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Barriers and Boundaries: How Residents Make Meaning of Segregating Built Environments

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Abstract

Built environments have structured urban space in racist and classist ways, contributing to residential segregation and related inequalities. Previous research has examined how perceivable built environment features become symbolic boundaries that structure both socio-spatial division and meaning-making, but little research has examined how physical barriers—features that carry symbolic meaning and limit connectivity between nearby areas—may promote both symbolic "othering" and inhibit contact between residents on either side. Drawing on ethnographic fieldwork, we examine how residents interpret and experience physical barriers and symbolic boundaries in race-, income-, and race-and-income distinct areas in Houston, Texas. We describe three typologies of barriers/boundaries (unremarkable, intrusive, and hyper-salient), demonstrating how the same barrier or boundary can have different meanings for people on either side. For physical barriers, these meanings were often mediated by residents' actions. Our findings extend theorization of how the built environment shapes interpretations and experiences of segregation, and vice versa.

Keywords

community and urban sociology, inequality, poverty and mobility, racial and ethnic minorities

The historic and contemporary planning and construction of urban built environments have structured urban space in racist and classist ways (Bayor 1996; Binkovitz 2019; Bullard 1987; Feagin 1988; Lipsitz 2011; Retzlaff 2019). Such structuring has promoted spatial divisions that are closely linked to social divisions. These divisions, in turn, are tightly coupled with social inequality (Curtis et al. 2013; Massey 2016; Mohl 2002; O'Connell, King, and Bratter 2016; Schindler 2015; Sugrue 2005). In other words, urban built environments are entwined with racial and income segregation as well as the inequalities that such segregation facilitates.

Previous research has paid attention to how features of the built environment, such as roads or high-rise public housing complexes, become symbolic boundaries that structure both socio-spatial division (e.g., between racially segregated areas) and the meanings residents ascribe to

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Table 1. Defining Symbolic Boundaries and Physical Barriers.

Type of Feature and Definition
Symbolic Boundaries
We use the term symbolic boundaries to refer to the perceivable divisions between adjacent, segregated areas (e.g., a residential street or local road) that are meaningful but do not limit road network connectivity between race- and/or income-distinct areas.
Physical Barriers
We use the term *physical barriers* to refer to these same divisions between segregated areas, but where physical features (e.g., railroad tracks, waterways, highways, dead-end streets, etc.) limit road network connectivity between race- and/or income-distinct areas. In other words, crossing to the other side is possible, but requires navigating around the barrier.

the boundary and the people on the "other" side. Theoretically speaking, a symbolic boundary is crossable; it does not on its own prevent socially distinct residents from interacting with each other. Research has shown, however, that residents' interpretations of these boundaries affect how they interact with—or avoid interacting with—those on the "other" side (Anderson 1990; Hunter 1974; Hwang 2016; Suttles 1972).

By contrast, other features of the built environment—namely, physical barriers that limit connectivity between segregated areas—may promote both symbolic "othering" and inhibit contact between residents on either side (Roberto and Korver-Glenn 2021). Yet little research has examined how residents interpret and experience perceivable physical barriers as compared with symbolic boundaries or what the implications of their interpretations and experiences are for segregation processes (Kramer 2018). This is an important gap to fill given the ubiquity of urban built environments—every urban resident encounters and must navigate them—the potential differences in how residents interpret and experience physical barriers versus symbolic boundaries, and the consequences of their experiences for ongoing racial and income segregation.

The present paper thus undertakes a comparative ethnographic study of how residents interpret and experience physical barriers and symbolic boundaries in race-, income-, and race-and-income distinct areas in Houston, Texas. Throughout the paper, we use the term *symbolic boundaries* to refer to the perceivable divisions between adjacent, segregated areas (e.g., a residential street or local road) that are meaningful but do not limit road network connectivity between race- and/or income-distinct areas. We use the term *physical barriers* to refer to these same divisions between segregated areas, but where physical features (e.g., railroad tracks, waterways, highways, dead-end streets, etc.) limit road network connectivity between race- and/or income-distinct areas. In other words, crossing to the other side is possible, but requires navigating around the barrier (see Table 1 for a summary of symbolic boundaries and physical barriers). Drawing on data collected in six different field sites—three separated by physical barriers and three with symbolic boundaries—we find variation in the salience of barriers and boundaries as well as in the actions residents take in response to the barrier or boundary. We found that while segregation produces the context in which people make sense of physical barriers and symbolic boundaries, as all neighborhoods had some context of segregation (e.g., race, income, or both), the by-products of segregation (e.g., resource-hoarding, exclusion) also shaped the actions residents made in regard to barriers and boundaries.

For example, we found that while residents often identified physical barriers as salient to their daily lives, they navigated around and crossed these barriers as often as they avoided them. In fact, we find that physical barriers in race- or income-segregated spaces do not prevent crossings, but they do make them more difficult. Importantly, crossings of physical barriers are not created equal, as those with more resources (e.g., cars) more easily cross them, and those with fewer resources, who must rely on walking or taking the bus, for example, are inconvenienced further.

Given that boundary crossing was most common for securing resources or accessing social networks or amenities, those individuals who live in neighborhoods with more resources and amenities have fewer reasons to cross outside their neighborhood. So though physical barriers may inconvenience residents across neighborhoods, those with fewer material and time resources—in our study, people of color needing to cross from low-income areas into more affluent communities (e.g., to access employment)—pay a steeper price. This is yet another racialized and classed consequence of segregation and its by-products.

Symbolic boundaries in race- or income-distinct neighborhoods had a much more straightforward relationship with movement: those boundaries that residents crossed were often deemed unremarkable, and those that residents did not cross were more often identified as salient or meaningful by residents. Interestingly, in highly resourced neighborhoods that were both race- and income-distinct from surrounding areas, physical barrier and symbolic boundary crossings were not the norm (regardless of whether the barrier or boundary was salient to residents). Our data indicate that that this is at least in part because residents of these highly resourced neighborhoods did not need to cross these barriers and boundaries. In the other neighborhoods we studied, which were either race- *or* income-distinct, physical barriers and symbolic boundaries helped shape and facilitate the segregated landscape of Houston neighborhoods, yet in the case of symbolic boundaries, they did not completely inhibit cross-neighborhood ties.

In what follows, we draw from prior work to situate our study and its contribution, discuss our methods and data, and describe our findings as well as their implications for future research.

The Social History and Spatial Consequences of the Built Environment

Built environments are the human-made interventions that construct or manipulate physical objects in, through, and surrounding human settlements (e.g., Marshall 2004). They are relatively permanent and static aspects of cities; from a material sociology perspective, they are perceivable, programmed objects—objects that prescribe what humans should or should not do in urban space (Benediktsson 2022; see also McDonnell 2023). They can include transportation networks (e.g., roads, highways, railways); commercial or residential buildings; channelized waterways (e.g., ports, rivers, bayous); amenities (e.g., parks, pools/fountains, sports arenas, golf courses); utility infrastructure (e.g., cellular towers, drainage/sewer systems, waste sites); and partitions (e.g., fences, security walls), among other possibilities.

In the past, the "programming" (Benediktsson 2022:5) and construction of cities' objects—highways, channelized waterways, buildings, fences, and other durable physical structures—were explicitly racist. In making determinations about what to build and where, what to demolish and where, as well as who to keep in and who to keep out, White urban planners, developers, real estate professionals, government officials, and everyday residents deployed dehumanizing ideologies about Asian, Black, Indigenous, and Latinx people and spaces to rationalize these decisions. Unsurprisingly, their racist determinations meant that interventions in urban space disproportionately harmed communities of color while benefiting White communities (Bayor 1996; Binkovitz 2019; Bullard 1987; Charles 2003; Connerly 2002; Faber 2020; Feagin 1988; Jackson 1985; Lipsitz 2011; Retzlaff 2019; Schindler 2015; Thomas 2022).

For instance, in cities across America, including Houston, where our study takes place, White city planners, transportation officials, and residents viewed Black and Latinx neighborhoods as "blighted" areas that could, or should, be razed to the ground. These White stakeholders successfully manipulated plans for major highways, ensuring that their paths would be cut through predominantly Black and Latinx neighborhoods or between such neighborhoods and nearby White neighborhoods—using millions of public dollars to do so (Bayor 1996; Connolly 2014;

DiMento and Ellis 2013; Feagin 1988; Kimble 2024; Retzlaff 2019; Semuels 2015). Black and Latinx homes and businesses were bulldozed, and, consequently, Black and Latinx communities suffered. Residents lost their homes and livelihoods; social and communal routines were disrupted or destroyed. The monstrous concrete-and-steel highways imposed unwanted aesthetic changes to the look and "feel" of their neighborhoods. Meanwhile, White residents—whose neighborhoods remained much less affected by highway construction—viewed the highways as a necessary, and welcome, feature of the built environment since their commutes to and from work had become more convenient. White city-dwellers also welcomed the chance to avoid proximity to Black and Latinx areas: highways allowed them to drive over or through these areas without the need to stop, observe, listen, or interact with those who lived there.

These sorts of material and institutional means of programming public, built environment objects enabled a type of racial segregation that could persist with or without racial animus. Indeed, as Mike Owen Benediktsson (2022:6) notes, when public objects effectively "confer structure, regularity, and a degree of predictability to the social life of the city . . . they disappear into the background." And, unlike the micro-segregation John Logan (2017) describes between row and alley housing in late 1800s Washington, D.C., large-scale infrastructural interventions enabled racial segregation on a broad scale. Highway construction continues to displace residents and communities in largely Black and Latinx areas, including in Houston (Dillon and Poston 2021).

Racism, however, was not the sole motivator for segregation practices. Racism worked in tandem with classism. People who planned and built cities used physical objects, such as fences, highways, and amenities to keep lower-income people out of higher-income areas. For instance, in Houston, the White planners and developers of River Oaks—one of America's wealthiest neighborhoods—used two already-existing physical barriers, the "natural" Buffalo Bayou and the human-made amenity Memorial Park, and constructed another amenity as a third barrier, River Oaks Country Club golf course, to ensure protection, or "geographic security" (Cook and Kaplan 1977:30), from their lower-income Houston counterparts.

Importantly, racist and classist motivations were often ideologically inseparable. For instance, while many of the Black neighborhoods that were bisected by highway construction were middle-class (e.g., Feagin 1988; Retzlaff 2019), the ideologies that undergirded these built environment decision-making processes entwined neighborhood racial status with presumed or ascribed class status. White urban planners and real estate elites understood Black neighborhoods as low-income not according to any identifiable metric of income or class status but precisely because the prevailing racist ideology presupposed the cultural, social, and economic inferiority of Black people.

In the present day, real estate elites, White or affluent urban residents, city planners, and politicians do not generally construct urban built environments through appeals to explicitly racist ideologies—at least, not out in the open. However, they continue to draw from explicitly classist and subtle or thinly veiled racist ideologies when attempting to interfere in, manipulate, or argue for or against certain built environment planning and programming decisions. They also build upon the historical practices of demolition and denigration to justify the continued devaluation of historically Black spaces. For instance, when evaluating the historical integrity of a historically Black neighborhood on the north side of Houston, the Texas Department of Transportation (TxDOT) determined that though Independence Heights was significant as the first incorporated community with Black leadership in the state, community properties were not eligible for incorporation in the National Register for Historic Places (TxDOT 2020).

In Independence Heights, multiple highways built in the twentieth century disrupted the neighborhood. More recently, it has dealt with severe flooding, speculation, and redevelopment, all of which have altered the look of the area. In the end, the report by the Texas Department of Transportation concluded that, although it has recognized the history of the neighborhood as "a

separate city built, organized, and governed by African Americans, and as a distinct and vibrant African-American community through the mid- and late twentieth century" (TxDOT 2020:118), too much had changed: "[T]hese areas no longer retain sufficient integrity to convey this significance" (TxDOT 2020:118). Decades of racist policy and practice had left the historic community too disfigured, according to the state, to warrant historical protections, thus clearing the way for yet another highway project. The 2020 report noted that assessing the historical significance of historically Black neighborhoods is particularly difficult because the conventional standards do not account for the common experiences of displacement via urban renewal, of disinvestment, and of the year-by-year investments in individual structures that alter the so-called integrity of the building. However, this historical context did not sway the state's final decision to deny historical protections for community properties.

Historic and contemporary urban built environment planning, programming, and construction have had significant spatial and social consequences. As indicated above, the actual construction of highways, railways, waterways, infrastructural projects, toxic waste sites, and so on disproportionately harmed communities of color (e.g., Bullard 1987). Once constructed, certain features of these built environments, including highways and railways, helped entrench and continue to support racial and income residential segregation (e.g., in Syracuse, see DiMento and Ellis 2013; Semuels 2015; see also Curtis et al. 2013; Kramer 2018; Mohl 2002; Schindler 2015; Sugrue 2005) and may structure unequal access to amenities (e.g., O'Connell et al. 2016), among other forms of social inequality.

Built Environments, Meaning-making, and Lived Experiences

In addition to highlighting their significance for spatial and social inequalities, researchers have examined how urban residents perceive and experience symbolic boundaries, or those features of the built environment, such as roads, that do not physically disconnect residents on either side but are nevertheless highly salient markers of socio-spatial identity and division (Anderson 1990; Hunter 1974; Hwang 2016; Suttles 1972; see also Lamont and Molnár 2002; Vis 2009). This body of work has indicated that though such boundaries are often quite "bright" (e.g., residents on either side readily ascribe social difference to residents on the "other" side and often avoid each other), they do not physically disconnect residents from each other and present possibilities for boundary crossings.

For example, Robert J. Chaskin and Mark L. Joseph (2015:161) found that homeowners and higher-income renters in the new mixed-income housing development in Westhaven Park (Chicago) interpreted the "'superblock' and its concentration of public housing residents in the middle of the new development" as markers of potential gangs and crime. Although the physical form of the housing development was intended to cultivate cross-class interaction, relatively affluent residents instead used their interpretations of the built environment to justify avoiding relatively poor residents and enact surveillance and other social control tactics. In another example, Elijah Anderson (1990) described Bellwether Street in Eastern City as "the edge"—a socially meaningful boundary separating middle- and upper-income White residents on one side of the street from working-class and poor Black residents on the other side of the street. Yet despite the shared significance of residents' interpretation of this programmed material object (McDonnell 2023), Bellwether Street did not physically divide or barricade residents on either side, leaving the possibility of crossing "the edge" in play.

By contrast, in cities such as Birmingham and Atlanta, highways were constructed between neighborhoods to mirror the boundaries of racial zoning (Archer 2020), further isolating populations that were already among the most marginalized (Wacquant and Wilson 1989). These historical processes can have lasting consequences and they continue to reproduce themselves in contemporary contexts, such as recent instances of using bollards and fences to create dead-end

streets and further the social and spatial disconnection between nearby areas in Baltimore and Detroit (Armborst, D'Oca, and Theodore 2015). However, little previous research has examined how urban residents interpret and experience barriers that are both symbolic and physical—those programmed features of the built environment that physically disconnect residents on one side from those on the other—in their daily lives.

Given the ubiquity of such features in urban settings, the importance of people's interpretations of material objects in determining action (Bartram 2022; McDonnell 2023), and the centrality of racialized and classed meaning-making in activity, residential, and school decisions (e.g., Bell 2020; Bonam, Taylor, and Yantis 2017; Chaskin and Joseph 2015), this gap is an important one to fill. One of the few studies to do so examined physical barriers in two Houston field sites consisting of three racially distinct neighborhoods (Roberto and Korver-Glenn 2021). The study found that local residents interpreted physical barriers as highly salient, visible markers of social difference between residential areas. They infused these physical barriers with symbolic meaning, with consequences for their professional and personal choices and implications for the broader structure of racial segregation in these areas.

The everyday salience of programmed built environments for structuring urban space and mobility along with the historic and contemporary entwinement of built environments with racist and classist ideologies and policies lead us to argue that residents' perceptions, interpretations, and experiences of spatial divisions in the built environment have ongoing significance in understanding segregation processes. Just as real estate agents interpret the presence of material objects, such as particular kinds of cars, as reliable indicators of neighborhood racial composition and steer their clients accordingly (Korver-Glenn 2021), residents may interpret physical barriers not only as material objects between one place and another but also as symbols of social status distinction between places (Lynch 1960; McDonnell 2023; Roberto and Korver-Glenn 2021). Moreover, just as building inspectors interpret homes and assign code violations in ways that depend on their own social location, the intent they infer on the part of property owners, and the relationship of homes to the broader, unequal urban landscape (Bartram 2021, 2022), people may interpret physical barriers and act on their interpretations in varying ways—making the effort to cross or avoid crossing barriers, for instance—that depend on their own social location, their neighborhood's status, and the status of the neighborhood on the "other" side of the barrier. Whether and how they interpret such barriers and act on their interpretations, however, has received little attention in prior research. With residential segregation on the rise in recent decades (e.g., Menendian, Gambhir, and Gailes 2021), this is a crucial gap to fill.

To address the limitations of prior research and extend theorization on the relationships between the built environment and racial segregation, income segregation, and race-and-income segregation, the present paper adopts a comparative ethnographic method to examine meaning-making and experiences related to physical barriers and symbolic boundaries in six different field sites. We draw from a rich body of ethnographic data to answer the following research questions:

1. How do people in race and/or income-distinct areas with physical barriers between them interpret and experience these barriers?
2. How do people in race and/or income-distinct areas with symbolic boundaries between them interpret and experience these boundaries?
3. What are the implications of residents' interpretations and experiences for race and/or income segregation?

In what follows, we outline our data and methods, then turn to our results before discussing the implications of our findings for future segregation research.

Data and Methods

Ethnographic Methods

We chose a race- and income-diverse research site—Houston, Texas—as a case study because we wanted a variety of race and class contexts for our comparative ethnographic work. We then used the Spatial Proximity and Connectivity (SPC) method (Roberto 2018) to identify six field sites that would allow us to compare how people in race and income-distinct areas with different kinds of divisions (physical or symbolic) navigate and interact with these divisions. We used the SPC method and 2010 U.S. Census (U.S. Census Bureau 2011, 2012) data to identify three areas separated by physical barriers (i.e., where social difference by race and/or income and physical disconnectivity was high) and three areas separated by symbolic boundaries (i.e., where social difference by race and/or income was high and physical disconnectivity was low). Inductively selecting field sites in this way enabled us to compare how people interpret and interact with local environments (physical and symbolic) in ways that may vary depending on local race and/or income distinctions. Table 2 summarizes these field sites and Figure A1 in the Appendix shows their location within Houston.[1]

We conducted more than one year of ethnographic fieldwork across these six research sites between 2018 and 2019. This fieldwork included ethnographic observation and in-real-time ethnographic interviews (Rinaldo and Guhin 2022). Although our ethnographic approach is limited in that, for instance, we could not follow residents' interpretations and experiences of the built environment over time, it is well-suited to answer our research questions since it allowed us to study people's interpretations and actions *in situ*, in the process of barrier or boundary crossing or avoidance. Put another way, conducting both ethnographic observations and interviews allows us to triangulate not only people's sense-making of urban built environments but also their actual behaviors. Our research team consisted of six researchers (the first and third authors as well as four additional research assistants), each of whom visited at least two of the research sites multiple times throughout the year. This team was race- and gender-diverse, comprised of four women and two people of color. Two researchers were fluent in Spanish, which allowed for data gathering among Spanish-speaking immigrant residents as well as English-speaking native-born residents. This diversity and the range of lived experiences and perspectives it represents alongside the consistency of data across individual researchers' ethnographic field notes and across multiple field sites strengthens our confidence in the reliability of our findings (Rinaldo and Guhin 2022; Small 2009).

Researchers used varying forms of transportation to get to their field sites, including cars, buses, and the light rail, and our notes often included details about the surrounding areas in addition to the field sites. Once at the field site, we took detailed field notes by hand in notebooks or by dictating notes into a phone app, then transcribed these notes as soon as possible after leaving the field. We wrote down details about the barrier or boundary (e.g., its appearance); the surrounding environment (e.g., were businesses or other amenities present); who was present in the areas on either side of the barrier or boundary, including researcher-ascribed race, gender, or other social characteristics; and any observations of people crossing the barrier or boundary. We also memorized a brief series of questions and used these questions to conduct informal, unrecorded interviews with local residents and passersby in each field site, writing or dictating these interactions as part of the field notes (Rinaldo and Guhin 2022). Across all researchers, we conducted more than 100 such interviews across the year of research, which enhanced our observational field notes and allowed us to examine how residents perceived and interacted with local barriers and boundaries. Finally, to add visual depth to our field notes and interviews with residents, we also took many photos, both of the local area and the barriers/boundaries themselves, some of which are included below.

Table 2. Houston Field Sites by Area Social Distinction and Presence of Barrier/Boundary.

Social distinction	Physical barrier divisions between segregated areas, where physical features (e.g., railroad tracks, waterways, highways, dead-end streets, etc.) limit road network connectivity between race- and/or income-distinct areas—crossing to the other side is possible, but requires navigating around the barrier	Symbolic boundary divisions between adjacent, segregated areas (e.g., a residential street or local road) that are meaningful but do not limit road network connectivity between race- and/or income-distinct areas
Race and income	OST/South Union Black, low-income area on the east side of Hwy 288 and Asian-White, middle/high income on the west side of Hwy 288 Glenbrook Valley/Meadowbrook[a] Latinx working-class area on the north side of Simms Bayou; Black/Latinx low-income area on the southwest side of Simms Bayou	Robindell Latinx, working-class area on the north side of Bissonnet St.; White, middle/high-income area on the south side of Bissonnet St. Glenbrook Valley/Meadowbrook[a] Latinx middle/high-income area on the southeast side of Simms Bayou; Black/Latinx low-income area on the on the southwest side of Simms Bayou
Income	Glenbrook Valley/Meadowbrook[a] Latinx working-class area on the north side of Simms Bayou; Latinx middle/high-income area on the southeast side of Simms Bayou	Lindale/Near Northside Latinx, middle-income area on the north side of Cavalcade St.; Latinx, low-income and working-class area south of Cavalcade St.
Race	Fifth Ward/Denver Harbor Black, low-income area on the west side of north/south railroad tracks; Latinx, low-income area on the east side of north/south railroad tracks	Northline/Acres Homes Black, low-income area west of Shepherd Dr.; Latinx, low-income area east of Shepherd Dr.

[a]Note: When we selected our field sites in 2019, we had to rely on 2010 U.S. Census data to use the SPC method. This was not ideal since we knew local racial or income characteristics could have changed over a nine-year period, yet it was necessary given the requirements of the SPC method and the fact that we began the project before the 2020 Census was conducted. Nevertheless, urban areas are typically very resistant to rapid racial/income turnover and so we expected most or all areas to be very similar in 2019 to their 2010 characteristics. This was the case for all but one selected field site, Glenbrook Valley/Meadowbrook, where we noticed that the southwest portion of the field site appeared to have a larger Black population and the southeast portion of the field site appeared to have a larger White population than the 2010 Census data had indicated. We then used the American Community Survey five-year estimates for 2014 to 2018 from the National Geographic Information System (Manson et al. 2019) to examine the race income characteristics of these areas and found they corresponded to our field observations. Thus, what emerged through our observations and interviews with local residents was attention to race income differences across the bayou; income differences across the bayou; and a symbolic division on the south side of Simms Bayou between the residents of east Glenbrook Valley (largely single-family homes) and their physically connected but income and, often, racially distinct neighbors to the west (who largely resided in multifamily complexes). Rather than abandoning this field site and selecting another, we decided to stick with it in order to describe, qualitatively, the on-the-ground dynamics of a race-and-income diverse urban space and to capitalize on the multiple ways local residents made sense of the symbolic boundary they had brought to our attention.

Analytic Approach

We adopted an abductive approach to gathering and analyzing all of these data (Tavory and Timmermans 2014). For instance, in addition to conducting fieldwork, the first author read, conducted an initial analysis of, and provided feedback on each set of field notes submitted by the

other five researchers soon after they completed their notes and prior to their next trip to a field site. Through this process, the first author provided feedback not only on the quality and content of the field notes but also made notes and suggestions about what was surprising (e.g., given what prior literature would have led us to suspect) as well as what to look for and ask in future trips to the field site. In this way, the data gathering and initial analysis process were iterative, with initial results informing ongoing data collection and ongoing data collection filling in gaps in our knowledge of how people perceive and experience physical barriers and symbolic boundaries. Research team members regularly wrote theoretical, observational, and methodological memos, which also were used to inform ongoing data collection and initial analysis efforts.

We continued conducting field research for more than a year until we reached saturation (Small 2009). That is, we continued purposefully recruiting more local residents who we perceived as differing along a variety of social (e.g., race, gender, nativity, income) axes and we continued recording field notes of our observations of the field sites until and even after we began to hear and observe the same or similar themes repeatedly. The diversity of residents in our informal ethnographic interview sample, the diversity of the field sites, and the race, ethnicity, and gender diversity of our research team alongside these repeated themes increased our confidence in the validity and reliability of our findings.

Two research team members, the first and third authors (both White women), then combined and formally coded all data three times using ATLAS.ti software. Our coding process yielded 74 unique codes (e.g., infrastructure, navigating barriers) and four code groups (barriers, crossing behaviors, infrastructure/built environment, and neighborhood characteristics). We used these codes and code groups to organize our results. For example, our codes were applied to both the interview data and the observational data recorded by research assistants. We were able to both note when, for example, a resident described when and why they chose to cross a boundary (e.g., "Crosses Boundary—Grocery") as well as when research assistants observed people actually crossing and their behaviors at the time (e.g., "Carrying groceries"). Both could then be analyzed via the "Crossing Behaviors" code group. Though the present paper focuses on local residents' interpretations and experiences of physical barriers and symbolic boundaries, this approach allowed us to triangulate these patterns with our observational field note data to further underscore these findings, to which we now turn.

Results

In the following section, we identify where and how physical barriers (material objects that afford little physical connectivity between nearby places) and symbolic boundaries (material objects that afford physical connectivity yet signal social distinction) mattered to residents of six neighborhoods in Houston. Overall, we find that residents interpreted barriers' and boundaries' salience, or importance, through three primary modes: *unremarkable, intrusive*, and *hypersalient. Unremarkable* barriers or boundaries were those residents interpreted as having low salience or relevance for their actions and their perceptions of their own and nearby neighborhoods. One relevant code, "All One Neighborhood," reflects this status, as described by residents who did not consider the barriers or boundaries as a mark of division. Residents may or may not cross unremarkable physical barriers or symbolic boundaries, and these barriers and/or boundaries were found in all three types of neighborhoods (i.e., race-, income-, and race-and-income segregated neighborhoods). *Intrusive* barriers were those physical barriers residents interpreted as important and inconvenient. Their inconvenience was tied to the regularity with which residents navigated around them, largely to access amenities and social networks on the other side. Intrusive barriers made life more difficult for residents of race- or income-distinct neighborhoods. In the data, such barriers appeared under several codes, including "Crossing— Negative/Complicated" in which residents expressed frustration navigating their way across

barriers. Finally, residents interpreted still other physical barriers and symbolic boundaries as *hyper-salient*, creating social distance between themselves and people on the "other" side of a boundary. Residents did not cross hyper-salient barriers and were only found in race-and-income-distinct neighborhoods. Hyper-salience was largely described as such by higher-status residents (see Table 3).

These divides were captured in several codes, including most strongly in "Crime/Perceptions of Crime," and often came through as a result of direct interactions with the interviewer (e.g., while in the Robindell area, a resident warned the research assistant to be safe, "saying, "You know the area," which seemed to imply that the area was dangerous) (Robindell Field Notes, Research Assistant #2, 10/22/2019). Here, too, the particular dynamics of the respondent and interviewers' identities seemed to play a role in what a resident was willing to share. For example, one Latinx RA noted an interaction with an older Latino man during the interview conducted in Spanish:

> Daniel said "Hay mucho moreno asi que cuidado" (there's a lot of Black people so be careful). I wasn't surprised by the comment and was actually expecting it. Racist sentiments are common in the Latinx community and especially in the immigrant community. They come from countries where they never interact with African Americans and only hear bad things about them. Therefore, they're afraid of them when they get here. That's my experience with my extended family. To this comment, I only said "okay" and kept going. (Northline/Acres Homes Field Site, Research Assistant #3, 10/20/2019)

That same RA had been rebuffed earlier in the visit by an African-American woman in the neighborhood in the neighborhood who said simply: "Whatever you have, I don't want it." Having a diverse set of research assistants helped accommodate for the potential variations in responses in particularly sensitive conversations, although it also points to potential gaps in communication when/if respondents did not feel comfortable to express such opinions.

In identifying these patterns, we find that neighborhood segregation structured how residents interpreted physical barriers and symbolic boundaries in two ways. First, for higher-status residents in race-and-income segregated neighborhoods, residents interpreted these physical barriers and symbolic boundaries in ways that underscored and reproduced social distance from residents on the other side. Second, for lower-status residents in these race-and-income segregated neighborhoods and residents in race- or income-segregated neighborhoods, interpretations of physical barriers were often mediated by the actions residents had to take as a result of the frustrating intrusion on their mobility and the resource-hoarding of higher-status neighborhoods and residents. For instance, one Latino resident in the Fifth Ward area explained that he mostly drives everywhere, including out of the neighborhood to frequent a grocery store that caters to higher-income customers, rather than going to the one available in his neighborhood. He explained that the presence of train tracks and other barriers make it so he often leaves his neighborhood entirely, using highways instead, to access amenities (Fifth Ward/Denver Harbor Field Site, Research Assistant #1, 08/03/2019). In short, we find that how people perceive, interpret, and experience urban-built environments is complex and nonlinear.

In the following sections, we discuss the three major typologies of barriers (unremarkable, intrusive, hyper-salient) with attention to the particular neighborhood contexts in which they each emerged. These typologies are meant to capture overall patterns, and not the behavior of every resident within a neighborhood or status group. For example, while the most common interpretation of physical barriers by residents on the lower-status side of race-and-income distinct areas was "intrusive, crossed," a small number of residents interpreted these barriers as unremarkable and uncrossed. We present the typologies to best capture broader patterns that we

Table 3. Summary of Findings on Perceptions and Experiences by Presence of Barrier/Boundary, Area Social Distinction, and Side of the Barrier/Boundary.

Feature	Social Distinction	Side of the Feature	Perception	Experience
Symbolic boundary	*Race or income distinction*	Both sides	*Unremarkable:* boundary described as insignificant or fluid, and residents perceived the area on the other side as a part of their neighborhood	Crossed the boundary regularly and socialized with residents on the other side
	Race and income distinction	Lower-status side	[Only a small number of residents in Robindell and Glenbrook Valley/Meadowbrook shared any perceptions of the boundary; their perceptions varied]	[Only a small number of residents in Robindell and Glenbrook Valley/Meadowbrook shared any experiences of the boundary; their experiences varied]
		Higher-status side	*Hyper-salient:* boundary is a reference used by residents to otherize and create social distance from residents on the other side	Did not cross or engage with residents on the other side
Physical barrier	*Race or income distinction*	Both sides	*Intrusive:* constructed the barrier's meaning in relation to their inconvenience, rather than to the people on the other side of it [Perceived as unremarkable by a very small number of residents]	Navigated and crossed to go about their daily lives, but did not have any meaningful social connections or interactions across the barrier
	Race and income distinction	Lower-status side	*Intrusive:* needed to cross the barrier in order to access amenities on the higher-status side	Navigated and crossed to go about their daily lives, but did not have any meaningful social connections or interactions across the barrier
		Higher-status side	*Unremarkable:* did not actively perceive the barriers as impacting their daily lives or conveying meaning about a place or people, but did not perceive the area on the other side as a part of their neighborhood [OST/South Union and a small number of residents of Glenbrook Valley/Meadowbrook] *Hyper-salient:* perceived the area that the barrier occupied as a dangerous place, but did not characterize residents south of the bayou as dangerous or undesirable [Glenbrook Valley/Meadowbrook]	Did not cross or engage with residents on the other side Avoided the area of the barrier [only Glenbrook Valley/Meadowbrook]

Note: We use the term symbolic boundaries to refer to the perceivable divisions between adjacent, segregated areas (e.g., a residential street or local road) that are meaningful but do not limit road network connectivity between race- and/or income-distinct areas. We use the term physical barriers to refer to these same divisions between segregated areas, but where physical features (e.g., railroad tracks, waterways, highways, dead-end streets, etc.) limit road network connectivity between race- and/or income-distinct areas—crossing to the other side is possible, but requires navigating around the barrier.
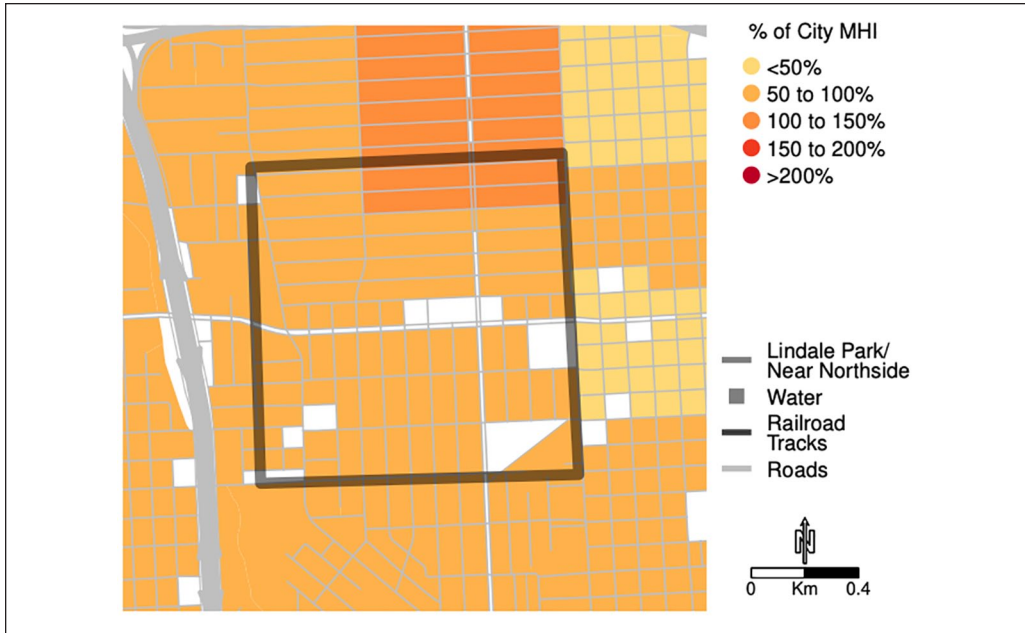
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Figure 1. Percent of city median household income for Latinx population in Lindale Park/Near Northside field site.
2012 inflation-adjusted $, data source: 2012 ACS five-year data.

think speak to vital and understudied shared significance of urban built environments—both symbolic boundaries and physical barriers—that structure residents' daily, segregated lives.

Unremarkable

Lindale/Near Northside and Northline/Acre Homes

We found that in race- or income-distinct areas divided by a symbolic boundary, local residents perceived, interpreted, and experienced the boundary as unremarkable, insignificant, or fluid, and many of them crossed these boundaries regularly. At times, they noted the social differences on either side of the boundary, but these differences did not prevent residents from crossing the boundary and, in many cases, perceiving the field site as a single neighborhood. We observed this pattern in the income-segregated, predominantly Latinx Lindale/Near Northside (see Figure 1) neighborhood as well as in race-segregated Black and Latinx Northline/Acre Homes neighborhood (see Figure 2a–2c).

For example, one young Latino man and resident of the Lindale Park/Near Northside field site explained that the area north of Cavalcade (Lindale Park) and south of Cavalcade were "the same," but then began noting some of the class status differences he had observed:

"Lindale [Park] and . . .," he gestures around but laughs, realizing he doesn't really have a name for the area where he lives and works, south of Cavalcade. Still, he says, "I don't really look at it as parts of a different neighborhood, I think it's the same." But as we talk more, he begins to note the differences: "They have their own Lindale newspaper, we don't." Or: "People maybe have their events, like a church event or Fall Fest or Christmas" event. Those sorts of events are one of the reasons he ventures over there now. He also has clients whom he considers friends who live in
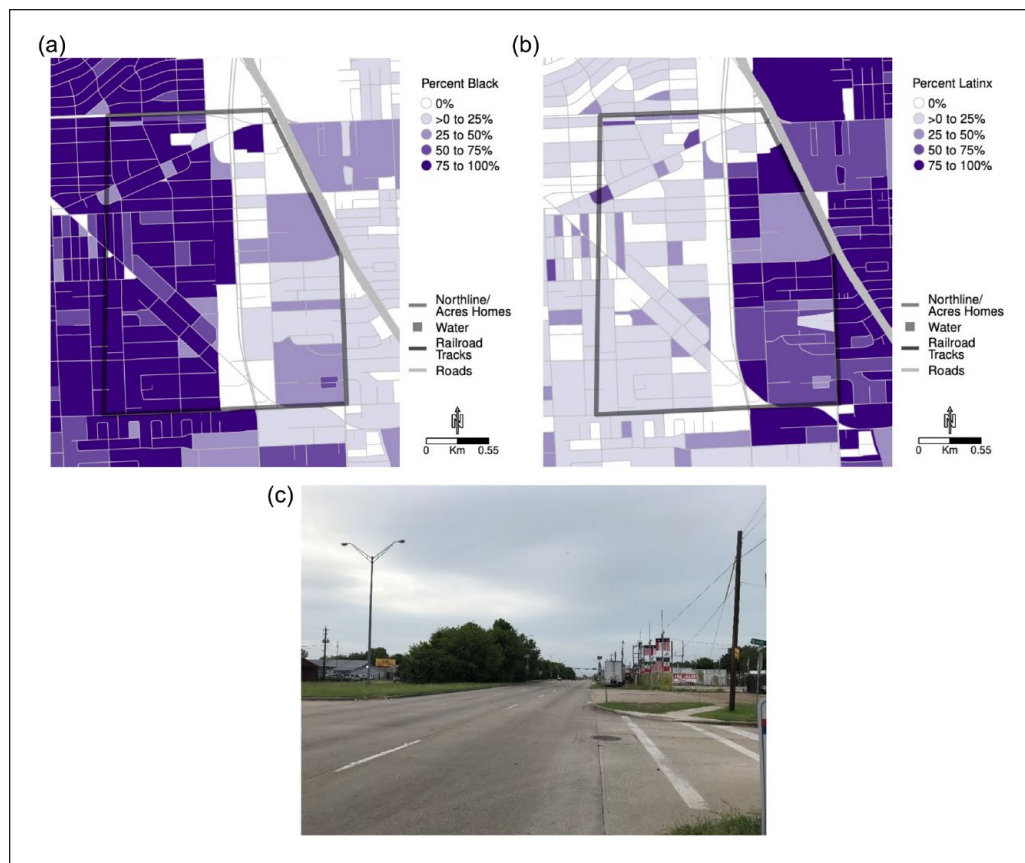
Figure 2. (a) Black population in Northline/Acres homes field site. (b) Latinx population in Northline/Acres homes field site. (c) View of Shepherd Drive, Northline/Acres homes.
Data source: 2010 decennial census (a,b), photo by research assistant #1 (c).

Lindale Park. "Sometimes friends invite us there," he says. In which case, he drives. (Lindale Park/Near Northside Field Site, Third Author, 12/12/2019)

Similarly, another young Latino man in the Lindale Park/Near Northside field site noted that:

he has friends and family north of Cavalcade [in Lindale Park], he says he crosses it fairly often, usually driving and "it's not an issue." Are there any differences between the neighborhoods, I ask. "Not really," he shrugs. (Lindale Park/Near Northside Field Site, Third Author, 12/12/2019)

In the race-distinct Northline/Acres Homes field site, respondents likewise did not perceive Shepherd Drive as a remarkable boundary, though they regularly expressed awareness of the racial layout of the space. These respondents, like those in Lindale Park/Near Northside, regularly crossed Shepherd Drive to visit people they knew or to access employment and amenities. For instance, Research Assistant #1 interviewed a Black woman who lived in the predominantly Black area west of Shepherd Drive:

I asked if she lived on the west [predominantly Black] side of Shepherd and she nodded yes before I pointed to the east [predominantly Latinx] side of the street and asked if she ever goes over there. She seemed confused and explained that "that's not a different neighborhood." I asked her about the racial

demographics of the area and she said its "all mixed." She said that the east side of Shepherd is "mostly apartment complexes" that are a mix of Hispanic and Black residents, but she rarely goes over there. . . . When I said "what about this side of the street" and pointed west she immediately said "that's all Black over there. (Northline/Acres Homes Field Site, Research Assistant #1, 07/21/2019)

This woman, and other residents from our race- or income-distinct field sites, often expressed awareness of the racial or income differences that symbolic boundaries marked. But unlike many of the respondents in the higher-status race-and-income distinct field sites with symbolic boundaries, these respondents regularly crossed these boundaries and did not use them to "other" those who lived on the opposite side. They often viewed the area on the "other" side as part of their own neighborhood.

A very small number of residents in race- or income-distinct areas with physical barriers likewise interpreted the barriers as unremarkable and described crossing as a regular feature of life. For instance, a middle-aged Black resident of Fifth Ward said he often crossed the train tracks there. When the research assistant asked if he had any trouble traveling because of the train tracks, the respondents "chuckled to himself and said 'there are trains everywhere,' as if it was a fact of life that he had come to terms with long ago" (Fifth Ward/Denver Harbor Field Site, Research Assistant #1, 07/05/2019). And, in Glenbrook Valley/Meadowbrook, one young Latino man from the southwest side of the field site noted that he "goes [north] across the bayou maybe once a week to job at the park or play basketball" (Glenbrook Valley/Meadowbrook Field Site, Research Assistant #3, 09/22/2019) and did not ascribe further meaning to the bayou or to crossing.

At times, the particular dynamics of the researchers' positionality also seemed to exaggerate how residents expressed these sentiments. In one instance, a White RA reflected on the tone of a bus stop conversation with an elderly man he noted as "racially ambiguous" with darker skin tones:

> He took a similar posture after each question I asked, as he seemed perturbed not by the fact that I was asking questions but by how obvious the answers were. I was happy to acknowledge how little I knew but this did not seem to assuage his annoyance, and thus the conversation was a tad tense . . . When I asked if he went anywhere else he looked at me incredulously without answering. Like others I spoke with, he seemed to regard the areas east and west of Lockwood as the same and offered little detail about his interactions across such boundary lines. (Fifth Ward/Denver Harbor Field Site, Research Assistant #1, 08/03/2019)

In these examples, we see that actions shape the meaning residents attach to barriers; because crossing train tracks was a regular occurrence, one need not remark upon it. This shows that the relationship between barriers, interpretation, and action is nonlinear in these segregated spaces. It is not just that meaning shapes action, but that action also shapes meaning.

OST/South Union and Glenbrook Valley/Meadowbrook

In the race- and income-distinct OST/South Union site (see Figure 3a–3d), we also found evidence of unremarkable physical barriers. Residents on the west side of the highway—which was multiracial and higher-income than the predominantly low-income Black area east of the highway—did not ascribe meaning or salience to the highway, nor did they cross it or know residents on the "other" side. For instance, Research Assistant #1 interviewed two Asian respondents, one man and one woman, on the west side of the highway who "both said they take the bus to the Med[ical] Center [further west]. They both could not recall a time they crossed [east] over 288
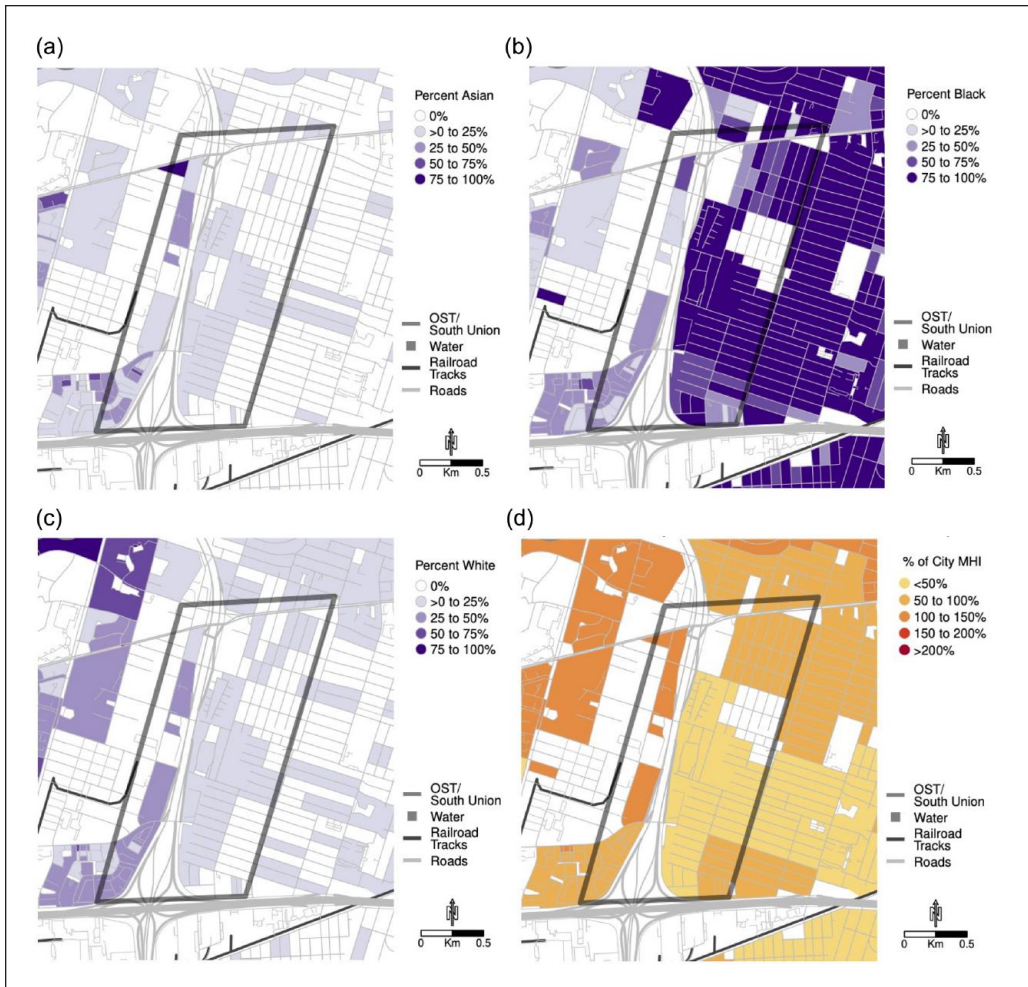
Figure 3. (a) Asian population in OST/South Union field site. (b) Black population in OST/South Union field site. (c) White population in OST/South Union field site. (d) Percent of city median household income in OST/South Union field site.
Data source: 2010 decennial census (a, b,c) and 2012 inflation-adjusted $, data source: 2012 ACS five-year data (d).

and reported that they did not know anyone over there" (OST/SouthUnion Field Notes, Research Assistant #1, 10/10/2019).

Likewise, another Asian woman reported that she took the bus to the Medical Center further west, but did not travel east across the highway. In fact, she was insistent that the bus did not even cross the highway to head further east, although the bus route map indicated otherwise:

I asked if she knew where we were on the map, and she shook her head, so I pointed it out. I then pointed to the highway on the map, and she quickly said that "the bus that does not go over there." I asked her if she knows anyone on the other side [east] of the highway, and she shook her head. I asked if she has ever been over there, and she paused for a second before saying, "I mostly stay around here." She says she takes the bus to the Med[ical] Center often but certainly has not taken it further east. (OST/SouthUnion Field Notes, Research Assistant #1, 10/10/2019)

Similarly, a small number of residents in the race-and-income distinct Glenbrook Valley/ Meadowbrook area—where Simms Bayou served as a physical barrier between residents on the bayou's north and south side—viewed the bayou as unremarkable. For instance, on the north side of Simms Bayou, which was predominantly Latinx and had residents with higher incomes than the predominantly Black and lower-income area on the southwest side of the bayou—Research Assistant #2 recorded the following in her field notes:

> I approached a Hispanic man in his 40's who was playing with his daughter at the playground. I introduced myself and asked if he ever goes to the neighborhoods south of the bayou, pointing to the specific region on the printed map. He answered with a short "no." He went on to elaborate that he knows that the bayou is called Simms Bayou but has never been to the neighborhoods south of the bayou. I tried to continue the conversation by asking why he doesn't go and if he knows anyone personally from that area, but he gave me a blank stare and continued to repeat "no." (Glenbrook Valley Field Notes, Research Assistant #2, 10/11/2019)

Repeated observation of this field site—particularly the sidewalks on either side of the field site that, theoretically, would provide residents on either side opportunities to cross—likewise indicated that people do not walk or ride bikes from the north of Simms Bayou to the south, or vice versa.

In short, multiple residents (most of them on the "higher-status" side) did not interpret the highway or the bayou—perceivable physical barriers that disconnected them from the race-and-income distinct areas nearby—as salient for their everyday lives. This is not to say that residents did not know about these barriers, but instead, it indicates these residents did not actively interpret the barriers as impacting their daily lives or as conveying meaning about a place or people. Arguably this could be because the segregation from surrounding areas was taken-for-granted. Unlike residents we heard from in Lindale/Near Northside and Northline/Acre Homes, they did not perceive these areas as a part of their neighborhood. Their unremarkability was connected to their non-engagement rather than their crossing.

Intrusive

One of the key findings from this study is that people can interpret the same physical barrier in different ways depending on the side of the barrier in which they are located. Let us revisit race-and-income-distinct OST/South Union (see Figure 4). Research Assistant #1 recorded the following encounter with a woman on the east (predominantly Black and low-income) side of Highway 288. While higher-status residents of this neighborhood interpreted the physical barrier as unremarkable and one they did not cross (see previous section), this resident described getting across the highway as a "pain":

> As I walked [on the east side of Highway 288 in OST/South Union] I saw a woman with light brown skin walking two dogs, one of which was clearly a puppy. She was dressed comfortably, in a pair of red shorts, blue t-shirt, and a gray Houston Astros hat. The sidewalk was too narrow for her, the two dogs, and I to all walk on, so I stepped into the ditch temporarily and used it as an opportunity to ask her about the dogs, and subsequently, if I could ask her a couple questions. She acquiesced cheerfully. Up close I saw that her shirt bore the logo of a dog walking company, although she said she lived close by. To my surprise, she said that she goes across 288 "often," although she described getting over there as a "pain." Typically, she said, the best route is to drive south and connect to the 288 frontage road rather than driving north to Yellowstone. She says that her and her partner primarily go across the highway to get groceries, as she said that the HEB [grocery store] near Rice Village has much better produce than the one located off Old Spanish Trail. She made a slightly disgusted face when describing the produce at the local HEB. She also said that "we have a Fiesta [grocery store]"

Figure 4. Barrier sign at dead-end road east of highway 288 in OST/South Union, looking west toward highway.
Photo by first author.

> but "it's just ok." She also lamented out loud that "we don't have a Chipotle over here." She said that the highway affects her ability to access these types of resources. (OST/South Union Field Notes, Research Assistant #1, 06/29/2019)

This woman's interpretations of the highway exemplified how multiple residents on the lower-status side of physical barriers between race-and-income distinct areas interpreted and experienced these barriers as intrusive precisely because they needed to cross them in order to access amenities on the other, higher-status side. These experiences contrast with the sorts of invisibilizing perceptions of higher-status individuals described above, including the woman who did not cross the highway and did not even think the bus did either.

We find that the intrusive category emerged among people from the lower-status side of a physical barrier in race-and-income-distinct areas as well as among residents on either side of a physical barrier between race- or income-distinct areas. Overall, people in this category perceived the barrier, interpreted it as an intrusion in their daily lives, and described having to navigate and cross these barriers in order to go about their daily lives. Importantly, accessing amenities did not mean that residents had any meaningful social connections or interactions across the barrier.

A similar encounter in the race-segregated Fifth Ward/Denver Harbor field site further illustrates this dynamic (see Figure 5a and 5b). Research Assistant #1 interviewed a Black man in this racially distinct Black-Latinx area divided by train tracks, who echoed the above example:

> . . . he said that the train tracks just west of Waco are a major hassle. He shook his head in disbelief as he described how he has to "go around" when there are trains or too much traffic. He also laughed as he told me this, as he said that "waiting on trains" is part of living in the neighborhood. (Fifth Ward/Denver Harbor Field Site, Research Assistant #1, 07/05/2019)
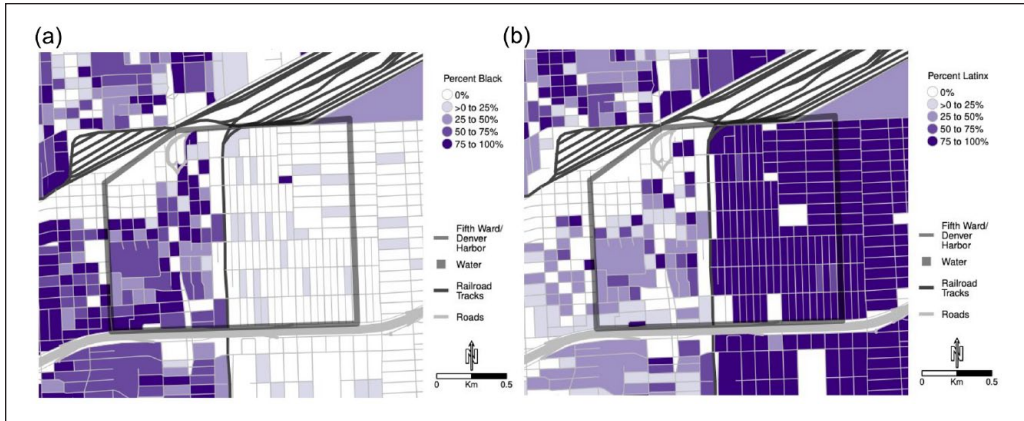
Figure 5. (a) Black population in Fifth Ward/Denver Harbor field site. (b) Latinx population in Fifth Ward/Denver Harbor field site.
Data source: 2010 decennial census.

His comments were echoed by a Latinx man at the same field site, who felt "boxed in" by the train tracks:

> With a semblance of frustration, he said that "you have to go north or south" as residents feel boxed in by the train tracks on each side. Thus, rather than risk hitting trains, he often goes south to I-10 or north to 610 if he needs to go somewhere. (Fifth Ward/Denver Harbor Field Site, Research Assistant #1, 08/03/2019)

Because of the lack of amenities—again, the result of many years of racist economic development in cities across the United States—residents on either side of the tracks in the Fifth Ward/Denver Harbor field site had to navigate the train tracks to access employment, grocery stores, schools, and other necessities in their daily lives. They interpreted the physical barrier as a frustrating intrusion on their mobility and constructed the barrier's meaning in relation to their inconvenience, rather than to the people on the other side of it.

Hyper-salient

Lastly, symbolic boundaries between race-and-class distinct areas were a hyper-salient, if not highly visible, reference point used by residents of higher-income areas to otherize and create social distance from residents on the "other" side. Higher-status residents on the southeast side of Simms Bayou (Glenbrook Valley/Meadowbrook) and those south of Bissonnet (Robindell) regularly perceived, interpreted, and experienced symbolic boundaries dividing them from lower-status residents—on the southwest side of Simms Bayou and north of Bissonnet, respectively—as important, not-to-be-crossed markers. They often criminalized people in the lower-status areas or otherwise characterized them as undesirable.

For instance, one day while doing fieldwork in Glenbrook Valley/Meadowbrook (see Figure 6a–6d), Research Assistant #3 met a Spanish-speaking Latino resident on the southeast side of Simms Bayou. This resident was wearing dress pants, a button-up shirt, and a Gucci belt and standing near his BMW vehicle. Although the resident said he occasionally went to the park north of the bayou to exercise or play basketball with his friends (thus crossing a physical barrier between income-distinct areas to reach an amenity), when asked about going to the southwest side of the bayou (crossing a symbolic barrier from the higher-status
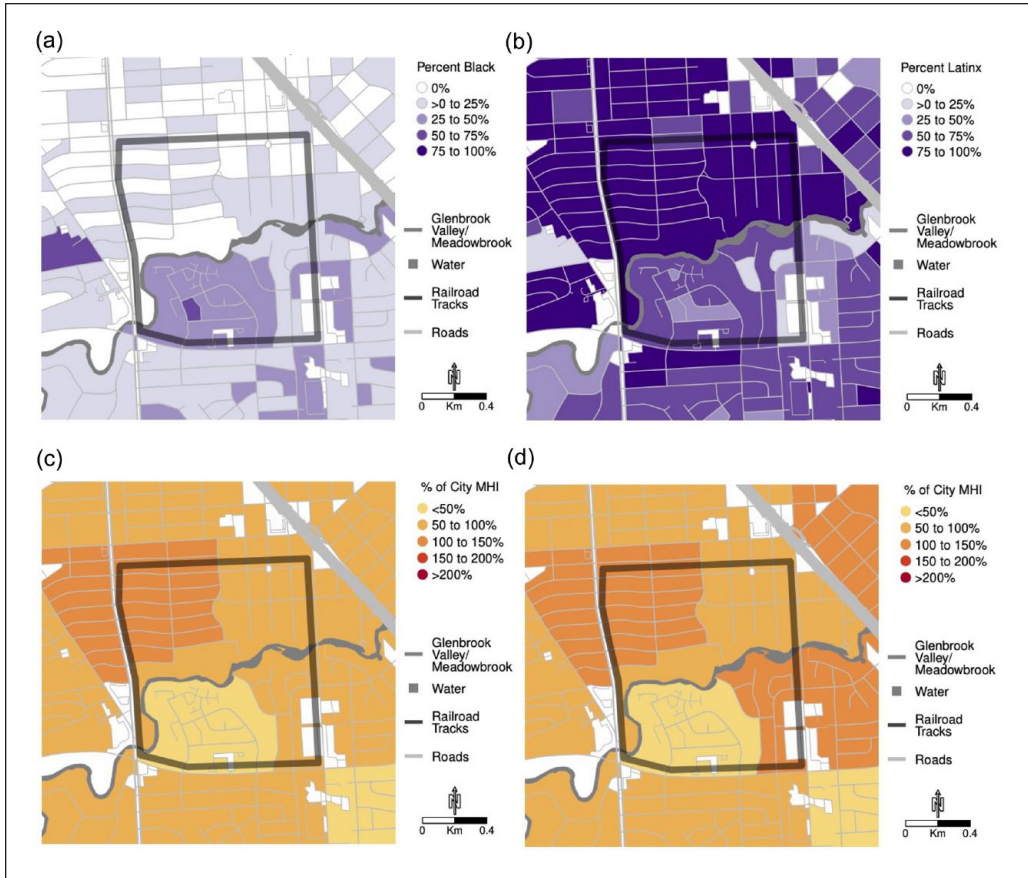
Figure 6. (a) Black population in Glenbrook Valley/Meadowbrook field site. (b) Latinx population in Glenbrook Valley/Meadowbrook field site. (c) Percent of city median household income in Glenbrook Valley/Meadowbrook field site. (d) Percent of city median household income for Latinx population in Glenbrook Valley/Meadowbrook field site.
Data source: 2010 decennial census (a,b) and 2012 inflation-adjusted $, data source: 2012 ACS five-year data (c,d).

side to the lower-status side), he replied, "I can go over there if I want to get shot." He continued by noting that he had a friend who was mugged, had his car stolen, and got shot in the leg in that area (Glenbrook Valley/Meadowbrook Field Notes, Research Assistant #3, 9/22/2019). This example shows how boundary-crossing can differ for the same person. So while it may be reasonable for someone to cross certain income-distinct physical barriers (e.g., for an amenity), crossing race-and-income-distinct symbolic boundaries (or physical barriers) for higher-status residents was universally outside the question.

Similarly, in the Robindell field site, Research Assistant #2 interviewed two White men south of Bissonnet—a higher-income and predominantly White area with large numbers of high-end, late-model vehicles (e.g., BMW, Lexus), neatly manicured lawns, freshly painted home exteriors, and other amenities not observed in the relatively lower-income and predominantly Latinx area north of Bissonnet (see Figure 7a–7c). In her field notes, Research Assistant #2 explained,

> I asked them if they went north of Bissonnet often, showing them the general area on the map. They jokingly responded that they did when they were going to Sugar Land. They then expanded on their
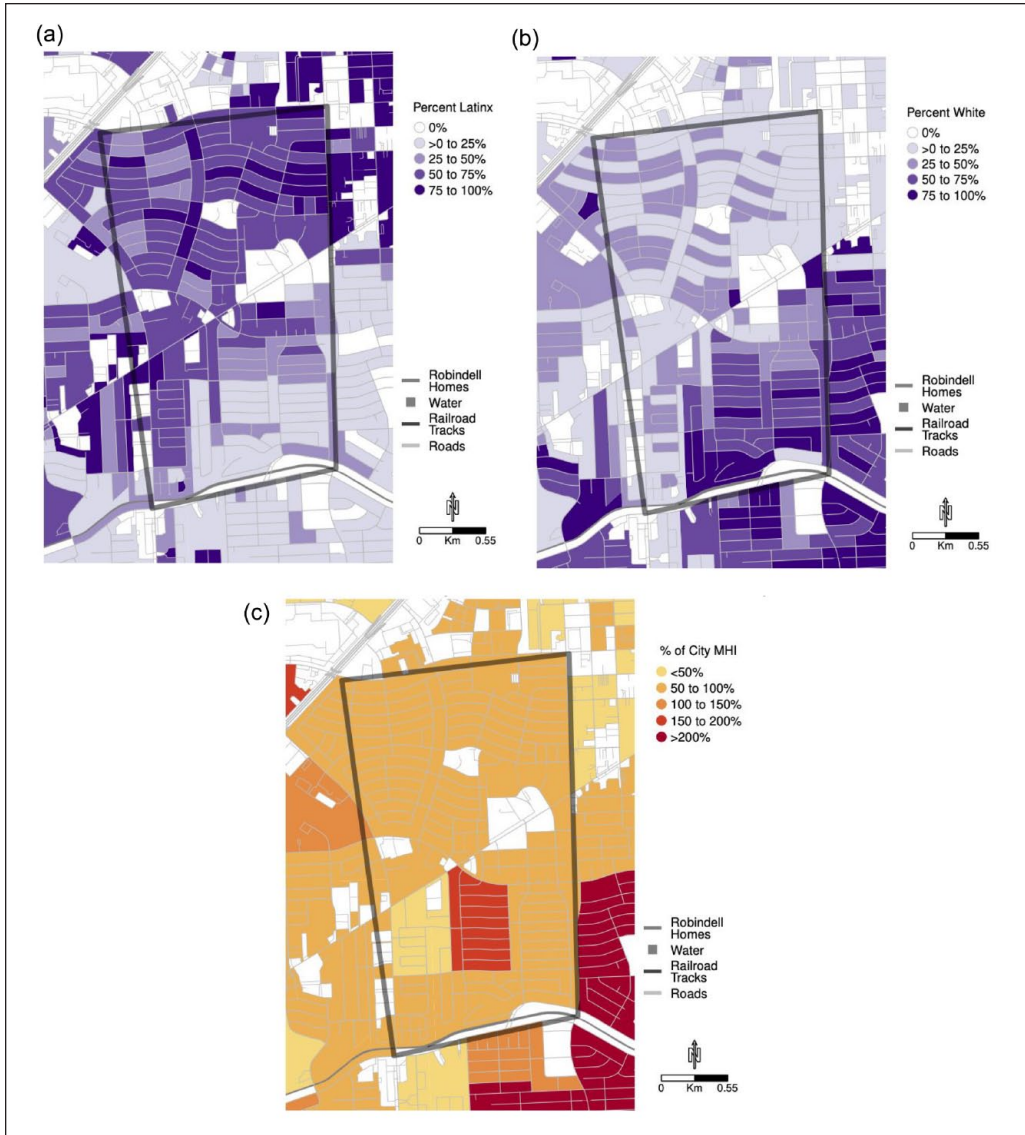
Figure 7. (a) Latinx population in Robindell field site. (b) White population in Robindell field site. (c) Percent of city median household income in Robindell field site.
Data source: 2010 decennial census (a,b) and 2012 inflation-adjusted $, data source: 2012 ACS five-year data (c).

initial response by saying that there was "not as much retail that takes [them] north of Bissonnet." They continued by stating that there are a lot of liquor stores up north but not a lot of chains (they mentioned Whataburger) or retailers up Fondren. One man let his response trail off by saying that this used to be a good neighborhood and is now coming back a little. (Robindell Field Notes, Research Assistant #2, 9/10/2019)

These two men only went north of Bissonnet—the symbolic boundary dividing their higher-status area from the lower-status northern area—on their way to another well-off area, Sugar Land (a wealthy suburb southwest of Houston). In addition to noting that the Robindell area did not

have amenities that they wished to access, one of the men provided further insight into their justification for not going into this northern area by explaining his perceptions of it as a neighborhood that "used to be . . . good." In this way, symbolic boundaries' hyper-salience came from how residents used them to divide space—between their "good" neighborhood and places they avoid or do not frequent because of the stigma (e.g., crime, liquor stores) that they associate with people and places on the "other" side.

Residents of the predominantly Latinx north side of the Simms Bayou in Glenbrook Valley/Meadowbrook also interpreted the bayou as a hyper-salient physical barrier that separated them from the predominantly Black and relatively lower-income area on the southwest side of the bayou. For them, this barrier was not to be crossed. Additionally, higher-status residents north of the bayou interpreted the physical barrier as a place where dangerous people might be, making the barrier itself something that should be avoided completely. This was the least common category of perception/experience we uncovered in the physical barrier field sites and occurred only in the Glenbrook Valley/Meadowbrook field site when residents spoke about Simms Bayou and the park that abutted it to the north. (Residents did not report similar dynamics in race-and-income distinct OST/South Union.) To illustrate, consider Research Assistant #3's interview with an older White woman who lived north of Simms Bayou. As he showed her a printed-off map of the field site, he asked:

RA3: Do you ever visit the neighborhood South of the bayou? [Explaining and showing the map to her]
Respondent: No.
RA3: Do you live here?
Respondent: Well this is my daughter's house, but I've lived in this neighborhood for 12 years.
RA3: What do you think of the other neighborhood [south of the bayou]?
Respondent: I don't really hear about anything that happens over there. I do interact with my neighbors around here though.
RA3: Do you ever go to the park just down the road? [pointing in the direction of the park]
Respondent: Yes, but I try to stay away from the bayou, because there are shady characters that hang out near there.
RA3: What makes them look shady?
Respondent: They just look shady. (Glenbrook Valley/Meadowbrook Field Notes, Research Assistant #3, 11/04/2019)

Research Assistant #3 also interviewed a middle-aged Latina who had immigrated from Mexico as a young child and who lived north of Simms Bayou in Glenbrook Valley/Meadowbrook. She similarly characterized the bayou as hyper-salient and did not approach it or cross it.

RA3: *Vive en este vecindario?*
Respondent: Si, vivo aqui.
RA3: Y ha visitado el vecindario al otro lado del Bayou? [showing her on the map and orientating us]
Respondent: No.
RA3: Y no conoce gente allá?
Respondent: No, tampoco.
[*RA3: Do you live in this neighborhood?*
Respondent: Yes, I live here.
RA3: And have you visited the neighborhood on the other side of the Bayou? [showing her on the map and orienting us]
Respondent: No.
RA3: *Do you know people over there?*

Figure 8. North of Simms Bayou looking southwest toward multifamily apartment complexes, Glenbrook Valley/Meadowbrook.
Photo by first author.

Respondent: Also no.]

After some further questions, the woman told Research Assistant #3 she perceived the path along the north side of the bayou as having some dangerous characters, including one who harassed women who used the path (Glenbrook Valley/Meadowbrook Field Notes, Research Assistant #3, 11/04/2019). These respondents did not interpret residents south of the bayou as dangerous or undesirable. However, they did interpret the area that the physical barrier occupied as a dangerous place that they avoided.

In sum, higher-status residents in Robindell interpreted symbolic boundaries as hyper-salient and did not cross, or at times even approach, them, nor did they report having social contacts or connections with residents on the "other" side. A small number of higher-status residents in Glenbrook Valley/Meadowbrook interpreted the physical barrier of the bayou in a similar way (see Figure 8). Given what we learned about boundary crossing in other neighborhoods, this is not a surprise. Higher-status residents in Robindell and Glenbrook Valley/Meadowbrook lived in relatively high-resource areas, full of amenities. Their need to cross to connect with resources or social networks was likely lower than those in other neighborhoods. Given the importance of resource-hoarding for the maintenance of high-status segregated spaces, it is not surprising that a narrative about those outside the neighborhood or the importance and/or danger of physical barriers or boundaries was found in these neighborhoods as well. Just as those accessing resources needed to cross barriers, those holding onto their resources needed stories about why physical barriers or symbolic boundaries were important to avoid or maintain as a source of protection.

Discussion and Conclusion

The present paper extends the theorization of the relationships between the built environment and segregation by adopting a comparative ethnographic method to examine meaning-making and experiences related to physical barriers and symbolic boundaries in six different field sites. Our research shows that residents' interpretations of barriers and boundaries are shaped by processes of segregation (e.g., resource-hoarding and exclusion). In other words, whether a barrier or boundary is unremarkable, intrusive, or hyper-salient depends in part on the actions residents take due to segregation's effects (e.g., search for amenities or not) and the broader neighborhood context in which residents live. In our study, if people lived in a highly resourced race-and-income-distinct neighborhood, they more often interpreted symbolic boundaries and, at times, physical barriers, as hyper-salient, as this salience is necessary to make sense of and justify their own seclusion. In this way, race-and-income segregation heightens the meaning-making of higher-status residents.

In addition to illuminating the ways residents on the higher-status side of symbolic boundaries reconstruct these boundaries through racialized and classed meaning-making, these findings speak to the ongoing significance of physical barriers—constructed in the past, experienced in the present—highlighting how people from race-and-class-marginalized communities possess a spatial "second sight" (Du Bois [1903] 2007), or an awareness of the urban context and the ways it impacts their daily lives, that people in race-and-class-advantaged communities do not. Indeed, urban built environments have long been programmed (Benediktsson 2022) to minimally burden such advantaged communities and grant them easy access to amenities, employment, and other resources. Our findings show that another contemporary consequence of programming and constructing built environments in these ways has been to shape the spatial imaginary of residents in race-and-class-advantaged communities in such ways that they are not even aware of race-and-class-marginalized communities on the "other" side. The physical barrier thus relieves them of the active choice to engage in meaning-making about residents on the "other" side by presenting a formidable, and literal, barrier to even knowing the "other" community exists.

In contrast, those on the lower-status side of these exclusive physical barriers more often interpret and experience the barrier as intrusive, as they must cross it to access the resources that segregation has kept from their neighborhoods. In this way, the effects of segregation also shape how residents interpret these physical barriers and how they navigate them. And, even when these residents do cross physical barriers, they do not necessarily interact with the relatively affluent others they may observe or encounter. Although urban built environments, as material public objects, confer structure to daily city life through material and institutional means, their effectiveness and consequent "disappear[ing] into the background" (Benediktsson 2022:6) varies. Put another way, the shared significance of material objects such as roads, highways, bayous, and train tracks hinges on their racist and classist programming and consequent unequal affordances such programming confers (cf. McDonnell 2023).

Our study speaks to the ways segregation processes shape our experiences of the built environment and vice versa, but there is more to learn here about how those social processes themselves work. It is certainly possible that more in-depth interviews about respondents' tenures in their neighborhoods, their social networks, and their residential histories, among other dynamics, could help further explain our findings. Future research should also continue to explore whether and how physical barriers and symbolic boundaries shape the experiences of residents over time, especially as our research indicates that lower-status residents pay a time and convenience tax to cross them. We see this line of research as contributing to understandings of "temporal inequality" (Mahadeo 2019:187).

Overall, our findings extend theorization of residential segregation. Specifically, we build on recent work demonstrating the centrality of interlocking racialized and classed housing market

processes for maintaining residential segregation (e.g., Krysan and Crowder 2017) as well as scholarship demonstrating the centrality of materiality for how people interpret homes and neighborhoods (e.g., Bartram 2022) to illuminate how the everyday interpretations of the built environment in which people's homes are located and in which their lives unfold shape on-the-ground experiences of race-and-income segregation.

Through close examination of Houston's built environment and its relationships to segregation, we answer recent calls to more closely examine historic and geographic variations in racial and economic hierarchies (e.g., Dantzler 2021; Riley 2018). At the same time, we emphasize that physical barriers and their programming—that is, disconnectivity accomplished through material and institutional means—are not merely historical artifacts. They are also (re)created and (re)programmed through contemporary urban planning, environmental, and housing development processes at neighborhood and city levels that may or may not involve the very residents who must navigate and make meaning about these objects in their everyday lives. Finally, our findings extend the theorization of why built environments matter in the context of persistent—and growing—residential segregation (Massey 2016; Menendian et al. 2021): They inequitably structure access to amenities and resources as well as the cognitive maps people use to navigate daily life in the city (Lipsitz 2011; Lynch 1960; see also Bullard 1987, 2018).
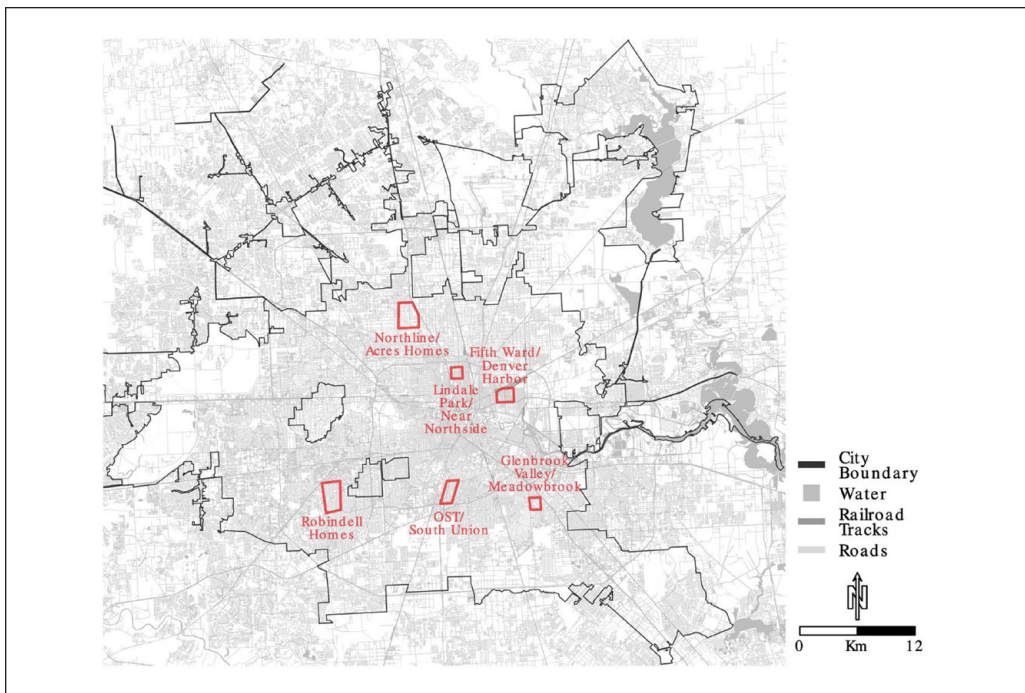
Appendix

Figure A1. Location of field sites within the City of Houston, TX.

Author's Note

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Notes

1. Once in the field and having begun our ethnographic observation, we realized that one of our field sites, Glenbrook Valley/Meadowbrook, had changed since the 2010 Census. Though previously we had anticipated the area being a physical barrier/income type, we found that the area had changed and now fit into the physical barrier/race-and-income type; the physical barrier/income type; and the symbolic boundary/race-and-income type of field. Rather than abandoning this field site and selecting another after noting these changes, we decided to stick with it in order to describe, qualitatively, the on-the-ground dynamics of a race-and-income diverse urban space and to capitalize on the multiple ways local residents made sense of the symbolic boundary they had brought to our attention. For more details, see the Table 3 note.

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