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Communities and School Ratings: Examining Geography of Opportunity in an Urban School District Located in a Resource-Rich City

Terrance L. Green[1] · Joanna Sánchez[2] · Emily Germain[2]

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Abstract Research on geography of opportunity documents how residential patterns influence students' access to equitable educational opportunities and resources. This scholarship often highlights how geography reinforces educational inequity in urban school districts located in resource-constrained cities. Yet, less research has explored how the geography of educational opportunity and resources plays out in school districts located in fast-growing and opportunity-rich cities. As such, this descriptive analysis uses Geographic Information Systems (GIS) to map the spatial distribution of high schools considered high-quality according to their state accountability rating by race and socioeconomic status in an urban school district located in an opportunity-rich city in the Northeastern U.S. We also examine how district transfer and selective enrollment policies as well as distances to other public and charter high schools rated high-quality influence the geography of educational opportunity. Our findings suggest that spatial arrangements and district policies impact patterns of unequal educational opportunity and resources across the district for children of color who live in low-income communities, despite being located in an opportunity-rich city. This study concludes with implications for policy and future research.

✉ Terrance L. Green
tgreen@austin.utexas.edu

Joanna Sánchez
jds.gis@gmail.com

Emily Germain
ekgermain@gmail.com

[1] Department of Educational Administration, University of Texas at Austin, George I. Sanchez Building, 1912 Speedway D5400, Austin, TX 78712-1604, USA

[2] Educational Policy and Planning Program, University of Texas at Austin, George I. Sanchez Building, 3rd Floor, 1912 Speedway D5400, Austin, TX 78712-1604, USA

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Introduction

For decades, reformers have aimed to address the impacts that neighborhoods of racial segregation and concentrated poverty[1] have on students' access to equitable educational opportunities. This is important because research shows that where students live shapes where they go to school, with whom they go to school, and the quality of schools they have access to (Cashin 2015; Siegel-Hawley 2014a; Tate 2008). However, educational opportunities and resources are spatially segregated and clustered by residential neighborhoods, often based on their racial and socioeconomic demographics (Briggs 2005; Green 2015). Yet, residential location is one of the main mechanisms that families use to access opportunity in society for their children. John powell[2] (2008) therefore asserts that residential and spatial segregation is opportunity segregation. Further, research suggests that students who attend schools in resource-rich neighborhoods can gain academic and social advantage over students that are excluded from these schools (Miller 2012; Orfield and Lee 2005; Rury and Saatciogula 2011). Existing research also highlights how geography reinforces educational inequity between wealthy, suburban and urban school districts as well as within urban school districts located in resource-constrained cities (Walters 2007). However, less research has explored how the geography of educational opportunity and resources plays out in school districts located in fast-growing, opportunity-rich cities; that is, cities that have thriving economies, population surges, and high employment rates.

The purpose of this descriptive study is to use Geographic Information Systems (GIS) to map the spatial distribution of high schools considered high-quality according to their state accountability rating by race and socioeconomic status across attendance zones in an urban school district located in a fast-growing and opportunity-rich city: Johnsonville.[3] We purposefully employ descriptive GIS because it "has a central role in all explanation, it is fundamentally important in and of itself [and] . . . we cannot construct meaningful casual explanations without [first having] good description" (King et al. 1994, p. 34). In doing so, we also examine how these spatial patterns, district policies, and distances to other public and charter high schools rated high-quality influence the geography of educational opportunity for students across neighborhoods and schools within the district. In this analysis, we specifically focus on high schools, like Siegel-Hawley (2013), because their large attendance zones draw students across broader residential areas which allows

[1] We acknowledge the range of assets and strengths in neighborhoods with concentrated poverty.

[2] john powell spells his name with all lower case letters. So to respect that, we also spell his name with lower case letters.

[3] In this paper, we use pseudonyms to describe all states, cities, school districts, schools, attendance boundaries, and neighborhoods.

us to more richly explore which students have access to high schools rated high-quality in the district.

As such, we investigate the following research questions: (a) How are high schools that are rated high-quality spatially distributed across the district in relation to low-income African American and Latino/a neighborhoods in an opportunity-rich city? (b) How do attendance boundaries, distance to other public and charter high schools rated high-quality, as well as district transfer and selective enrollment policies influence access to schools rated high-quality for African American and Latino/a students who live in low-income neighborhoods? Put simply, we examine the geography of opportunity as it relates to secondary education by examining the types of schools—in terms of accountability rating—that children have access to in their neighborhood.

Findings from this study suggest that attendance boundaries, distance, transfer, and selective enrollment policies reinforce unequal educational opportunity and resources across high schools in the district for children according to their race, socioeconomic status, and geography—despite being located in an opportunity-rich city. Importantly, our descriptive findings also suggest that existing spatial arrangements and district policies influence inequitable access to educational opportunities and resources even without parents acting in deliberate and discriminatory ways to hoard high-quality educational opportunities for their children (e.g., Bonilla-Silva 2010; Lyken-Segosebe and Hinz 2015). These findings contribute to the research that descriptively examines the geographic patterns and implications of schools' location on student access, especially for students who live in communities that have been and are currently underserved (e.g., LaFleur 2016). Understanding these spatial arrangements and policy dynamics are important for school districts in fast-growing and opportunity-rich cities across the United States because it illustrates present conditions and highlights the imperative to expand educational opportunities for all children, especially children of color who live in low-income communities. In what follows, we begin with a discussion about the literature on geography of opportunity in the field of education. Then, we describe this study's theoretical framework and methods. We next analyze this study's findings and conclude with implications for policy and future research.

The Geography of Educational Opportunity: Neighborhoods and Attendance Zones

We review research on geography of opportunity to provide a context for how spatial arrangements and other factors such as—neighborhood attendance lines,[4] charter schools, district transfer and selective enrollment policies—impact students' access to schools rated high-quality and the educational resources that accompany these schools (Lubienski and Dougherty 2009; Tate 2008). The geography of

[4] It is also important to note that attendance zones are in part created by topography, they are often fluid and change year to year, community input can also impact attendance lines, and they are often hotly contested and impact housing and transportation decisions.

opportunity is an important concept for understanding educational inequity in the U.S. (Hillman 2016; Tate 2008). We acknowledge that geography includes both place (i.e., distance between home and school) and space (i.e., the socially constructed and shifting social, economic, cultural and political meaning that people attach to spatial locations, and even schools) (Bell 2009). As such, in this section, we examine the literature on geography of opportunity and discuss key research findings and limitations as they relate to this study.

The research on geography of opportunity considers the spatial relationship between neighborhood-communities and schools, and has thus focused: on poverty, place, and educational outcomes (Tate 2008), the distribution of schools on children's access to educational opportunity (LaFleur 2016), the influence of neighborhoods on student and family outcomes (e.g., Chetty et al. 2015; powell et al. 2007), neighborhood assets within the context of urban schooling (Green 2015; Miller 2012), the impacts of geography on schools' resources and racial demographics (Goldring et al. 2006; Holme and Rangel 2012; Tate and Hogrebe 2011), segregation and school choice (Siegel-Hawley 2014a), parents' geographical preference for schools (Bell 2007, 2009), the advantages of attending wealthy suburban schools compared to under-resourced urban schools (Rury and Saatciogula 2011), and educational gerrymandering—how demographically changing suburban school districts and metropolitan areas redraw attendance lines to re-inscribe racial segregation (Diem et al. 2014; M. Orfield and Luce 2010; Leigh 1997; Siegel-Hawley 2013). Given this body of research, Gulson (2005) therefore suggests that education researchers should examine "interactions of policy and the everyday practices of populations that shape, and are shaped by, physical locations, particularly cities" (p. 142), especially for children who have been traditionally underserved. For example, for students who need to attend schools close to home because they do not have access to transportation to take them across town to other schools, having a school rated high-quality in their neighborhood can be one of the greatest forces shaping educational opportunities (e.g., LaFleur 2016; Turley 2009). In other words, the location of schools rated high-quality can be one of the most basic yet powerful dimensions of educational opportunity. Disregarding this reality concurrently disregards how structural inequities have historically and currently constrain the educational opportunities of children of color and children who live in low-income backgrounds (e.g., Hillman 2016), because as LaFleur (2016) asserts, "for many low-income families, perceived and actual socioeconomic costs may limit their capacity to send their children to schools that are further from home" (p. 3 see also Bell 2009).

Moreover, the literature also highlights that as opportunities have increased in fast-growing and opportunity-rich cities, white middle-class neighborhoods have raised more tax dollars through housing appreciation that supports their schools, thereby reproducing geographic advantage for students in these neighborhoods and schools. At the same time, fast-growing and opportunity-rich cities have also experienced increases in poverty rates that have been linked to the displacement of low-income families, gentrification, and the proliferation of charter schools in traditionally low-income communities of color (Green in press-b; Lipman 2013).

Additionally, research documents how attendance zones significantly impact the racial demographics of schools because they often mirror residential neighborhoods that are racially and socioeconomically segregated (Sohoni and Saporito 2009; Siegel-Hawley 2014a). These segregated neighborhoods more often restrict opportunities for children of color and children from low-income backgrounds and sort them into schools that receive inequitable funding and resources (Jencks and Mayer 1990; powell 2008). Even after decades of school desegregation and reform policies, schools in wealthy suburban districts continue to hoard their educational opportunities and resources through redrawing attendance zones in ways that protect the racial and socioeconomic makeup of these schools as well as the privileges that accompany them (Diem et al. 2014; Henig 2009; Holme et al. 2016; Siegel-Hawley 2013). Thus, attendance zones, along with school district policies, impact educational inequity because they can zone students into or away from various types of schools, such as those with more advanced curricula, racial diversity, additional resources, and other social opportunities that might better position students for college (Bischoff 2008; Cashin 2015). As a result, educational opportunities too often become inscribed within geography.

To address the geography of educational and resource inequity, urban school districts have become experiment centers for perennial reforms and policy changes in which an assortment of school choice options (e.g., charter schools, vouchers, and magnet programs) are the latest fad. In part, there has been an increase of charter schools in low-income urban districts because of the prevailing narrative that charter schools offer more options to urban parents, they allow children to attend schools outside of their neighborhood, and these schools increase the achievement of students of color and students from low-income backgrounds (Berends 2015; Lubienski and Dougherty 2009). However, school choice options have neither alleviated academic nor neighborhood-based educational inequities as hoped for in many urban districts (e.g., Goldhaber and Eide 2002), but have in some cases worsened racial and socioeconomic segregation in schools (Frankenberg et al. 2010).

Despite the recent growth in school choice options that allow students to attend schools other than those located in their neighborhood, data from the National Center for Educational Statistics (NCES) indicates that 83% of students still attend the traditional public schools that they are assigned to per attendance boundaries. However, the relationship between attendance boundaries and schools is important as they have built in advantages for students who live in affluent neighborhoods due to their unequal access to larger tax bases, privileged institutions, resources, and networks that can accelerate their education and social mobility (Cashin 2015). These advantages in turn influence access to school-level resources such as: quality teachers, academic offerings, the age of school facilities, and additional funding support for the school (e.g., booster clubs, fundraising, private donations, etc.) (Darling-Hammond 2000, 2010; Duncan-Andrade and Morrell 2008; Skrla et al. 2004, 2009).

Additionally, districts typically draw school attendance boundaries around local neighborhoods, which are often segregated. Siegel-Hawley (2013) contends, “This arrangement means that segregated neighborhoods yield segregated schools—which

in turn remain linked to profoundly disparate educational opportunities" (p. 585). In other words, attendance zones can systemically reinforce educational opportunity gaps as African American and Latino/a students from low-income neighborhoods are often zoned to attend schools with fewer less-qualified and experienced teachers and lower graduation rates (Darling-Hammond 2010; Green 2015; Siegel-Hawley 2013). Indeed, school attendance boundaries are not always "accidents of geography" (e.g., Fischel 2009) but can be gerrymandered and reproduce unequal outcomes by race and social class in neighborhood schools (Henig 2009; Orfield and Luce 2010; Richards and Stroub 2015; Siegel-Hawley 2013).

In addition, both historically and contemporarily, attendance boundaries have been used as a mechanism of segregation, especially between urban and suburban school districts across metropolitan areas (Green and Gooden 2016; Holme et al. 2016), even though some districts have drawn attendance boundaries in odd and irregular ways to promote diversity (Richards and Stroub 2015; Saporito and Van Riper 2016). More recently, some suburban districts that are experiencing an influx of children of color have redrawn attendance boundaries to segregate students by race (Siegel-Hawley 2013, 2014b). While gerrymandering of attendance boundaries was rendered unconstitutional in *Keyes v. Denver School District No. 1* (1973), it is difficult to prove in court because the plaintiffs must show that attendance boundaries were changed due to discriminatory intent (Green and Gooden 2016; Richards and Stroub 2015; Siegel-Hawley 2013). Richards and Stroub (2015) have thus noted, "the stringent legal standard of *Keyes* has ensured that educational boundary decisions are subject to the vagaries of local politics, allowing attendance zones to be engineered and manipulated by local actors with little oversight" (p. 3). This suggests that the educational opportunities inscribed within geography can be persistently solidified through attendance boundaries, and the courts have limited means for redressing this concern (Green and Gooden 2016).

In short, Richards and Stroub (2015) further assert, "historical and anecdotal evidence suggests that educational boundaries have been manipulated to engineer the racial/ethnic and socioeconomic composition of schools, whether motivated by discriminatory or affirmative intent" (p. 5). As a result, *de facto* racial segregation in schooling and neighborhoods endures. To this end, the literature on geography of opportunity provides a background to illuminate the importance that neighborhoods (i.e., geography) often serve as means for children to access high-quality educational opportunities and resources. We thus contend that geographic or spatial arrangements are a mechanism through which opportunities and resources can be withheld *for* some children and withheld *from* other children in the same school district.

Conceptual Framework: Spatial Opportunity Hoarding

To theoretically frame this study, we draw on a notion of opportunity hoarding (Tilly 1998). Opportunity hoarding is traditionally understood as encompassing four tenets: a distinctive network, valuable resources that are renewable and subject to monopoly, sequestering of resources by network members, and creation of beliefs

and practices that sustain the network's control of the resources. This approach to opportunity hoarding focuses on the practices of individual actors, which is important but it can obscure the spatial arrangements in which their actions occur. Given the purpose of our study, we use this lens to illustrate what we refer to as the *spatial hoarding* of educational opportunities and resources through current geographic arrangements. While school districts (i.e., individual actors) draw attendance zones, allocate resources, and set policy, existing spatial arrangements have in part produced and continue to reproduce education, social, and material inequities. Further, educational opportunities are shaped by the geographic and educational infrastructure and not always because of what actors did or did not do (e.g., Hillman 2016). In other words, spatial arrangements are part of a social structure that awards systemic privileges and benefits (i.e., more educational opportunities and resources) to people who live in certain places and attend certain schools (e.g., Bonilla-Silva 2010; powell 2008).

The literature suggests a form of opportunity hoarding occurs within well-resourced suburban schools (Lewis-McCoy 2014; Lewis and Diamond 2015), between parents in schools (Lyken-Segosebe and Hinz 2015), and geographically between suburban and urban school districts (Doughterty 2008; Rury and Saatciogula 2011; Walters 2007). As such, Walters (2007) argues that forms of spatial opportunity hoarding is mostly accomplished through colorblind policies that serve as the primary mechanism though which separate and unequal schooling is reproduced in school districts across the U.S. Importantly, addressing spatial opportunity hoarding should not be viewed as redistributive or zero-sum, but rather as "opportunity expansion through human investment policies [that have] potential gains, both economic and social for targeted groups and the community at large" (Tate and Hogrebe 2011, p. 52). Thus, in using this lens we seek to explore how spatial dynamics (along with other factors) influence access to schools rated high-quality, despite not having local actors (e.g., parents) explicitly employing discriminatory practices.

Methods and Analysis

We examine the spatial distribution of educational opportunity and resources in the Johnsonville Public School District (JPSD). In this section, we describe our selection criteria, case context, data sources, procedures, and analysis process.

Selection Criteria

Our research methods are similar to those employed by other scholars who have examined the location of schools in and across cities within the context of geography of opportunity (e.g., LaFleur 2016; Miller 2012; Tate 2008). As such, this descriptive research employs an in-depth case study analysis (Creswell 2012). To identify a site for this study, we employed purposive sampling to find a representative case of a school district in a fast-growing city that is recognized as a "place of opportunity" (i.e., opportunity-rich). We intentionally and non-randomly

selected a case where we could learn the most. Thus, given this study's purpose, we selected JPSD for several reasons. First, Johnsonville offers a rich case study with a useful dataset to explore our research questions. Second, the City of Johnsonville is recognized as one best "place of opportunity" in the U.S., according to academic literature and mainstream media outlets (e.g., Forbes Magazine). Third, Johnsonville is one of the fastest growing, opportunity rich cities in the US, but has historical patterns of stratified opportunity by race and social class. In addition, agree with scholars that descriptive inference is robust research (King et al. 1994). As King and colleagues (1994) assert, " . . . it is whether systematic inference is conducted according to valid procedures. Inference, whether descriptive or causal, quantitative or qualitative, is the ultimate goal of all good social science" (p. 34). We thus employ descriptive GIS with this in mind.

Case Context

Johnsonville epitomizes a fast-growing, "booming city" that is viewed as an oasis of opportunity as it is often cited as one of the best places to live in the U.S. The city is a national leader in technology-based economies and job growth, is one of the best place in the U.S. to start a business, and is widely admired as one of the best places to live in the U.S. Among the 25 largest cities in the nation, Johnsonville has experienced one of the greatest population growth between 2010 and 2013 as over 70 people move to the city everyday. However, while Johnsonville's population has grown nearly 50% over the past decade, at the same time, the number of people—especially children—living in poverty in Johnsonville has grown over 75%, which is the second-largest percentage increase among big cities across the United States (Kneebone and Berube 2014). These data are further alarming across metropolitan Johnsonville as the number of persons living in poverty in nearby suburbs has grown over 140% during the past decade (Kneebone and Berube 2014).

Johnsonville is part of one of the most economically segregated metros in the U.S., which is built on the city's current and historical racial segregation. The current racial segregation in Johnsonville is anchored in the use of restrictive housing covenants, redlining, and a 1915 city plan that required African Americans to move to east Johnsonville—in what the city called the "Black District"—to receive city services such as public schools, electricity, and water. Many researchers and demographers argue that the 1915 city plan is responsible for today's spatial arrangements. The racial segregation, particularly between east and west Johnsonville, was solidified by the construction of Interstate 80 (I-80) in 1955, which was and still is a *de facto* boundary of racial and socioeconomic demarcation in the city. Currently, Johnsonville is undergoing significant gentrification that is pushing low-income people of color, especially those African Americans who traditionally lived in east Johnsonville, to first-ring suburbs. The city is consequently experiencing rapid demographic shifts while Johnsonville schools are losing enrollment to surrounding school districts and charter schools. Thus, in the case of Johnsonville, population growth does not necessarily equal more school-aged children in the district, especially since the city has been positioned as a place of opportunity, particularly for young, white professionals in the technology industry.

Given the city's racial history, growing poverty rates, and the effects of gentrification, these and other issues present formidable challenges to equitable educational opportunities for students of color who live in low-income neighborhoods in Johnsonville. At the same time, these challenges offer a chance to expand and connect more students to the existing opportunity structures in more advantaged neighborhoods and schools. Johnsonville is therefore ideal for this study because it resembles many other U.S. cities that are experiencing similar population, demographic, and economic shifts. Additionally, according to 2014–2015 data, JPSD enrolled nearly 70,000 students. The school district is majority of color, but still relatively diverse. Racial demographics show that 59.5% of students are Latino/a, 25.9% are white, 8% are African American/Black[5], and the district identifies the remaining 6.6% of students as "other."[6] Approximately, 60% of students qualify for free and or reduced lunch (i.e., low-income) and 27% of JPSD students are linguistically diverse.

Data Sources

This study draws on demographic, academic, and geographic data from the district, the state education agency, U.S. Census Bureau, American Community Survey (ACS) for 2009–2013, the 2010 census tract boundaries, and Google Maps. The Census Bureau does not collect information at the school zone level. Therefore, we used demographic data at the census tract-level to access the most germane information for this study. We decided not to use block group data because it is often inconsistent and not seamless across all the U.S., and at times there are holes or block-groups that do not have values in their respective tables.

As such, census tracts generally have a population size between 1200 and 8000 people, with an optimum size of 4000 people. Data at the census tract-level is useful because the district collects data at the tract-level, and it has key information in decennial census and administrative data, such as housing values aggregated into units of census geography (Coulton et al. 2001). Together, these data were used to address our research questions.

GIS Mapping Procedures

In this study, we used GIS[7] to map the spatial distribution of all JPSD high schools based on their state accountability rating in 2013–2014 (i.e., Did Not Meet Standards, Met Standard without Distinction, Met Standard with Designated Distinction).

[5] In this paper, we use the terms African American and Black interchangeably to refer to people of African descent.

[6] We personally do not advance the term "other" but this is the language that the school district uses.

[7] Education researchers commonly use GIS to generate easy-to-understand maps that can inform a range of school, community, and policy stakeholders, and increase our understanding about education within the context of geography (Tate and Hogrebe 2011). Hence, GIS is fitting for this study because it will provide a way to map and "examine questions of physical space—the geography of schools, homes, neighborhoods, and districts—as primary consideration" (Lubienski and Dougherty 2009, p. 612).

Mapping the district's 2014–2015 tracking patterns, we found 11 fixed high school zones or boundaries,[8] which we overlaid with census tracts. The number of tracts in our high school zones ranges from 5 to 21. Because census tracts and school zone boundaries are not equivalent, some tracts extend beyond one school zone. We therefore applied a decision rule that incorporated into a school zone all tracts that had their geographic centers located inside the zone. Once tracts were selected, data were aggregated to the school zone. It is important to note that we created choropleth[9] maps of the racial composition and poverty rates of school zones overlain on locations of schools. Our goal for creating these maps was to provide a visual representation of the demographic makeup of the neighborhoods to illustrate where each school is located, not to produce quantitative analysis by race, poverty, and census tract. These maps supplement the demographic data that we provide for each school (e.g., LaFleur 2016).

As such, we collected, aggregated, and mapped demographic data across census tracts to the school zone level for the following variables: percentage of population below 18 years living in poverty, percentage White population, percentage Black population, and percentage Latino/a population. Given this study's purpose, we also wanted to identify low-income neighborhoods of color (e.g., Black and Latino/a). Neighborhoods that were deemed "African American/Black [or] Latino/a and low-income" met the following criteria: (a) had at least 41% African Americans or Latino/a and (b) 40% of school-aged children living in poverty (Massey and Denton 1998). We used the 40% poverty marker because of its longstanding use in the literature to identify neighborhoods with concentrated poverty (e.g., Massey and Denton 1998). However, given the declining African American population in Johnsonville, there were no majority Black neighborhoods by these measures. Neighborhoods with the highest African American populations were 32, 22, and 14%, respectively, which we used since that is what was available. Thus, with the exception of one figure, all school zones were mapped using these criteria (see Fig. 7). In Fig. 7, we added up the percentages of the African American and Latino/a populations within each zone and mapped the sum along with zone's poverty data. Figure 7 shows the school zones that have both a majority of color population (at least 51%) and concentrated poverty.

Data Analysis

Data analysis for the maps included a four-step iterative process. First, we mapped all JPSD schools by level (e.g., elementary, middle, and high) and state accountability rating. Then, we mapped all high school attendance boundaries in the district by race and poverty rates. Second, we overlaid on the race and poverty maps only the high schools (differentiated by accountability rating, that is Met Standards with Designation and Distinction and all other schools). Third, we

[8] We also mapped JPSD magnet schools, but their boundaries are not geographically fixed.

[9] A choropleth map is a thematic map that colors and shades areas based on their proportion to the measurement of the data and variables that are being displayed.

analyzed the spatial location between the high school rated high-quality and low-income neighborhoods of color to answer our first research question.

Fourth, and to answer our second research question, we calculated the distance between a "improving school" high school (e.g., any high school that was not identified as meeting standards with designation and distinction)—which were all located in low-income neighborhoods of color—and the three nearest high schools rated "high-quality." To calculate the linear distances in miles between these schools, we created a unique code in Python scripting language that used the City of Johnsonville's street network within the GIS software. We next re-ran the same script and calculated the distance from the "improving" school to the nearest charter high school rated "high-quality," given their prevalence in the city over the last few years. This allowed us to broadly analyze the distance of available options for students of color in low-income neighborhoods attending an "improving" high school in the district. We next analyzed district policies for selective enrollment (i.e., admissions based on test or another selective criteria) and transfers to examine whether these students could access high school rated high quality, if they attempted to (see Table 2).

Limitations

Like all research this study has several limitations. First, we used the state's accountability rating system to identify schools considered "high-quality," which captures student achievement, student progress, academic performance, and postsecondary success. Though important measures, we realize that the state's accountability ratings are myopic but also problematic when used for punitive instead of supportive purposes, and often overlook assets in schools like children's cultural wealth, hardworking teachers and administrators, and parents' commitment to their children's education. Thus, in using the state's measures, we do not aim to reinforce the false assumption that schools rated high-quality according to the state are "better schools" because we reject this assumption. These measures are also limited because they do not account for the out-of-school *opportunity gaps* that shape students in-school experiences and outcomes (Green in press-a; Hilliard 2003; Milner 2012; Welner and Carter 2013).

In addition, the state's accountability system is problematic because it has been used to justify the closing of public, urban schools that are at times replaced by charter schools (Green in press-b). We, however, used these ratings despite the limitations and tensions of doing so because schools are still evaluated by these metrics. Second, another limitation is that this study only considers snapshot data, which allows us to conduct descriptive but not longitudinal analysis. Third, to identify schools that received the district's highest ratings, schools that met standard without distinction were categorized as "improving" because we did not want to perpetuate a "failing" public schools narrative. Further, while these findings may not be generalizable they have implications for similar urban school districts in fast-growing, opportunity-rich cities. Finally, in our maps we did not calculate home to school distances because we did not have access to individual students' home addresses. We therefore calculated the mean driving distance from "improving

schools" to schools that were rated high-quality. The intent was to illustrate that if a student wanted to attend a school other than the one they were zoned for, then the responsibility shifts to families to provide that transportation to other schools. We next discuss our findings.

Mapping the Spatial Distribution of Educational Opportunities and Resources in JPSD

To begin, we mapped the spatial distribution of high schools rated high-quality throughout JPSD (see Fig. 1). The maps descriptively illustrate that "improving" schools are concentrated east of I-80. The maps also reveal that elementary schools (represented by the green circles) disproportionately met standard with distinction compared to middle schools (triangles) and high schools (squares). Figure 1 illustrates that northwest, central-west, and southwest Johnsonville all possess more feeder patterns that met standard with distinction as compared to other parts of the district. Even before overlaying race and poverty data, there are clear spatial disparities in the placement and distribution of schools rated high-quality across the district, especially at the high school level (Fig. 2).

Mapping the Geography of School Ratings by Race and Attendance Zones

We next analyzed the relationship between high school attendance zones, the rating of schools within their boundaries, as well as the racial demographics of each zone/neighborhood. Figure 3 displays the varied percentages of the Black population in each high school attendance zone. However, the three school zones in the easternmost part of JPSD have the greatest concentrations of African Americans at 14, 22, and 32%, respectively. As Fig. 3 highlights, the large majority of African American students in these neighborhoods are not zoned for any high schools rated high-quality. The attendance zones that have the majority of African American students are only zoned for one high school rated high-quality. However, that high school, Oak Park, is located within another school, Warren High School, and has a selective enrollment policy that precludes a lot of students who live in the surrounding neighborhood from attending Oak Park. Although Oak Park High School sits in a neighborhood that is 32% African American and 12% white there are only 2.1% African American students but 54.5% white students enrolled in the school.

Similar trends emerge when descriptively analyzing the spatial distribution of high schools rated high-quality in relation to Latino/a neighborhoods/attendance zones, even though Latino/as comprise a larger proportion of the overall population in Johnsonville. According to Fig. 4, seven of the eleven high school zones contain a Latino/a population of at least 36%, with five zones over 50%. Like their African America counterparts, our descriptive analysis reveals that most Latino/a students are zoned to attend high school rated "improving," which is the case in six of the seven, or 85%, of the school zones. These data thus shows the limited options, per attendance zones, for students of color in the district to attend high schools rated

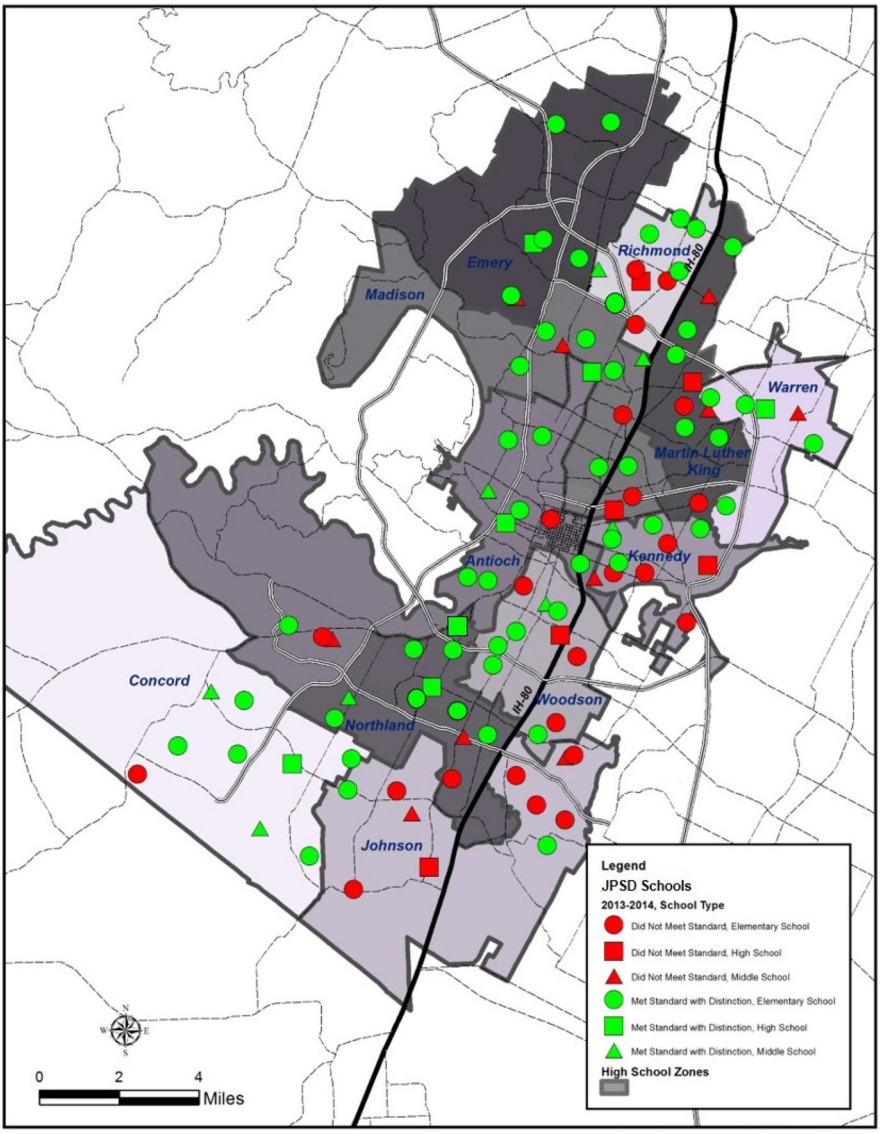

Fig. 1 Spatial distribution of all schools rated high-quality in JPSD

high-quality. Hence, neither African American nor Latino/a students have close geographic access to high schools rated high quality, which leaves families with the difficult task of trying to navigate the selective enrollment and transfer policies of the district as well as transportation dynamics for their child to attend a school rated "higher-quality," if they choose.

However, the data provides a more nuanced picture when overlaid with white neighborhoods. Alternatively, the white population in Johnsonville (Fig. 5) is

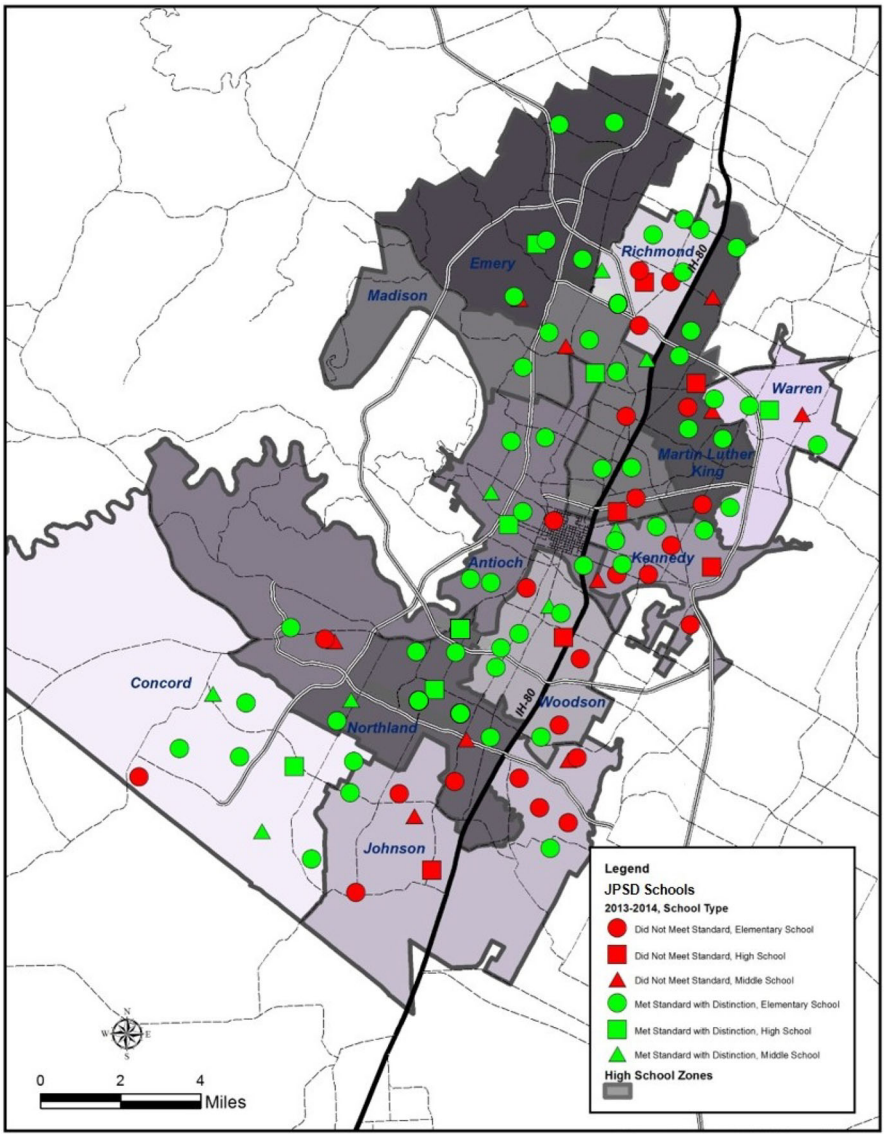

Fig. 2 Spatial distribution of high school rated high-quality in JPSD

heavily concentrated in the western portion of the city and district, north to south. In the five school zones with high schools rated high-quality, the white population is 55% or higher, and above 67% or two-thirds of the population, in four of the zones. Woodson High School, however, is an anomaly in the distribution of schools. Whereas throughout the rest of Johnsonville white students have almost exclusive access to high schools rated high-quality via attendance zones that are majority white, Woodson High School is an "improving" school in a zone that is 44% white

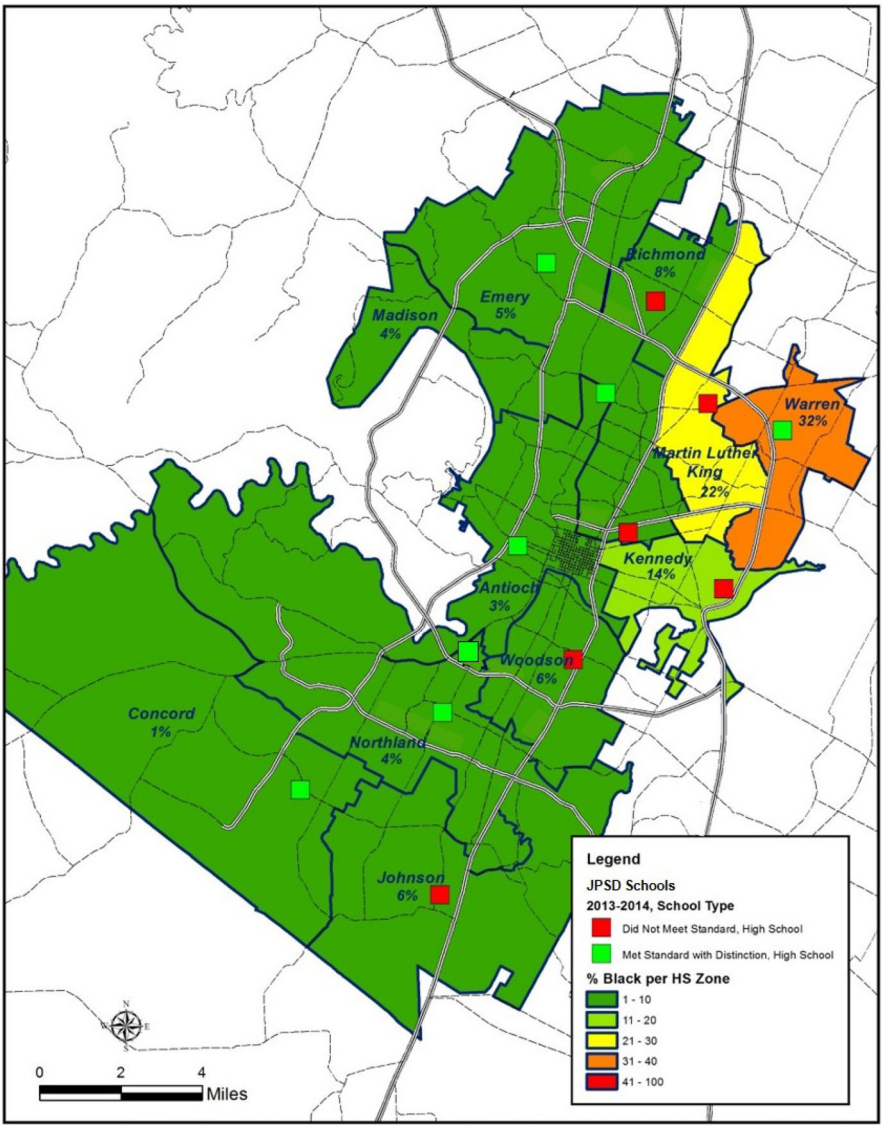

Fig. 3 Spatial distribution of high school rated high-quality to Black neighborhoods

(although not quite a majority). The population within the school, however, is only 3.8% white (see Table 1 for student demographics in JPSD high schools), which suggests that the neighborhood's white residents either do not have school-age children or do not send their children to Woodson High School. The ability of middle to upper class whites to live in certain neighborhoods, particularly those west of I-80, carries with it the privilege of having access, per attendance zones, to more high schools rated high-quality.

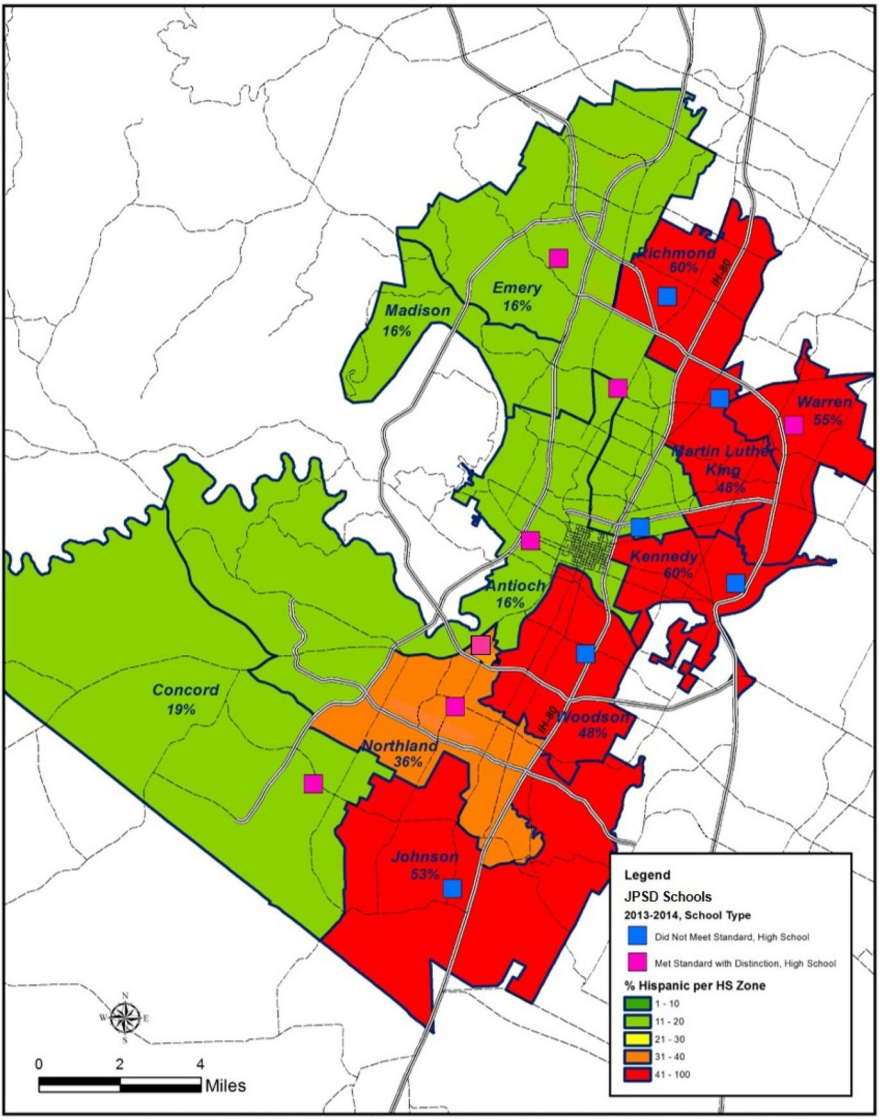

Fig. 4 Spatial distribution of high school rated high-quality to Latino/a neighborhoods

Mapping the Geography of School Ratings by Poverty and Attendance Zones

When analyzing the attendance zones by the population 18 years and under living in poverty, similar patterns emerge as in the race maps (See Fig. 6). We find that the east-west divide is still persistent. Essentially, concentrated poverty is most prevalent east and along I-80, with a section of southeast Johnsonville being an exception. All but one of the "improving" high schools (i.e., Johnson High School)

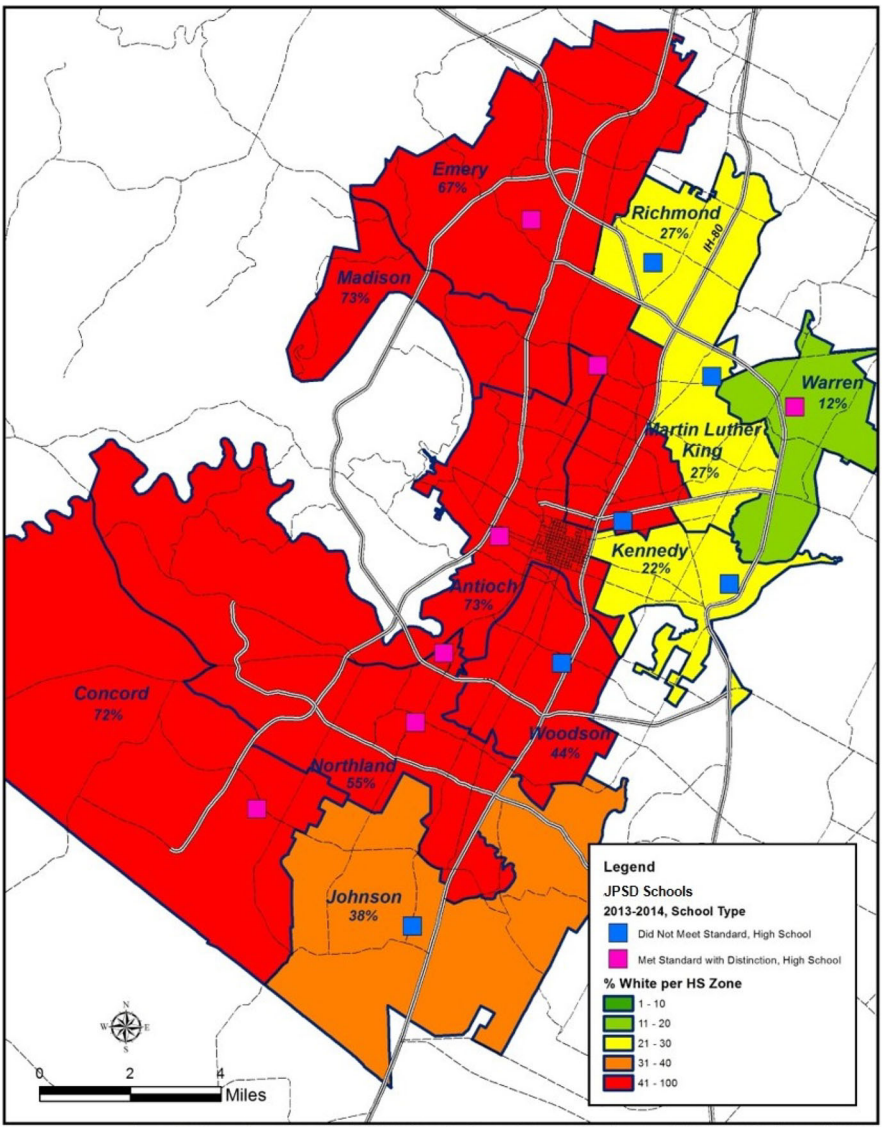

Fig. 5 Spatial distribution of high school rated high-quality to white neighborhoods

is located in a school zone with concentrated poverty. Conversely, low poverty zones (i.e., neighborhoods) have the majority of schools rated high-quality.

Moreover, to provide an intersectional analysis, we mapped both race and poverty data to examine school zones that have both a majority of people of color and concentrated poverty. Our data reveals that the zones containing both majority people of color and poverty do not contain a single high school rated high-quality, except for a magnet/selective enrollment high school that is located within another

Table 1 Demographic data for JPSD high schools

JPSD high school	Student demographics (%)						
	African American	Hispanic	White	Asian	Students from low-income backgrounds	ELL[a]	Special education
Johnson	7.3	77.2	10.7	2.7	69.5	10.4	10.8
Emery	5.5	30.7	53.2	6.3	26.6	4	6.3
Johnsonville	6	43.8	45.5	2.3	33.2	2.5	10.4
Concord	3.6	35.1	51.2	5.4	13.2	1	6.9
Northland	7.1	74.3	15.4	1.2	68.2	9.1	13.2
Kennedy	15	78.8	3.4	1.4	90.3	18.8	19
Richmond	9	81.9	4	3.2	88.5	29.1	12.7
Oak park	2.1	22.6	54.5	16.4	15.3	0.3	0.7
Warren early college HS	36.9	59.3	2.2	0.2	85.2	15.4	11.6
Madison	14.6	34.8	43.5	2.8	35.6	4	9.1
Martin Luther King HS	21	72.6	2.2	3.2	88.2	27.6	13.5
Vista	8.4	63.2	21.7	2.7	58.6	2.6	0.8
Woodson	9.8	84.2	3.8	1.5	85.4	21.3	14.1

[a] ELL refers to English Language Learners who are also known as students who are linguistically diverse and students for whom English is not their first language

high school (i.e., Warren and Oak Park). The data from these maps, then, suggests that race and socioeconomic status play a role in the distribution and access to high schools rated high-quality within Johnsonville. It also becomes clear that spatial arrangements of attendance zones, which are largely homogenous in terms of race (students of color vs. white) and social class, exist in ways that situate the majority of high schools rated high-quality in west Johnsonville.

The Geography of Educational Opportunity, District Policies and Charter Schools

The spatial arrangement across the district in terms of which children are zoned for schools rated high-quality becomes more lucid with each disaggregated layer of mapping in this study. Given this reality, we were further interested in understanding the schooling options available for families of color in low-income neighborhoods that were only zoned for schools rated improving. In other words, we wanted to know about the role that district policies played in supporting students' access to high schools rated high-quality that were not located in their neighborhoods. Additionally, given the proliferation of charter schools in Johnsonville, we also included charter high schools into our analysis. To answer our second research question, we considered the distance from improving high schools to the three nearest high schools rated high-quality in the district and the nearest charter high

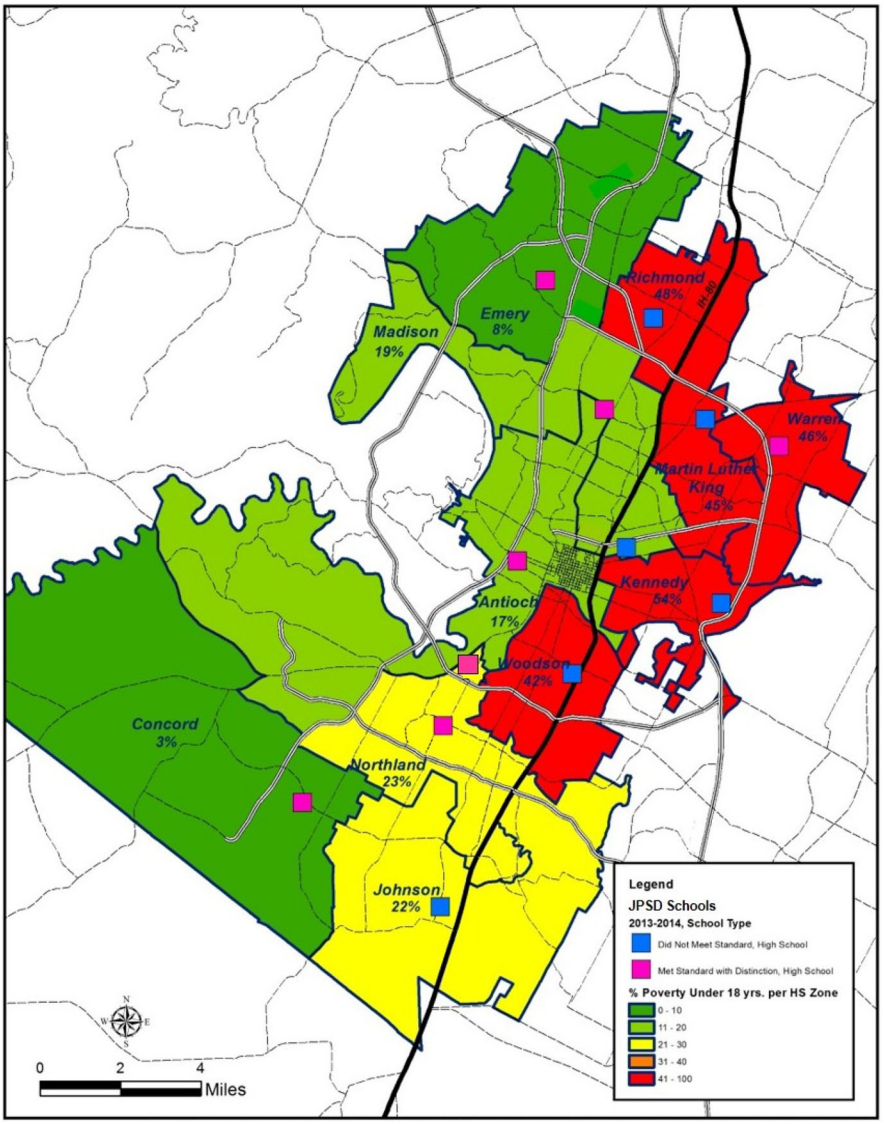

Fig. 6 Spatial distribution of high school rated high-quality and neighborhoods of poverty

schools rated high-quality (see Fig. 7). We begin with a discussion of our findings by the first, second, and third closest schools per distance (in miles) from each high school rated.

According to our analysis, the closest high school rated high-quality in the district is, on average, 3.4 miles from an improving school (See Fig. 7 and Table 2). For many high school students, this is a seemingly navigable distance. However, when combining these distances with district policies, access to these schools

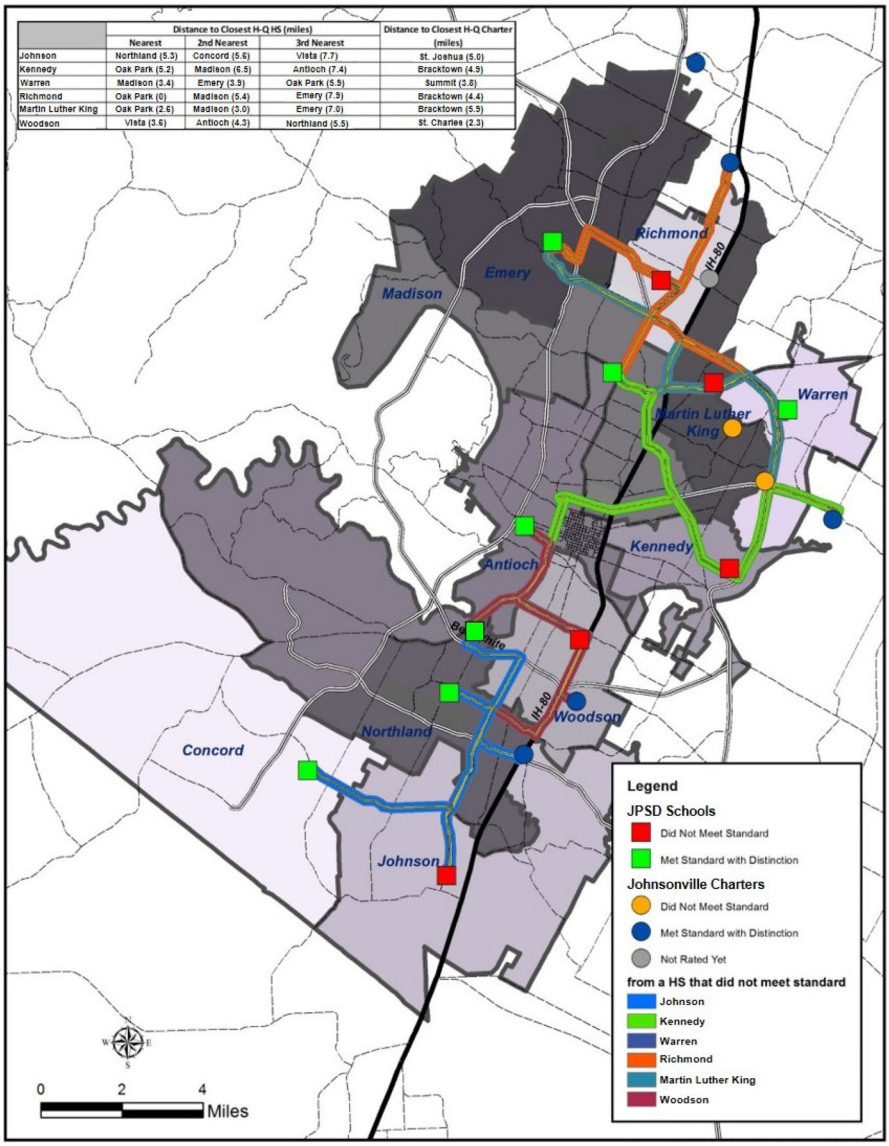

Fig. 7 Distance to high school rated high-quality and charter high schools

become a more arduous task. Our data indicates that for students zoned for four of the six improving high schools, the closest high school rated high-quality has a selective enrollment policy, for another the closest option is frozen to transfers, and for one, the campus is open to transfers. This suggests that students at five of the six improving high schools have limited access to the nearest high school rated high-quality. Looking at the second nearest high school rated high-quality, we find that it is over a mile further away on average (4.8 miles). In this case, none of the students

have access to a high school rated high quality that is fully open to transfers, as two of the options are selective enrollment, and the other four are projected to be "likely frozen" during in the next school year.

The third nearest high school rated high-quality is, on average, another 2 miles away (6.9 miles). In this dataset again, access is quite limited. In fact, in the list of options, two schools are selective enrollment, two are frozen, one is being monitored, and one is open for families. Noticeably, in the entire Table 2 the word "open" appears only twice, indicating that out of 18 options overall, only two (11%) are actually receiving students regularly through JPSD's transfer policy (see Table 2). High-quality charter schools are located within the range of the nearest high-quality district high school, but as is the case within JPSD, charters have a limited number of seats available, especially after the 9th grade year.

Moreover, a further analysis into JPSD's transfer policy shows another level of inaccessibility for students of color from low-income neighborhoods to a high school rated high-quality. Priority transfers are given for one of three reasons and are contingent upon space being available: (1) sibling transfer, (2) tracking transfer (remain in the same feeder if you move to a new location), and (3) "Majority-to-Minority transfer" (Black/Latino/a are considered a group and White/Asian the other group). For most students of color who live in low-income neighborhoods a "majority-to-minority transfer" would be a way to attend a school with higher school ratings. However, within JPSD, of the four white/Asian majority schools (Emery, Johnsonville, Concord, and Madison) three or 75% are frozen to transfers, and one is likely to be frozen beginning in subsequent year, thereby leaving students with almost no alternatives.

Students who are unable to file a priority transfer can take advantage of the non-priority transfer application, which is also contingent upon space once priority transfers have been filled. Students can request non-priority transfers for either curriculum (specific course sequence not offered at their zoned school) or general transfer (when a student does not qualify for any of the other transfer categories). According to the district, all initial transfer decisions are made through a lottery, and appeals go to the associate superintendent responsible for a particular school. Most of the high schools rated high-quality in Johnsonville are at capacity or maintain selective enrollment policies: two are overenrolled and two are at, or almost at, capacity. In sum, these policies, although well intentioned, impact unequal access to schools rated high-quality for children largely by race and social class.

More than a High-Quality Rating

Additionally, we move beyond having access to a school that is rated high-quality as the only marker of educational opportunity and briefly examine the material resources between two high schools in JPSD based on their state ratings. We particularly highlight the resources between Concord and Woodson High Schools—a school rated high-quality and a school rated improving—including three resources: teacher quality, achievement outcomes, and facilities (Skrla et al. 2009). Concord is located on the west side of Johnsonville in an attendance zone that is less than 1% African American, 72% white, and has only 3% poverty.

Table 2 Distance to high school rated high quality, charters, and district policies

Improving schools	Distance to closest H-Q HS (miles)			Selective enrollment AND Transfer Policy			Distance to closest H-Q charter (miles)
	Nearest	2nd nearest	3rd nearest	Nearest	2nd nearest	3rd nearest	
Johnson	Northland (5.3)	Concord (5.6)	Vista (7.7)	Open	Frozen	Selective	Morning (5.0)
Kennedy	Oak park (5.2)	Madison (6.5)	Johnsonville (7.4)	Selective	Monitored for freezing	Monitored for Freezing	Bracktown (4.9)
Richmond	Madison (3.4)	Emery (3.9)	Oak park (5.9)	Monitored for freezing	Frozen	Selective	Tech (3.8)
Warren	Oak park (0)	Madison (5.4)	Emery (7.9)	Selective	Monitored for freezing	Frozen	Bracktown (4.4)
Martin Luther King	Oak park (2.6)	Madison (3.0)	Emery (7)	Selective	Monitored for freezing	Frozen	Bracktown (5.9)
Woodson	Vista (3.6)	Johnsonville (4.3)	Northland (5.5)	Selective	Monitored for freezing	Open	Lee (2.3)
Mean distance (mi)	3.4	4.8	6.9				3.7

Woodson is located east of I-80 and is located in an attendance zone that is 48% Latino/a and has 42% poverty. In terms of teacher quality, as measured by average years of experience and teacher turnover (Skrla et al. 2009), the teachers at Concord have an average of 14.6 years of experience, and the school's teacher turnover rate is 12.6%. At Woodson they have a 20% teacher turnover rate and teachers have an average of 11 years of experience. Additionally, the facilities of schools, an important resource, are varied. Concord is was built in 1988, nearly 30 years ago, sits on 66.0 acres, and is a total of approximately 450,000 square feet. Conversely, Woodson was built in 1953, 65 years ago, sits on 30 acres (half less than Concord), and is a total of about 300,000 square feet.

Achievement equity is also an important resource for schools (Skrla et al. 2009). Concord has a 95% graduation rate while Woodson has an 80% graduation rate. At Concord, 80% of the students graduated were college ready for math and English while only 36% of Woodson's students graduated with this readiness. Overall, college attendance rates for Concord and Woodson were 83 and 39%, respectively, despite graduation rates. These brief descriptive data about resources at the school-level illustrate some of the differences in resources at schools rated high-quality compared to those rated improving in JPSD.

Discussion and Implications

This descriptive analysis illustrates some of the geography of educational opportunity and resources across the district's high schools. As shown in our maps, the spatial distribution of high schools rated high-quality in Johnsonville and the accompanying attendance zones, with racial and socioeconomic homogeneity, influences which children have access to the more highly rated schools by the state's rating. As such, the geography of educational opportunity by race and attendance zones is illuminating in several ways. First, high schools across the district struggle to maintain the same level of quality, according to their state ratings, that is produced in those attendance zones that are majority white and little poverty. Similarly, there is a stark separation of schools rated high-quality and those rated improving based on their geographic located as either east or west of I-80. Second, white families and their children (more than families of color) live in neighborhoods, specifically those west of I-80, that enjoy the privilege of being zoned for more middle schools rated high-quality in the district (see Fig. 5). Having access to these schools are not imperative but important because of the additional resources that they have, as demonstrated in our brief discussion of Concord and Woodson high schools.

Third, the geography of educational opportunity is most tenuous for students of color who live in low-income attendance zones. Six of the seven or 85%, high schools rated high-quality are located in attendance zones that are primarily comprised of white students, and the same is mostly true for attendance zones that are not concentrated for poverty. Further, if a family of color is unable to buy or lease their way into one of these school zones, then accessing a high school rated high-quality in the district may be more difficult. While this is not the case for all

white students in the district, the ability of those who live in the more resourced neighborhoods lessens or even nullifies their need to navigate district transfer and selective enrollment policies and charter school dynamics to seek enrollment for their children in other schools.

The findings from this study aligns with existing research that documents how children of color who live in low-income neighborhoods are often zoned for schools with the lowest ratings (Jencks and Mayer 1990; powell 2008). Yet, this study contributes to the literature by offering an empirical example of how these dynamics play out in an opportunity-rich city, and well as the role of district selective enrollment and transfer policies. The "rising tide lifts all boats" logic does not appear to alleviate the impacts of inequitable spatial arrangements, especially for children of color who live in low-income neighborhoods, despite being located in an opportunity-rich city. Therefore, to address such spatial educational conditions, as illustrated in this study, will require direct policy actions.

Implications for Policy and Future Research

The ways school districts in fast-growing cities of opportunity approach the geography of educational opportunity has important implications for students nationally and locally. This study thus offers several important policy implications. Based on the findings, this study suggests that districts should consider ways to expand access to schools rated high-quality within and across all attendance zones in the district—beyond offering a few magnet options or transfer policies that are inaccessible for many of the students who could benefit the most from such policies. For example, the expansion of these resources might include high-quality teachers, administrators, and fiscal support, all as a means to equalize resources across schools. In other words, school districts in fast-growing, opportunity-rich cities should employ policies that ensure that every attendance boundary, especially those zones serving a majority of students of color from low-income neighborhoods, have high schools rated high-quality in their feeder patterns. Educational opportunities could also be expanded as student populations maximize the enrollment capacity of existing schools in fast-growing, opportunity-rich cities, new schools are built and attendance zones are redrawn (Siegel-Hawley 2013). The redrawing of intra-district attendance zones presents a critical opportunity for school districts in fast-growing cities to optimize equitable educational opportunities and demographic diversity.

Additionally, the reality of policies such as transfers and selective enrollment should be examined to understand the nuances between policies on paper versus policies that can be actualized. For instance, as noted in our findings, students of color from low-income neighborhoods could theoretically use transfer policies to access high schools rated high-quality. However, in reality, many of the high school were frozen, which prevents students from accessing these schools despite policies that would grant them access.

In addition, findings from this study imply that leaders from fast-growing, opportunity-rich cities, and the school districts located within them, might work together to create housing and education policies that expand educational *and* residential opportunities for children and their families. Due to the

interconnectedness of schools and housing, in fast-growing, opportunity-rich cities policies to expand educational opportunities cannot be done in isolation. We also understand that implementing equitable school policies, especially those that aim to improve academic outcomes for children of color in low-income neighborhoods, are fraught with political contention and white, middle-class backlash. Given this reality, school districts in fast-growing, opportunity-rich cities should explore equitable educational options that are not predicated on white, middle class interests, so that districts will not be forced to tinker around the edges of reform in fear of losing white students to nearby districts and charter schools, such as eliminating attendance zones in the district.

Finally, this study offers implications for future research. First, future research might focus on longitudinal analysis to better understand how these spatial patterns could change over time as cities continue to experience growth. Second, future studies might further disaggregate and understand how more resources at the school level impact geographies of educational opportunity through inferential statistics. Unpacking these school-level resources in more detail might account for some of the assets that schools in low-income neighborhoods possess, but are overlooked with the state's traditional accountability rating system.

Third, analysis is needed on the ways in which spatial opportunity hoarding and geographies of educational opportunity manifest in a metropolitan context for school districts located in fast growing, opportunity-rich metros. Such studies could extend research that examines demographically changing metros. This case study offers broad lessons for other school districts in fast-growing cities of opportunity, as policymakers, educational leaders, and communities continue to grapple with how to expand geographies of high-quality educational opportunities for all students, especially children of color who live in low-income neighborhoods. Though this study offers a glimpse into the importance of this work for this district, we hope this work pushes for deeper and more research on this topic to make cities of opportunity places where *all* children can have access to the bountiful opportunities these spaces offer.

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