementary charter schools were operating during this time. The final analytic sample used for the school segregation analysis consists of 564,044 unique students attended 948 different schools.

To examine trends in neighborhood characteristics, we use block group level data from Census 2000 and Census 2010 combined with Geolytics annual estimates for years 2001-2009. From these data we have information on race, median income, age, public and private school enrollments, etc. Block groups are the smallest geography for which annual estimates from 2001-2009 are available, and generally contain between 600 and 3,000 people. These block group data are then spatially matched to Community School Districts (CSD) and school zone boundaries. Our sample for the neighborhood segregation analyses includes only those CSDs that ever contain a charter elementary school during this period, because these CSDs are likely quite different from those that never have a charter school.

To begin our analysis of school segregation, we explore the characteristics of students who opt-out of attending their zoned school by estimating a simple linear probability model linking student demographic characteristics (gender, race/ethnicity, eligibility for free or reduced price lunch, distance to zoned school, distance to nearest charter school, prior test scores, among others) with an indicator equal to one if the student opted out of their zoned school to attend *any* choice school. Then we restrict the sample to students who opt out of their zoned school to explore what factors predict choosing a charter school. Next, we investigate the relationship between charter schools and school segregation for three separate student groups: students who opt out of their zoned school to attend a charter school, students who opt out of their zoned school to attend a non-charter school, and students who attend their zoned school. For each of these groups, we compare the composition of the school a student actually attends to the composition of his or her zoned school under the counterfactual of no school choice.

To examine the relationship between charter schools and neighborhood segregation we estimate a set of regressions linking whether a charter school located was open in a CSD in the prior with the percent of residents that are black, Hispanic, white or Asian in a school zone. We then replace our indicator of any charter in the prior year, with a more detailed measure of charter penetration equal to share total elementary school seats in a CSD that are in charter schools. We use the CSD-level measure of charter schools to exploit a charter school policy that provides enrollment preferences to students living within the same CSD as the charter. This model includes CSD fixed effects which control for all time invariant characteristics of a CSD, including average demographic characteristics.

Results

School-level analyses show that students who opt-out of their zoned school are different than those who do not on a number of characteristics (table 1 – column 1). For example, black students are 13.2 percentage points more likely to opt-out of their zoned school than white students. Conversely, poor students (measured by eligibility for free

and reduced price lunch at baseline) are 1.5 percentage points less likely to attend a school other than their zoned school. We also observe differences by borough. Compared to children in Manhattan, students from all other boroughs are less likely to opt-out, which may reflect in part, the large number of charter schools and other choice schools in Manhattan. Column 2 examines the probability of opting out to attend a charter school versus other opt-out schools. Some of the patterns are very similar to what we see with all students, particularly regarding race/ethnicity, borough of residence, and distance to nearest charter school. There are some differences. Charter school students are more likely to be black or Hispanic, and less likely to be poor or receive special education services.[1] These results suggest that there is sorting across different types of schools, but these differences could be an artifact of charter school location—that is charter schools may simply be more likely to locate in minority neighborhoods with less economically disadvantaged populations.

Next, we examine whether students in charter schools and other opt out schools attend schools that are significantly different from what they would experience in the absence of choice (Table 2). Compared to their zoned school, charter school students are enrolled in schools that have significantly higher shares of black students and lower shares of Hispanic and poor students. Conversely, students who attend other opt-out schools enroll in schools with only slightly lower shares of minority and poor students and higher shares of white students. While both charter and other opt-out students attend schools with lower shares of poor students compared to their zoned school, the difference is much larger in charter schools. Indeed, these students attend schools that are on average 9.9 percentage points less poor than their zoned school compared to a difference of 1.8 percent points for students in other opt-out schools. Students in charter schools also attend schools with a significantly higher share of their own race. Finally, when we explore what happens to the composition of schools attended by students who do not opt-out, we see that while most students attend schools very similar to what they would experience if all students attended their zoned school, students of all races are more likely to attend more segregated schools when students are able to opt-out of their neighborhood school. Overall, these results indicate that charter schools may lead to greater racial segregation in schools, particularly for minority students.

In our neighborhood analyses we find that a higher share of charter seats increases the non-Hispanic white population in a neighborhood, while there are small declines in the share of black residents. Overall, while suggestive, neighborhood analyses are quite preliminary. Our next steps include investigating whether these demographic changes depend on the quality of the charter sector in a neighborhood, the quality of the neighborhood school, and how these shifts in demographic composition translate into other measures of segregation such as the exposure index.

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[1] Charter schools tend to underreport poverty among students, we therefore define students as poor if we ever observe them as being eligible for free/reduced price lunch or attending a universal free meal school. Even so, this result should be interpreted with caution and we therefore do not focus heavily on poverty in the remainder of our discussion.

Table 1: Predicting school change 2007-2010, grades 1-5

	Opt-out	
	All	Charter
	(1)	(2)
Distance to zoned school	0.210***	-0.033***
	(0.005)	(0.003)
Distance to nearest charter	-0.062***	-0.006***
	(0.001)	(0.001)
Female	0.001	-0.002
	(0.001)	(0.001)
Black	0.132***	0.132***
	(0.003)	(0.002)
Hispanic	0.077***	0.079***
	(0.003)	(0.002)
Asian	0.021***	0.035***
	(0.003)	(0.002)
Foreign born	-0.012**	-0.013***
	(0.004)	(0.003)
Free/reduced price lunch	-0.015***	-0.030***
	(0.002)	(0.002)
Limited English proficiency	-0.046***	-0.040***
	(0.002)	(0.001)
Special education	0.084***	-0.054***
	(0.003)	(0.001)
Recent immigrant	-0.027***	-0.020***
	(0.004)	(0.003)
Z-score ELA	0.011***	-0.000
	(0.001)	(0.001)
Z-score MATH	-0.006***	0.012***
	(0.001)	(0.001)
Bronx	-0.068***	-0.154***
	(0.002)	(0.002)
Brooklyn	-0.086***	-0.164***
	(0.002)	(0.002)
Queens	-0.119***	-0.169***
	(0.003)	(0.002)
Observations	1,070,187	445,466

Standard errors in parentheses
* $p<0.05$ **$p<0.01$ ***$p<0.001$
Notes: Models include year and grade fixed effects, and indicators for missing distance and test scores. Free/reduced lunch status, special education, recent immigrant, and limited English proficiency measured at baseline.

Table 2. Actual versus zoned school characteristics of students who opt out of zoned school

	All opt-out students			Charter students			Other opt-out students		
	Actual	Zoned	Diff.	Actual	Zoned	Diff.	Actual	Zoned	Diff.
Demographics									
Black	0.356	0.364	**-0.007**	0.571	0.507	**0.064**	0.338	0.352	**-0.013**
Hispanic	0.420	0.436	**-0.016**	0.355	0.403	**-0.048**	0.425	0.438	**-0.013**
White	0.103	0.083	**0.019**	0.037	0.036	**0.001**	0.108	0.088	**0.021**
Poor	0.908	0.933	**-0.024**	0.859	0.958	**-0.099**	0.912	0.931	**-0.018**
Foreign born	0.094	0.104	**-0.009**	0.016	0.081	**-0.065**	0.101	0.105	**-0.005**
Recent immigrant	0.063	0.070	**-0.008**	0.006	0.056	**-0.051**	0.067	0.071	**-0.004**
Program char./performance									
Special education	0.114	0.116	**-0.001**	0.049	0.114	**-0.065**	0.120	0.116	**0.004**
Limited English prof.	0.139	0.155	**-0.016**	0.032	0.129	**-0.097**	0.147	0.157	**-0.009**
Reading z-score	-0.036	-0.099	**0.060**	0.002	-0.198	**0.198**	-0.039	-0.090	**0.049**
Math z-score	-0.056	-0.112	**0.054**	0.000	-0.240	**0.238**	-0.061	-0.101	**0.039**
Segregation									
Percent own race	0.557	0.543	**0.014**	0.638	0.520	**0.118**	0.550	0.545	**0.005**
White-non white exp.	0.824	0.891	**-0.067**	0.651	0.926	**-0.274**	0.838	0.888	**-0.050**
Black-non black exp.	0.641	0.634	**0.007**	0.429	0.493	**-0.064**	0.659	0.646	**0.017**
Hispanic-non Hispanic exp.	0.580	0.534	**0.016**	0.641	0.596	**0.045**	0.575	0.562	**0.013**
Poor-non poor exposure	0.092	0.067	**-0.022**	0.141	0.042	**0.099**	0.088	0.069	**0.018**
N	504,398			38,964			465,434		

Notes: Actual reflects the demographic composition of the schools that students actually attend, zoned reflects the demographic composition of schools that students would attend if all students were forced to attend their zoned school. Poor students are defined as students who are ever observed as being eligible for free or reduced price lunch. This is done to minimize discrepancies that might occur due to differences in reporting between charter and traditional public schools. Differences in bold are significant at the 5% level, differences in italics are significant at the 10 percent level.