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# Locating Chicago's Charter Schools: A Socio-Spatial Analysis

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**Abstract:** This project contributes to the body of research examining the implications of the geographic location of charter schools for student access, especially in high-poverty communities. Using geographic information systems (GIS) software, this paper uses data from the U.S. Census American Community Survey to identify the socioeconomic characteristics of the census tracts in which Chicago's charter schools tend to locate. Echoing the findings of other researchers who have examined charter school locational patterns, the present analyses found evidence of a "ceiling effect" by which many charter schools appear to locate in Chicago's higher-needs census tracts, broadly cast, but avoid locating directly within those that are highest-need. The findings suggest that because Chicago's charter schools face per-pupil expenditures that are often up to 20% less than those of traditional public schools, they may strategically leverage location to help shape student enrollment. By frequently locating near, but not directly within highest-need communities, charter schools may find it easier to attract a quorum of relatively higher achieving students who are less expensive to educate, therefore increasing their chances of meeting academic benchmarks and retaining their charters. By extending the findings of other researchers to the context of Chicago—where charters represent an ever-increasing share of the public school market—the present analyses may inform future revisions to the policies governing the authorization of charter schools in Chicago, with the goal of increasing access for highest-need students.

**Keywords**: Chicago; Charter Schools; Access to Education; Socioeconomic Status; Poverty; Geographic Information Systems; Geographic Location; Census Figures

#### Localización de las escuelas charter de Chicago: Un análisis socio-espacial

Resumen: Este proyecto contribuye a la literatura que examina la ubicación geográfica de las escuelas charter y sus consecuencias en relación de acceso de los estudiantes, especialmente en comunidades con alta concentración de pobreza. Este trabajo utiliza datos de la Encuesta de la Comunidad Americana de censo de EE.UU y software de sistemas de información geográfica (GIS), para identificar las características socioeconómicas de las secciones censales de Chicago que las escuelas charter tienden a localizarse. Confirmando los hallazgos de otros investigadores que han examinado los patrones de localización de las escuelas charter, este análisis brinda evidencias de "efecto techo" por el cual en términos generales muchas chárter parecen localizarse en las secciones censales con mayores necesidades en Chicago, pero no ubicarse directamente dentro de las zonas que tienen las mayores necesidades. Los hallazgos sugieren que debido a que las escuelas charter de Chicago tienen gastos por alumno que a menudo son hasta un 20% menores que los de las escuelas públicas tradicionales, las chárter se estarían ubicando estratégicamente en esas áreas para aumentar su alumnado. Al ubicarse con frecuencia cerca, pero no directamente en las comunidades más necesitadas, las escuelas charter serian mas atractivas alumnos que alcanzan resultados académicos relativamente más altos y que son menos costosos para educar, por lo tanto, aumentar las posibilidades de que las charter alcancen sus metas académicas y retener el estatus de charter. Al confirmar los hallazgos de otros investigadores en el contexto de Chicago, donde las charter representan una proporción cada vez mayor del mercado de escuelas públicas este estudio puede ayudar futuras revisiones de las políticas que regulan la autorización de charters en Chicago, con el objetivo de aumentar el acceso de estudiantes con mayores necesidades.

**Palabras clave:** Chicago; escuelas *Charter*; acceso a la educación; estatus socioeconómico; pobreza; sistemas de información geográfica; ubicación geográfica; cifras censales

#### Localização de escolas charter em Chicago: Uma análise sócio-espacial

Resumo: Este projeto contribui para a literatura examinando a localização geográfica das escolas charter e as suas consequências em termos de acesso dos alunos, especialmente em comunidades com altas concentrações de pobreza. Este trabalho usa dados do Censo American Community Survey dos EUA e do software de sistemas de informação geográfica (SIG) para identificar as características socioeconômicas dos setores censitários em Chicago que as escolas charter tendem a localizar-se. Confirmando os achados de outros pesquisadores que examinaram os padrões de localização de escolas charter, esta análise fornece a evidência de "efeito teto" por que geralmente muitas charter parecem estar localizadas em setores com maiores necessidades em Chicago, mas não se localizam diretamente nas áreas com maiores necessidades. As descobertas sugerem que as escolas charter em Chicago têm gastos públicos por aluno que muitas vezes são até 20% inferiores aos das escolas públicas tradicionais, o que sugere que as *charter* se localizariam estrategicamente nestas áreas para aumentar o numero de alunos. Localizadas muitas vezes perto, mas não diretamente nas comunidades mais carentes, as escolas charter atrairiam alunos que alcançam resultados académicos relativamente maiores e são menos caros para educar, portanto, aumentando as chances de que as charters atinjam seus objetivos acadêmicos e conservar o estatuto de charter. Ao confirmar as conclusões de outros pesquisadores no contexto de Chicago, onde as charter representam uma parte crescente do mercado das escolas públicas este estudo pode ajudar a futuras revisões das políticas

relativas à autorização de *charters* em Chicago, com o objetivo de aumentar o acesso para os alunos com maiores necessidades.

**Palavras-chave:** Chicago; escolas *charter*, acesso à educação; status socioeconômico; pobreza; sistemas de informação geográfica; localização geográfica; dados censais

#### Introduction

In Chicago's rapidly expanding charter school sector, questions of whom these schools serve and whether they are accessible to highest-need students are critical. This project contributes to this conversation by examining the locations of Chicago's charter schools with respect to census tract level indicators of residents' socioeconomic well-being from the U.S. Census American Community Survey of 2000. These analyses are predicated by a body of research showing that the geographic location of schools has an impact on who enrolls. For many lower-income families, perceived and actual socioeconomic costs may limit their capacity to send their children to schools that are further from home (Andre-Belechy, 2007; Bell, 2009; Teske, Fitzpatrick, & O'Brien, 2009; Theobald, 2005). This study aims to determine whether Chicago charter school locational patterns are typified by the avoidance of highest-need neighborhoods, as researchers have found in other states and municipalities (d'Entremont, 2012; Glomm, Harris, & Lo, 2005; Gulosino & d'Entremont, 2011; Henig & MacDonald, 2002; Lubienski & Gulosino, 2007; Lubienski, Guloiano, & Weitzel, 2009). While this study does not examine student enrollment in Chicago's charter schools, it does present a descriptive analysis of charter school locational patterns within Chicago's complex socioeconomic landscape, which may have important implications for student access.

# Background

In the 1990s and early 2000s, when the number of states with charter school laws grew rapidly, policymakers and policy entrepreneurs (Kingdon, 2011) promoting charter school legislation frequently framed charters as a solution to the problem of urban educational underachievement (Nathan, 1996; Renzulli & Roscigno, 2005). Exempt from many of the regulations governing the operation of traditional public schools, advocates argued that charter schools were poised to develop innovative educational practices that could lead to improved student outcomes (Finn, Manno, & Vanourek, 2001). Those in favor of charter schools also stressed that because charters may neither charge tuition nor restrict admittance by attendance zone, they can drive innovation in a local education market by competing with traditional public schools to attract students. Proponents suggested that in this quasi-marketized public school environment, equality of educational opportunity would increase as schools competed to attract families that would now have the opportunity to select a school from a wider array of publically-funded options (Carnoy, Jacobsen, Mishel, & Rothstein, 2005; Chubb & Moe, 1990; Zhang, 2006).

The question of who participates in quasi-marketized public school options such as charters, and what specific family characteristics are associated with a willingness—or capacity—to "vote with their feet" remains, to some extent, unanswered (Forman, 2007). Researchers looking at participation in school choice options such as charters have found that parents will often endorse the concept of sending a child to a school-of-choice when responding to a survey (Kleitz, Weiher, Tedin & Matland, 2000), but that this enthusiasm tends to wane when families

are faced with the real-time logistics of enrolling a child in a school further from home (Teske et al., 2009). If there is reason to believe that lower-income families are less likely to send a child to a school further from home, then the capacity of charter schools to benefit these families may hinge on the locations in which they elect to open.

### The Intersection of Geography and Education

During the past two decades, a small number of scholars have suggested that education research should increasingly consider the importance of spatial relationships between schools, communities, and families (Gulson, 2005; Holloway, Hubbard, Jöns, & Pimlott-Wilson, 2010; Hanson, 2009; Robertson, 2009; Taylor, 2007 & 2009). While there has been an increased focus on the inequitable distribution of educational resources, these authors suggest that the impact of geography on access to available resources is often overlooked. Gluson (2005, p. 162) called for scholars in the field of education to more thoroughly investigate the "interaction of policy and the everyday practices of populations that shape, and are shaped by, physical locations, particularly cities." In the current era of neoliberal, market-based reforms, such as charter schools, Holloway et al. (2010) suggested that the spatial distribution of students and schools may impact the capacity of certain populations to access educational opportunity. Hanson (2009, pp. 157-58) similarly noted that "one pathway from education to geography runs through the nexus of provision and consumption, where students with varying degrees of mobility negotiate landscapes of spatially 'fixed' institutions."

Recognizing the importance of spatial relationships, a collection of education researchers have begun to question how geography may impact families' decisions to participate in school choice options that require them to send their child to a school further from home. From voucher programs to inter- or intra-district open enrollment to private schools, studies of parental decision-making have shown that location proves to be an especially important consideration for families (Andre-Bechely, 2007; Bell, 2007, 2009; Bradford, 1990; Martinez, Godwin, & Kemerer, 1996; Schneider et al., 2006; Teske, Fitzpatrick, & Kaplan, 2007; Teske et al., 2009; Theobald, 2005; Willms & Echols, 1992). These researchers emphasize that parents, especially lower-income parents, face logistical and economic hurdles that make it difficult to send a child to a school that is further from home. Even when transportation for the student is provided without cost to families, parents still must decide if the length of time their child will spend on the bus is appropriate. Further, families, themselves, must also be able to access their children's schools, and thus a school further from home may require that families have access to reliable transportation and have the time necessary to travel to and from that school (Teske et al., 2009). Together, these costs may create a disincentive for lower-income families to bypass their neighborhood public schools and send their children to schools further from home.

In addition to the logistical and economic hurdles that families face when sending a child somewhere other than a neighborhood public school, families must also consider the social costs of entering neighborhood or community other than their own. Taylor (2007) explored this line of thinking in the school choice context, and suggested that the selection of a school is a process that involves navigating layers of socioeconomic meaning; thus, families' decisions about the schools to which they send their children reflect the realities of both the economic and social costs of traveling between different neighborhoods. Bell (2007, 2009) argued that families make a series of complex social, economic, and academic assessments of schools, and evaluate whether or not they belong—or wish to belong—to the community in which a given school-of-choice is located. Taken together, the small pool of research on the impact of

geography on family participation in school choice options suggests that the physical locations selected by charter schools may have a significant impact on who enrolls.

#### **Charter School Locational Patterns**

Scholars who have analyzed the locations of charter schools in a selection of municipalities across the country have found that charter schools frequently elect to open in locations that are nearby, but not directly within, areas of highest socioeconomic need. Instead of locating within highest-poverty areas, these researchers found that charter schools often appeared in adjacent, slightly lower-needs areas that bore some markers of upward mobility (d'Entremont, 2012; Glomm et al., 2005; Gulosino & d'Entremont, 2011; Henig & MacDonald, 2002; Lubienski & Gulosino, 2007; Lubienski et al., 2009). Henig and Macdonald (2002) found that charter schools in Washington, DC, clustered in African American neighborhoods with relatively high levels of homeownership and voter participation, as well as in downtown areas close to subway stations. Research by Glomm et al. (2005) showed that in both California and Michigan, charter schools were more likely to be located in lower-income areas with greater proportions of relatively higher-educated adults. Similarly, Lubienski et al.'s (2009) analysis of charter school locations in Washington, DC, Michigan, and post-Katrina New Orleans found patterns of charters electing to locate in relatively lower-need areas of high-need municipalities. Analyses of charter school locations in New Jersey found parallel examples of charter schools locating just outside areas of highest socioeconomic need (d'Entremont, 2012).

These studies were all descriptive in nature; the authors identified where charter schools were located but did not gather data related to why charter schools chose their locations or the impact of location on student enrollment. There are clearly many factors that might influence a charter school's selection of a particular location, including, for example, the availability of a suitable building, the perceived safety of the area, or the presence of public transportation (Teske et al., 2007, 2009). However, these considerations may lead charter schools to avoid selecting locations in areas where prospective students live. Given the hotly contested question of how charter schools impact local education markets, identifying institutional patterns that affect student access—and therefore outcomes—is an area warranting further research. Plank, Arsen, and Sykes (2000) and Coen, Heinzmann, and Chase (2012) presented evidence that in a context where charter school funding is limited, and where charters operate with fewer per-pupil public dollars than traditional public schools (Batdorff, 2014), attracting higher-performing students may help lower costs. Because most charter schools cannot use admissions criteria to admit pupils and must meet specific student outcome benchmarks to retain their charters, charter schools may have incentive to attract students who are less expensive to educate, i.e., those students who are relatively higher-income or relatively higher-achieving (Plank et al., 2000). Lubienski et al. (2009) hypothesized that location is one of the only tools that charter schools may leverage to help shape enrollment in a way that supports the success of the school as an institution.

#### The Chicago Context

Illinois passed its charter schools law in 1996, during a time when policy entrepreneurs and policymakers at the national and state levels were calling for more "school choice" options in the public school sphere (Renzulli & Roscigno, 2005). Within little more than a decade after the law's passage, more than 100 charter schools were operating in Chicago (Coen et al., 2012; Malone, 2011). The rapid expansion of charter schools was concomitant with a district-wide effort to eliminate low-performing public schools, which resulted in the closure of roughly 100

of Chicago's traditional public schools between 2001 and 2014 (Lutton, Karp, & Ramos, 2011; Yaccino & Rich, 2013).

The Illinois law authorized local school boards and the State Charter School Commission to grant "charters" to new schools that would operate outside the authority of the Illinois School Code which regulates the state's traditional public schools (Illinois Compiled Statutes, Chapter 105, Section 27A). Among its many distinctions from the Illinois School Code, the Charter Schools Law stated that charters could: hire teachers and administrators without the credentials and certifications typically required of public school staff; use curricula and instructional practices of their own devising; submit bi-annual reports to the state instead of publicly reporting student data; and, finally, have their charter revoked if the school failed to meet benchmarks set by the authorizer (Illinois Compiled Statutes, Chapter 105, Section 27A-2; National Alliance for Public Charter Schools, 2014). The Illinois Charter Schools Law also diverged from the Illinois School Code in that, with few exceptions, it allowed charter schools in Chicago to draw students from any area of the city instead of using attendance zones, and required that students be accepted on a first-come, first-served basis. (Illinois Compiled Statutes, Chapter 105, Section 27A-4; Chicago Public Schools, 2014).

In addition to the statute's regulatory stipulations, the Illinois Charter Schools Law also included a great deal of hortatory language, especially with regard to the types of students that the state hoped charter schools would serve. In its opening paragraphs, the statute specified that charters should "increase learning opportunities for all pupils, with special emphasis on expanded learning experiences for at-risk pupils" (Illinois Compiled Statutes, Chapter 105, Article 27A-2). The article went on to define an "at-risk" pupil as one who, "because of physical, emotional, socioeconomic, or cultural factors, is less likely to succeed in a conventional educational environment" (Illinois Compiled Statutes, Chapter 105, Article 27A-3). The law's language around the prioritization of "at-risk" students instructed charter authorizers to "give priority" to charter school applications proposing to serve a large proportion of "at-risk" students but offered no other guidance and did not outline any measures for holding charter authorizers accountable (National Alliance for Public Charter Schools, 2014).

Despite its language around serving "at-risk" pupils, neither the statute nor the primary charter authorizer in Chicago, the Chicago Board of Education, made any recommendation as to where charter schools should locate until very recently. Chicago's 2013 request for charter school proposals was the first to broach this issue with its identification of two large swaths of land on the south and west sides of the city as "Priority Communities" (Chicago Public Schools, 2013). While the intention of this guidance was likely to increase the number of new charter schools proposed within those communities, only three of the seven new charters granted in 2014 were in located in Priority Communities (Ahmed-Ullah, 2014; Chicago Public Schools, 2013). Among the choices that individuals and organizations proposing charter schools must make, the question of where to physically locate the school undoubtedly looms large; location influences all spheres of a school, especially its pool of prospective students (Lubienski et al., 2009).

This paper will now turn to a descriptive analysis of where Chicago's charter schools have, in fact, elected to locate. The analyses presented here will examine neither the decision-making processes by which schools select their locations, nor the impact of location on charter school student enrollment. Instead, the analyses will describe locational patterns of Chicago's charter schools. Specifically, the analyses will examine the location of charter schools with respect to the city's highest-need census tracts—the very areas that are home to many of the "atrisk" students that the state's Charter Schools Law encourages these schools to serve.

# Analytic Approach and Results

Following the example of researchers who have examined charter school locational patterns in other municipalities, in this study I used geographical information systems (GIS) software to analyze the locations of Chicago's charter schools with respect to census tract measures of socioeconomic health.

#### **Data Sources**

In order to understand Chicago's socioeconomic landscape at the time when the city's charter school sector was expanding most rapidly, this study used census-tract-level measures of economic health from the U.S. Census Bureau's American Community Survey (ACS) of 2000. Because it takes multiple years to move from the development of a charter school proposal to the opening of a school, the ACS 2000 data provide a snapshot of the socioeconomic characteristics of Chicago's census tracts at a time when many individuals and organizations were developing charter school proposals and selecting locations for their schools. According to the Illinois State Charter School Commission, there were 134 charter schools operating within the city of Chicago by 2014 and more than half of that number opened in the first 10 years of the Charter Schools Law's existence, between 1998 and 2007 (Illinois State Charter School Commission, 2015; Saba, personal communication). It was also during the first decade of the law's existence that student enrollment in the city's charter schools increased by the largest proportions; for example, between 2005-06 and 2006-07, the percentage of students enrolled in the city's charter schools grew by nearly 30% (Institute on Metropolitan Opportunity, 2014).

### **Analytic Approach**

Using a methodology similar to that of researchers who examined the locations of charter schools in other municipalities (d'Entremont, 2012; Glomm et al., 2005; Henig & McDonald, 2002; Lubienski et al., 2009), the present analyses utilized the following census tract level indicators from the American Community Survey of 2000: (1) the percent of unemployed residents, (2) the poverty rate among families with children under 18, (3) the percent of households renting their home, (4) the percentage of adults with less than a high school degree, and (5) the percentage of the population between the ages of 5 and 20. As detailed in Table 1, across Chicago's census tracts, there is a great deal of socioeconomic diversity. For example, while the city's mean poverty rate for families with children under 18 was 23%, the standard deviation was also 19%, reflecting a great range in poverty rates among the city's census tracts. By comparing these socioeconomic measures across the city's census tracts with and without charter schools, it is possible to speak in broad strokes about the areas in which charter schools tend to locate.

Table 1

Average census tract level measures of poverty in Chicago

Indicator	Mean	Standard Deviation
Renter households	58%	23%
Unemployment rate	13%	11%
Poverty rate for families with children under 18	23%	19%
Adult population with less than a high school diploma or equivalent	31%	17%
Proportion of school-age residents (ages 5-20)	23%	10%

Note: Data from U.S. Census 2000 American Community Survey.

Because this project is specifically interested in the location of Chicago's charter schools with respect to the city's census tracts of highest socioeconomic need, I needed to identify the level of socioeconomic need in each of Chicago's more than 800 census tracts. Following the example of d'Entremont (2012), I assigned each census tract a socioeconomic need index score by summing the five ACS 2000 variables listed above and then normalizing the scores. Using ArcGIS 10.3, I developed a geodatabase by beginning with a map of Chicago's census tracts from the 2000 Census, adding each census tract's socioeconomic need index score, and then mapping the geocoordinates of every charter school that operated in Chicago between 1998 and 2013. In order to understand the accessibility of charter schools to highest-need students, ArcGIS was then used to identify where charter schools were located with respect to Chicago's census tracts with the highest socioeconomic need index scores.

#### Results

T-tests comparing census tracts with and without charter schools confirmed that, broadly speaking, charter schools tended to locate in census tracts where residents were less economically stable and where there were more school-age residents. Compared to Chicago's census tracts without charter schools, those census tracts with charter schools had higher: (1) proportions of renter-occupied housing, (2) proportions of adults with less than a high school diploma or equivalent, (3) proportions of school-age residents, (4) poverty rates for families with children under 18, and (5) unemployment rates (Table 2). And, accordingly, census tracts with charter schools also had significantly higher average socioeconomic need index scores than did census tracts without charter schools, averaging .6 and .1, respectively. Within this context, however, the present study is concerned with whether or not a "ceiling" effect appeared to limit the number of charter schools that located within Chicago's highest-need census tracts. Put another way, given that Chicago's charter schools tended to locate in the city's higher-needs census tracts, among these census tracts, did charter schools locate in those census tracts that were relatively more or relatively less advantaged?

Table 2
Means Comparisons of Socioeconomic Indicators in Chicago's Census Tracts With and Without Charter Schools

Indicator	Tracts With a Charter School	Tracts Without a Charter School
Renter households**	64%	57%
Unemployment rate***	19%	12%
Poverty rate for families with children under 18***	34%	21%
Adult population with less than a high school diploma or equivalent***	40%	30%
Proportion of school-age residents (ages 5-20)***	29%	22%
Index of Socioeconomic Need***	.6	.1

*Note:* \*\*p<.01, \*\*\*p<.001. Data from U.S. Census 2000 American Community Survey.

In order to determine where Chicago's charter schools located with respect to the city's highest-need census tracts, I first needed to identify which, among the city's more than 800 census tracts, were those of highest socioeconomic need. To do this, I used the normalized 5-item index of socioeconomic need and then categorized each census tract based on how many standard deviation units its index score was from the city mean. The city's charter schools were then flagged according to their census tract's level of socioeconomic need, as measured by its distance from the city mean. Figure 1 displays the number of charter schools located in census tracts representing different bands of socioeconomic need, where a negative score reflects lower need and a positive score reflects higher need. The distribution represents a fairly normal curve; the largest proportion of charter schools was located in census tracts with socioeconomic characteristics that reflected the city average or census tracts with slightly higher-than-average levels of need. Given the Charter Schools Law's prioritization of serving "at-risk" students (Illinois Compiled Statutes, Chapter 105, Article 27A), the proportion of schools in census tracts with socioeconomic index scores more than 1.5 standard deviation units above the city mean appears small. Considered through the lens of geography, it is reasonable to question whether student access to charter schools may be limited in these highest-need census tracts because few charter schools have elected to locate within them.

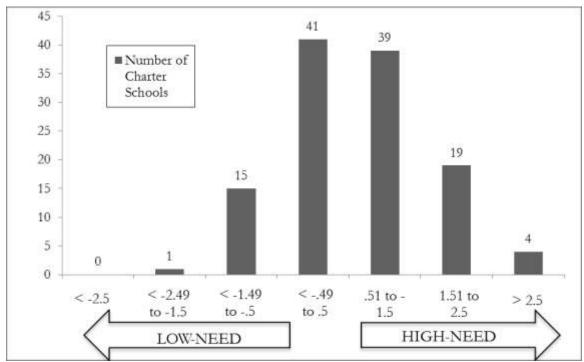


Figure 1. Counts of Chicago charter schools in census tracts categorized by the number of standard deviation units the census tract's socioeconomic need index score was from the city mean

To further explore the issue of access to charter schools for residents of Chicago's highest-need census tracts, I looked at those census tracts with socioeconomic index scores that were more than 1.5 standard deviation units above the city mean, and identified where the tract's closest charter school was located. For these "highest-need" census tracts, those with a socioeconomic need index score more than 1.5 standard deviation units above the city mean (n = 60), ArcGIS was used to determine whether there was a charter school located: (1) within the census tract itself, (2) within or directly on the border of an adjacent census tract of lower socioeconomic need, or (3) within or directly on the border of an adjacent census tract of similar or higher socioeconomic need.

As displayed in Figure 2, 19 of the 60 highest-need census tracts in Chicago had a charter school located directly within its boundaries. For the remaining 41 highest-need census tracts, the closest charter school was most likely located in a nearby census tract of lower socioeconomic need—those census tracts with a socioeconomic need index score less than 1.5 standard deviation units above the city mean. As displayed in Figure 3, for 28 of these 41 highest-needs tracts *without* charter schools, the closest charter school was located in or on the border of a nearby census tract of lower socioeconomic need; for the remaining 13, the closest charter school was located in a similar, highest-needs census tract.

In other words, for the residents of Chicago's 60 highest-need census tracts, the closest charter school was most likely to be located in a nearby, lower-needs census tract and less likely to be located in a nearby tract of similar or higher need. Even though highest-need census tracts are often contiguous with other census tracts of highest socioeconomic need, the closest charter school

<sup>&</sup>lt;sup>1</sup> In cases where a census tract had a charter school in both a neighboring tract of lower need and in a neighboring tract of higher socioeconomic need, the charter school that was physically closest to the census tract in question was counted.

was still most likely to be located in a nearby, lower-needs tract. This pattern is noteworthy as it implies that charter school operators may have some disincentive to locate in a highest-need tract.

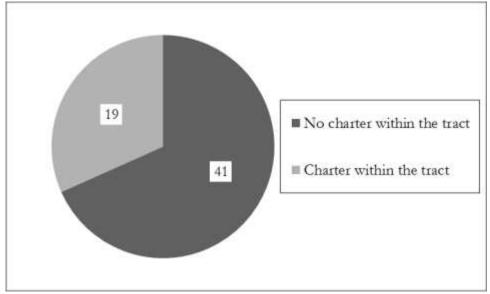


Figure 2. Count of the number of highest-need census tracts with and without a charter school located directly within its boundaries

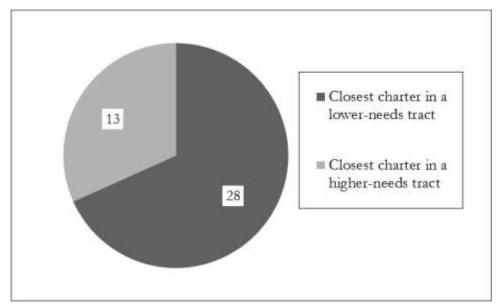


Figure 3. Among highest-need census tracts without a charter school located within its boundaries, counts of those where the closest charter school is in a lower-needs tract versus a similar or higher-needs tract

Examples of this pattern can also be understood by examining maps of charter school locations overlaid onto maps displaying the socioeconomic need index scores of the city's census tracts. Two maps displaying areas of the city that exemplify charter school avoidance of highest-need census tracts are presented below. Map 1 represents a roughly 3 by 4 mile area of Chicago encompassing parts of seven neighborhoods to the southwest of downtown, and Map 2 represents a roughly 2 by 3 mile area directly west of downtown. Visual inspection of these two maps brings the

statistical findings to life. Both maps present multiple instances where the charter school closest to a highest-need census tract is located within a nearby lower-needs census tract, or on the border of a nearby lower-needs tract. Other researchers have described similar patterns of charter schools locating near, but not directly within, certain areas as "encirclement" (d'Entremont, 2012; Lubienski et al., 2009).

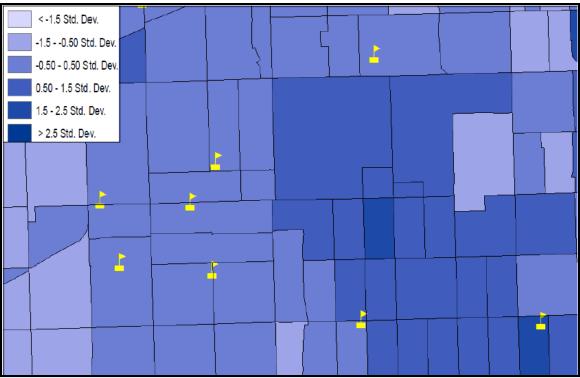


Figure 4. Map including portions of the following neighborhoods: Back of the Yards, Gage Park, Englewood, Archer Heights, West Edison, Bridgeport, and McKinley Park. Yellow flags represent the location of charter schools. Shading reflects the number of standard deviation units the census tract's socioeconomic need index score was from the city mean. Census tracts shaded in the lightest blue represent areas of lowest socioeconomic need, those shaded darkest blue represent areas of highest socioeconomic need.

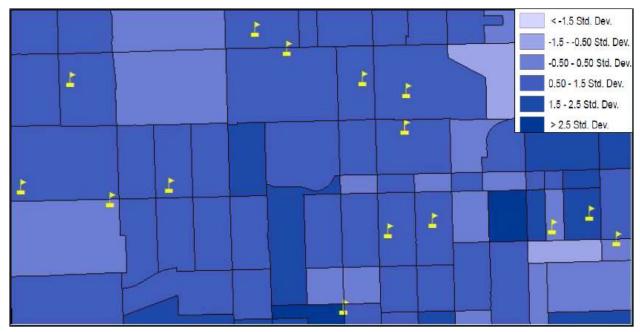


Figure 5. Map including portions of the following neighborhoods: South Austin, West Garfield Park, and West Humboldt Park. Yellow flags represent the location of charter schools. Shading reflects the number of standard deviation units the census tract's socioeconomic need index score was from the city mean. Census tracts shaded in the lightest blue represent areas of lowest socioeconomic need, those shaded in the darkest blue represent areas of highest socioeconomic need

#### Discussion

The spatial analysis identified a pattern showing that charter schools were more likely to locate near Chicago's highest-need census tracts rather than directly within them. These results align with the findings of similar studies of charter school locational patterns in other areas of the country including Washington, D.C., New Orleans, Michigan, California, and New Jersey (d'Entremont, 2012; Glomm et al., 2005; Gulosino & d'Entremont, 2011; Henig & McDonald, 2002; Lubienski & Gulosino, 2007; Lubienski et al., 2009). Coupled with research showing that parents are most likely to send children to schools closer to home (Andre-Bechely, 2007; Bell, 2007, 2009; Bradford, 1990; Martinez et al., 1996; Schneider, Elacqua, & Buckley, 2006; Teske et al., 2007, 2009; Theobald, 2005; Willms & Echols, 1992), the fact that charter schools are more likely to encircle—rather than locate directly within—highest-need areas may have important implications for access amongst students living in those highest-need census tracts.

One might make the argument that charter schools avoid locating in highest-need areas because these areas lack appropriate building space. Chicago's charter schools, however, frequently open in vacant traditional public school buildings (Lutton et al., 2011) and, in just fewer than half of Chicago's 60 highest-need census tracts, there was a closed traditional public school building present in the census tract by 2013. Given that only 19 of the 60 highest-need tracts had a charter school, but almost half were home to a closed public school building, it seems unlikely that it was simply a lack of available space that kept charter schools at bay. Other arguments suggesting that crime or inaccessibility might deter charters from opening in highest-need census tracts overlooks the fact that the Illinois Charter Schools law implores charters to serve "at-risk" students (Illinois Compiled Statutes, Chapter 105, Article 27A) who may live in highest-need census tracts, and for whom traveling to a school further from home is a less feasible option.

The extent to which charter school organizational behavior is shaped by hortatory language encouraging charters to prioritize serving "at-risk" students is unclear. The realities of the competitive and accountability-driven environment in which charter schools operate suggest that charter schools must be strategic about the organizational decisions that they make. The Illinois Charter Schools law did specify relatively strict expectations for meeting accountability benchmarks which, according to analysis by the Great Lakes Center for Education Research and Practice (Miron, 2007), accounts for the fact that Illinois revoked a larger percentage of charters than other Midwestern states in the first decade of the Illinois law's existence (Miron, 2007).

Further, in a financial context where charter schools typically operate with 70-75% of the per-pupil funding of a traditional Chicago public school (Ahmed-Ullah, 2011), the pressure on charter schools to find efficient means by which to educate students is all the greater. Other researchers have hypothesized that charter schools may leverage location to help shape enrollment. More precisely, these authors have suggested the possibility that charter schools may strategically avoid locating in highest-need areas in order to ensure that a quorum of relatively more advantaged students—who require fewer resources to educate—will enroll (d'Entremont, 2012; Lubienski et al., 2009). If attracting higher-achieving, lower-cost students is a rational goal for organizations that operate under the threat of closure, should they fail to meet accountability benchmarks (Miron, 2007), the question of how to encourage charter schools to locate in highest-need areas remains unanswered.

#### Limitations and Future Research

While the current study presents descriptive data suggesting that Chicago's charter schools are more likely to locate nearby rather than directly within census tracts of highest socioeconomic need, it does not speak to why this occurs and how it may impact student enrollment. Given the fact that charter schools are unlikely to locate in highest-need census tracts, it is then important to understand how far students living in those census tracts typically travel between home and school. Future research should use administrative data from the Chicago Public Schools to explore whether students in highest-needs census tracts tend to enroll in schools that are further afield, as compared to the distance between their home and their traditional neighborhood public school. Similarly, it is critical to determine whether students in highest-need census tracts enroll in charter schools, and if they do, to look at how far they must travel to get to school. Another related set of questions would look at the geography of charter school student enrollment and ask, how far do charter school students typically travel to attend school each day? What are the socioeconomic characteristics of the census tracts in which charter school students live, as compared to the census tracts in which the charter schools they attend are located?

In addition to leaning more about the flow of students between home and school across urban landscapes, it would benefit policymakers to understand why charters locate where they do and how they can be encouraged to move into highest-needs communities. Research focused on collecting data from charter school leaders and, where applicable, charter schools' education management organization staff, could examine their organizational behavior and decision-making processes. By gaining insight into how charter schools make important decisions such as the selection of a location for their school, this line of research could identify ways in which policymakers could encourage and facilitate the opening of charter schools in highest-need areas. Developing a better understanding of how school location is associated with student enrollment and how charters select locations for their schools would be highly relevant to the present context in Chicago. The 2013 identification of "Priority Communities" for new Chicago charter school campuses (Chicago Public Schools, 2013) suggests a growing awareness of the interplay between school location and student access. Further exploration of the spatial movement of students

between home and school would help Chicago, as well as states and districts across the country, understand how geography influences the implementation of charter school policy. Specifically, this research could help policymakers understand if geographic hurdles may prevent highest-need students from enrolling in charter schools, and how changes to policy could expand access. Without a more specific understanding of the spatial and geographic dynamics of the charter school sector, the limited presence of charters in highest-needs areas may continue, as well as the likely underrepresentation of highest-need students in charter school classrooms.

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