

RESEARCH ARTICLE

Contaminated Spaces: A Critical Policy Analysis of Historical School Siting Policy and Environmental Racism in Detroit and Houston

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ABSTRACT: We conduct a critical policy analysis of environmental and educational policies that enabled the siting of two schools in Detroit, Michigan, and Houston, Texas, near some of the highest-emitting sources of pollution in the country. Through qualitative analysis of 163 news media reports on the processes, implementation, and consequences of school siting decisions in Detroit and Houston, we uncover strategies of institutional denial, the naturalization of racism, and superficial community involvement that school district and industry officials used to deny, normalize, and circumvent community concerns about the environmental health risks associated with siting schools near dangerous sources of pollution. Our study reveals how the absence of school siting policies renders communities of color as contaminated spaces and emphasizes the importance of policy and research that dismantle unequal geographies of opportunity by evaluating policies at the nexus of education and the environment.

KEYWORDS: school siting, environmental racism, education policy

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More than 40 million people in the United States live in fenceline communities, or neighborhoods located within three miles of toxic environmental hazards such as Superfund sites, industrial plants, or waste disposal facilities (Johnston & Cushing, 2020; Southerland et al., 2023). Located within these communities are more than 12,000 public schools (Starbuck & White, 2016), where thousands of children face daily exposure to hazardous environmental pollutants and toxic chemicals. Alarming, between 58% and 80% of the nation's 100 highest-

volume polluters (HVPs) are located within two miles of a public school campus (Legot et al., 2010), and 44% of the nation's schools are located within one mile of known environmental hazard sites (Malik et al., 2026). Though research overwhelmingly confirms that children's exposure to pollution diminishes their academic outcomes (Grineski et al., 2020; Lu et al., 2021; Mohai et al., 2011; Persico & Venator, 2021), no federal policy protects students' environmental health and safety at school (Sampson, 2012). Furthermore, 20 states have no requirements that school district leaders consider environmental factors in school siting decisions (Center for Health, Environment, and Justice, 2005; Grineski & Collins, 2023; Kweon et al., 2018). In the absence of such protections, Native, Black, Latinx, and low-income children face heightened risk of exposure to toxic pollutants at school in comparison to their affluent and white peers (Cheeseman et al., 2022; Grineski & Collins, 2018; Kweon et al., 2018; Malik et al., 2026).

Yet, despite the documented risks of putting children in harm's way, we know little about how district and industry officials justify decisions to site schools dangerously close to known environmental hazards and HVPs. In this paper, we conduct a critical policy analysis (CPA) of the environmental and educational policies that enabled district officials to site two schools—Mark Twain School for Scholars in Detroit, Michigan, and César Chávez High School in Houston, Texas—in dangerous proximity to some of the highest-emitting pollution sources in the country. Specifically, we ask: In the absence of state policies protecting communities from environmental racism, how do stakeholders describe and experience decision-making processes, implementation, and consequences of siting K-12 schools dangerously close to high-volume polluters? Our analysis of district and industry officials' decision-making processes and responses to concerns raised by affected communities reveals a pattern of neoliberal race-evasiveness that pathologizes communities of color as contaminated spaces. By highlighting the neoliberal, color- evasive ideology underlying environmental racism and school siting policies in Detroit and Houston, we challenge the notion that policymakers can treat environmental and educational policies separately and emphasize the need for further research at the nexus of these policy domains.

Literature Review

A robust body of literature details how particular geographies facilitate opportunity and shield certain residents from environmental harm, while geographies of inopportunity render other residents vulnerable to environmental racism. Highlighting the interplay of the geography of opportunity and environmental racism, we draw on this literature to lay the groundwork for examining school siting impacted by spatial inequities, power, and policy.

The Geography of Opportunity and Environmental Racism. A growing number of researchers have linked the social inequalities that structure people's life opportunities to features of the spatial environments where they live, work, and learn. Conceptualized broadly as the geography of opportunity (Galster & Killen, 1995), this body of literature examines how patterns of residential segregation differentially position individuals in relation to various resources and harms, producing racial disparities in health, wealth, education, and other key life outcomes (Briggs, 2005; Squires & Kubrin, 2005; Tate, 2008). In the U.S., uneven geographies of opportunity have emerged from an interlocking set of racially exclusionary housing, land use, environmental, and educational policies that have systematically privileged generations of affluent White residents while disadvantaging poor Black and Latinx communities (Massey & Denton, 1993; Morello-Frosch & Lopez, 2006; Trounstein, 2020). Environmental racism plays a powerful role in shaping the geography of opportunity (Bullard, 1994a). As a form of structural racism, environmental racism

operates through a web of federal, state, and local policies, legal decisions, and institutional practices that disproportionately concentrate environmental burdens in marginalized communities while excluding people of color from full participation in decisions affecting their living conditions, health, and well-being (Henderson & Wells, 2021). The impacts of environmental racism can be observed in nearly every major metropolitan area in the U.S., as millions of low-income Black and Latinx residents continue to be segregated into spaces that not only are physically separate from wealthier white communities but are also marked by more hazardous environmental conditions (Mikati et al., 2018; Mohai et al., 2009; Morello-Frosch & Lopez, 2006; Tessum et al., 2021). These environmental inequalities are produced by intentional policy decisions.

In some cases, officials deliberately sited industrial facilities such as chemical plants, petroleum refineries, and waste disposal centers dangerously close to communities of color, thereby increasing residents' exposure to pollution (Bullard, 1994a; Johnston & Cushing, 2020). In other instances, racially exclusionary housing and economic policies shunted low-income Black and Latinx residents into neighborhoods made affordable due to their proximity to environmental hazards (Henderson & Wells, 2021; Lane et al., 2022; Pulido, 2000). Poor communities of color have suffered disproportionate health effects because of environmental racism (Morello-Frosch et al., 2011). Heightened exposure to toxic contaminants has substantially increased low-income, Native, Black, and Latinx people's risk of cardiopulmonary disease (Erqou et al., 2018; Parker et al., 2018), adverse perinatal outcomes (Burris et al., 2019), cognitive impairment (Ard et al., 2024; Pham & Chiew, 2023), cancer (Lord et al., 2023), and premature death (Geldsetzer et al., 2024), with racial disparities in pollution-driven health outcomes continuing to widen (Kerr et al., 2024).

Young people have not been spared from the impacts of environmental racism (Landrigan et al., 2010). High levels of toxic pollutant exposure have been linked to increased risks of childhood asthma (Corburn et al., 2006; Kravitz-Wirtz et al., 2018), pediatric cancer (Grineski & Collins, 2019), and cognitive impairments (Wodtke et al., 2022). Pollution exposure also negatively affects children's educational outcomes, reducing school attendance and disrupting healthy brain development (Brockmeyer & D'Angiulli, 2016; Grineski et al., 2020; Shier et al., 2019). And because pollution exposure levels are inequitably distributed across uneven geographies, Native, Black, Latinx, and low-income children face a disparate risk of experiencing these adverse health outcomes (Dickerson et al., 2023; Grineski & Collins, 2018; Payne-Sturges et al., 2023). While this literature confirms environmental racism's corrosive effects on children's health and well-being, comparatively less attention has been paid to the role of school siting decisions in reproducing or exacerbating these outcomes. Thus, in the next section, we synthesize the literature examining the relationship between school siting policy and environmental risk.

School Siting Policy

Decisions about where to site public schools are typically driven by cost, land availability, minimum acreage requirements, and proximity to the communities being served (McDonald, 2010; McDonald et al., 2014; Norton, 2007). Environmental concerns, however, are rarely taken into account (Mohai & Kweon, 2020). While some states have established minimum distance requirements for siting schools near major roadways, industrial facilities, or other sources of pollution, 20 states have failed to adopt policies of any kind preventing schools from being sited near environmental hazards or mandating the remediation of contaminated sites near schools (CHEJ, 2005; Grineski & Collins, 2023; Kweon et al., 2018; Rhode Island Legal Services, 2006). Though the federal Environmental Protection Agency (EPA) urges districts to

avoid constructing schools on or near “contaminated sites that have not been remediated” (EPA, 2011, p. 38), these guidelines remain voluntary. As a result, many schools are sited near contaminated brownfield sites or sit adjacent to HVPs (CHEJ, 2005; Cohen, 2010). Though EPA recommends that districts inform school communities and seek meaningful public input throughout the school siting process (EPA, 2011), most states do not require district leaders to inform the public about school site selection processes or engage community members in siting decisions (CHEJ, 2005; Rhode Island Legal Services, 2006). Consequently, communities most affected by decisions to site schools near environmental hazards are often the same ones excluded from district decision-making processes. Instead, community advocates have relied on grassroots environmental activism and legal action to contest environmental racism in school siting policy, with limited success in influencing siting decisions (Fischbach et al., 2005).

While the school siting literature highlights the failure of policy to protect students from exposure to environmental hazards, it says little about how district and industry officials justify decisions to locate schools near known sources of pollution, let alone how these decisions are communicated to the public. We therefore draw on concepts from critical spatial theory and colorblind racism to help explain how, in the absence of protective policy, these ideologies structure and legitimate officials’ actions and statements as they make school siting decisions that disproportionately place Black and Latinx children in the path of toxic chemicals and pollutants.

Conceptual Framework: Critical Spatial Theory and Colorblind Racism. To understand how school siting policy reproduces environmental racism, we draw on concepts from critical spatial theory (Soja, 2010) and Bonilla-Silva’s (2014) colorblind theory of racism. Specifically, we leverage critical spatial theory as a conceptual tool to examine the relationship between a physical space and the broader context in which it is situated. A critical spatial perspective recognizes that “the geographies we live in are not just dead background” (Tefera et al., 2017, p. 3) but rather are intentionally constructed and always connected to some “relative advantage or disadvantage” (Soja, 2010, p. 73). Utilizing critical spatial theory, we view environmental injustice as a mechanism through which power is maintained and access to educational opportunity is limited for marginalized students. Through this framework, we dismantle ideas of space as neutral or naturally occurring and answer the call to examine space’s role in educational equity (Tefera et al., 2017).

Additionally, we draw on Bonilla-Silva’s (2014) colorblind theory of racism to examine the ideology underlying both environmental injustice and educational inequality. Although the colorblind theory of racism is composed of four frames (i.e., abstract liberalism, naturalization, cultural racism, and the minimization of racism), we draw attention to the concept of the naturalization of racism. The naturalization of racism allows dominant groups to “explain away racial phenomena” by suggesting that racialized systems are merely natural occurrences rather than the direct outcomes of racist policies and structures (Bonilla-Silva, 2014, p. 98). Specifically, we illuminate how the naturalization of racism is core to the creation and maintenance of policies that systematically disadvantage communities of color, including policies that facilitate environmental racism, housing discrimination, and educational (in)opportunity.

Methods

To understand how school siting policy reproduces the uneven geography of opportunity and normalizes the ideology of colorblind racism, we draw on principles of Critical Policy Analysis (CPA) to examine media representations of district and industry officials’ justifications for decisions to locate schools near dangerous environmental hazards. CPA begins with the premise that unequal power dynamics

structure the social and political contexts in which policies are designed, implemented, and experienced. As a result, CPA scholarship “is explicitly focused on power, inequality, and injustice and how everyday people act to challenge injustice” (Turner et al., 2024, p. 178). Diem et al. (2014) and Young and Diem (2017, 2018) outline six critical concerns that inform CPA studies: (1) investigating the origins and evolution of policy; (2) attending to disconnects between policy rhetoric and reality; (3) examining how the unequal distribution of power and resources shape policy development and implementation; (4) analyzing systems and contexts in which policies are created and implemented; (5) investigating policy’s reproduction or transformation of existing hierarchies and power relationships; and (6) illuminating how marginalized groups use their agency to resist unjust policy. We apply these six principles to evaluate the extent to which school siting decisions reinforce unequal opportunity structures and to examine how community activists have organized to resist their domination and oppression.

One challenge we encountered in conducting a CPA of school siting policies in Houston and Detroit emerged from the absence of such policies governing siting decisions in Texas and Michigan. Because these states do not enforce any policies regulating the siting of schools near environmental hazards, we were unable to identify specific siting policies for analysis. Instead, we conceptualize policy as one component of a social practice, in which the nonexistence and non-implementation of policies reveal the broader political, economic, and cultural processes that preclude or undermine policy change (Dumas & Anyon, 2006). Diem et al. (2014) emphasize that CPA is uniquely suited for exploring these sorts of policy “silences,” as a CPA methodology reveals “not only what is centered in policy and policy conversations but also what is marginalized or absent” (p. 1077). Though the states we examine have failed to enact specific school siting policies, prevailing discourses of environmental quality and schooling in Houston and Detroit find expression in other arenas. Specifically, media reports, which play important roles in setting political agendas and shaping public opinion, reveal how policy issues are framed and understood while reflecting the discourses different groups employ to make sense of the presence or absence of policy (Castrechini et al., 2014; Saraisky, 2016). Thus, we examine media reports on school siting decisions in Houston and Detroit to analyze how unequal power relations structured district officials’ and community members’ frames for making sense of school environmental health issues, and the extent to which siting decisions made in the absence of state school siting policy reproduced environmental racism.

Case Selection. We focus our CPA of school siting policy on the cases of César Chávez High School in Houston and the Mark Twain School for Scholars in Detroit for several reasons. First, both Texas and Michigan lack policies regulating school siting, leaving decisions about where to locate schools largely in the hands of district leaders. This regulatory gap enables colorblind racism to influence school siting decisions in ways that disproportionately expose communities of color to environmental hazards. Second, Houston and Detroit are both large, racially diverse cities with historical legacies of residential segregation and a concentration of industrial facilities in or near Black and Latinx communities. Both cities have also seen campaigns to challenge environmental racism and advocate for cleaner schools and neighborhoods, making them critical sites for studying the intersection of school siting policy and environmental justice. Given that there is no uniform measure for determining what distance constitutes “dangerous proximity” between schools and environmental hazards, researchers have leveraged a range of spatial units and measurement techniques to assess the risk pollution sources pose to nearby populations (Chakraborty et al., 2011; Tenailleau et al., 2024). Following Legot et al. (2010) and London et al. (2015), we operationalize a two-mile distance as our measure of the danger posed by schools’ proximity to HVPs. This measure aligns with World

Health Organization (WHO) guidelines, which recommend siting schools at least 2 miles away from hazardous industrial facilities (WHO, 2003).

As illustrated in Figures 1 and 2, both school sites are located within one mile of at least one HVP, and Chávez is located within two miles of three different HVPs. We also note that the industrial pollution sources located near these schools are among the highest-risk HVPs in the nation: according to EPA's Risk-Screening Environmental Indicators (RSEI) model, which measures the relative risk to human health posed by facilities emitting toxic chemicals, the two facilities located within one mile of Chávez rank 147th and 167th among all HVPs nationally, while the facility near Twain ranks 358th (EPA, 2022).

Houston, Texas, and César Chávez High School

Often recognized as the energy capital of the world, Houston is responsible for producing more than a quarter of the nation's petroleum (Houston Energy Transition Initiative, 2021). Yet the city also ranks among the most polluted metropolitan areas in the country, a consequence of Houston's high concentration of refineries and petrochemical manufacturing plants, constant freight traffic along its 50-mile ship channel, and the frequency of extreme climate events triggering natural-technological disasters that spread hazardous pollutants through catastrophic flooding (Flores et al., 2021; Linder et al., 2008; Lam et al., 2021). Houstonians' exposure to pollution remains deeply unequal, with poor Black and Latinx residents far more likely to live in the city's most polluted census tracts (Chakraborty et al., 2014). These disparities are rooted in decades of environmental racism, driven by a constellation of discriminatory land use, housing, and environmental policies that have caused a majority of the city's industrial facilities, chemical plants, and toxic waste dumps to be clustered near historically redlined areas (Bullard, 1994b).

One of Houston's most polluted zones lies to the city's southeast along the ship channel, an area that Amnesty International in 2024 classified as a racial sacrifice zone due to heavy industrial pollution and the disproportionate concentration of communities of color in its proximity (Amnesty International, 2024). In this sector of the city, the predominantly Latinx East End neighborhoods of Manchester, Harrisburg, and Meadowbrook/Allendale sit in the shadows of three HVPs: the Texas Petrochemicals (TPC) Group Houston Plant, the Goodyear Houston Chemical Plant, and the LyondellBasell Houston Refinery. For decades, these facilities have exposed Houston's East End community to dangerous levels of toxic chemicals (Knighton et al., 2012), with unauthorized air pollution emission events occurring with alarming frequency (Ferrell, 2024).

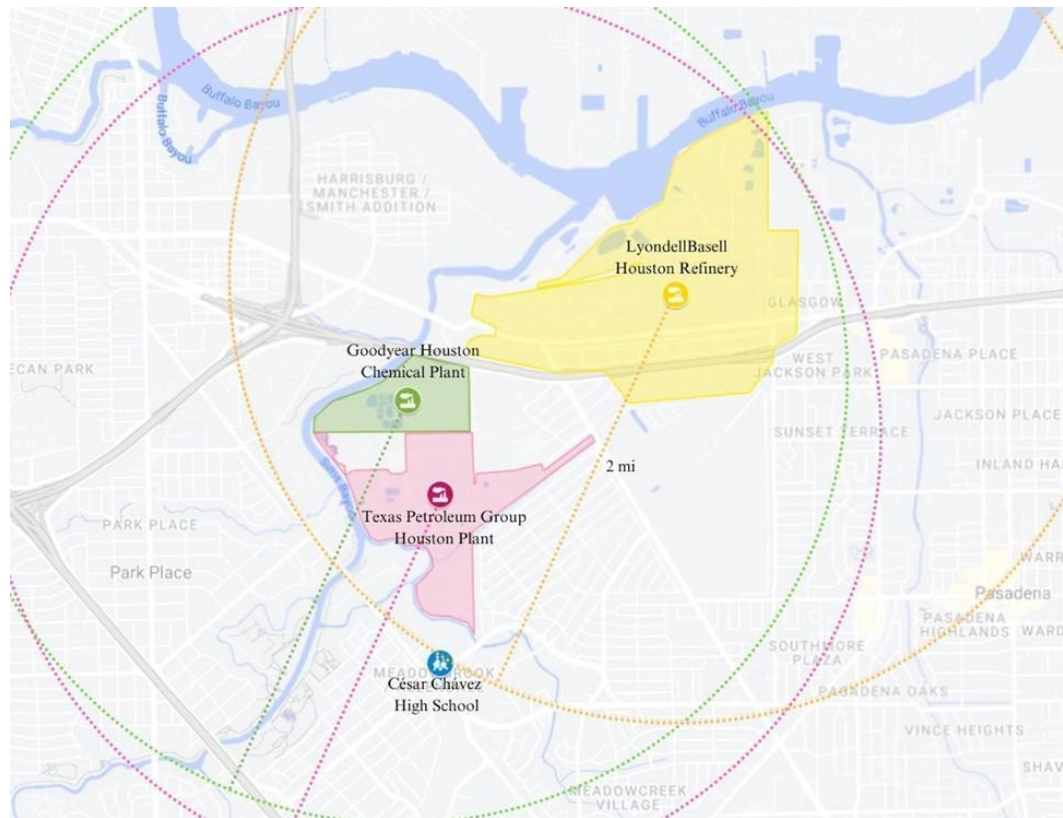
Carcinogens found in the area's air, soil, and water samples have been linked to heightened adult and child cancer risks and drastically shortened lifespans (Johnson et al., 2014; Walker et al., 2006). Consequently, Manchester residents face a 22% higher cancer risk than Houstonians in other neighborhoods (Center for Science and Democracy, 2016), and children living within two miles of the ship channel risk developing childhood leukemia at a rate 56% higher than those living just 10 miles away (Whitworth et al., 2008). In this study, we focus on César Chávez High School, which is located within two miles of all three HVPs (see Figure 1) and serves a student population that is 88% Latinx and 93% low-income (see Table 1). Despite longstanding campaigns by local environmental activists to draw attention to the risks posed by nearby chemical plants, Houston Independent School District (HISD) leaders proceeded with Chávez's construction after conducting only minimal environmental assessments of the site (Mann, 2007). Since the school opened, students have continued to be exposed to dangerous levels of pollution at school (Parras & Gustafson, 2017), and a 2023 district facilities assessment found that Chávez failed to meet multiple indoor environmental quality standards (Abia & Jernigan, 2024).

Chávez's location at the heart of a heavily polluted, low-income Latinx community makes it a key site for understanding the intersection of unregulated school siting policy and environmental racism.

Detroit, Michigan, and Mark Twain School for Scholars

The city of Detroit, once known for its booming automotive industry, has faced decades of disinvestment and economic and environmental degradation. In particular, the city's environmental concerns include the prevalence of lead-emitting facilities in neighborhoods with high Black populations (Moody & Grady, 2021), air pollution linked to the premature deaths of more than 660 Detroiters a year (Martenies et al., 2017), and high rates of asthma attacks among African American children (Shaffer, 2017). While the impacts of environmental racism are citywide issues in Detroit, in this case we focus on the neighborhoods of Oakwood Heights and Boynton, which are situated within Michigan's most polluted zip code, 48217 (Benz, 2019; Lewis, 2014).

Figure 1: *Location of César Chávez High School*



Note. César Chávez High School is in proximity to the Texas Petrochemicals Group Houston Plant, the Goodyear Houston Chemical Plant, and the LyondellBasell Houston Refinery.

Close to the Boynton neighborhood is the area's only operating public school: the Mark Twain School for Scholars (see Figure 2), which serves a student population that is over 85% Black (see Table 1 for additional details on student demographics). Located within one mile of the Marathon refinery, Twain transferred to its current site after the building's former occupant, Boynton Elementary-Middle School, closed in 2010. In this study, the case of Detroit is contextually different from

that of Houston, given that Twain's school building was constructed first and the siting of a nearby environmental hazard followed thereafter. Specifically, four years after the Boynton school first opened in 1926, the first petroleum storage tank was built, and Marathon later purchased the site in 1959 (Hicks, 2017). In this way, we purposely selected Mark Twain School for Scholars to demonstrate the experience of an existing school that encountered the siting and expansion of an environmental hazard in close proximity.

Table 1: *César Chávez High School and Mark Twain School for Scholars: Campus and District Student Demographic Data, 2023*

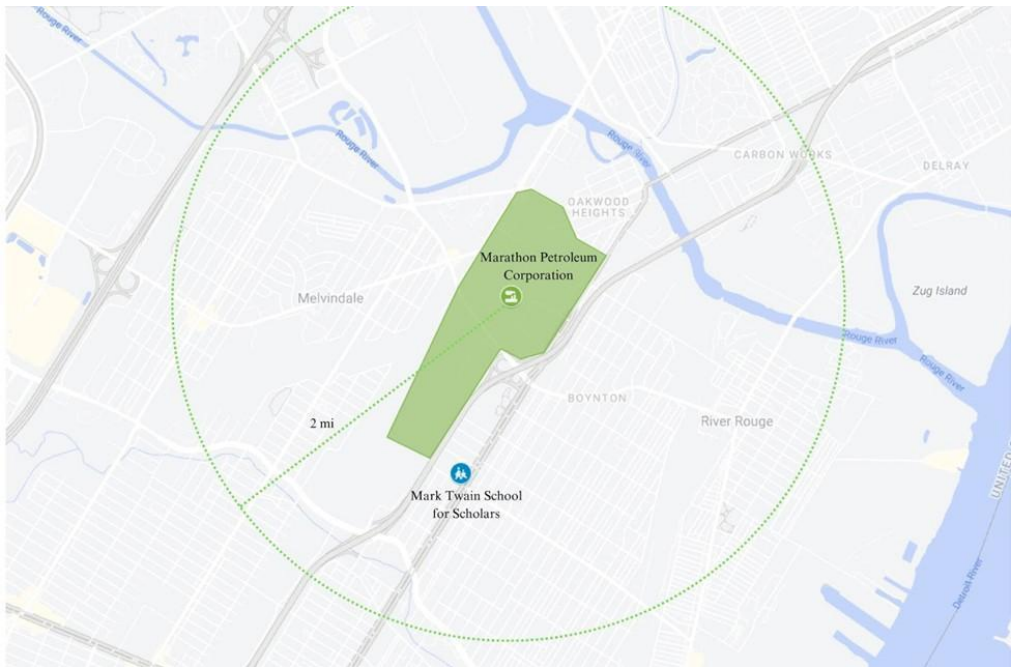
Measure	César Chávez HS	Houston ISD	Mark Twain	Detroit PSCD
Total enrollment	2,006	167,956	294	48,476
Economically disadvantaged	93.4%	80.6%	89.8%	82.5%
Emergent bilingual	44.9%	38.9%	5.1%	13.9%
Special education	10.6%	10.3%	9.9%	14.4%
Asian	3.2%	5.1%	0%	1.5%
Black/African American	7.1%	22.4%	85.7%	80.8%
Hispanic/Latinx	88.4%	65.9%	9.2%	14.5%
White	0.9%	8.7%	1.4%	2.4%
Two or more races	0.3%	1.8%	3.7%	0.6%

Note. HS = High School; ISD = Independent School District; PSCD = Public Schools Community District. Demographic categories as reported by the Texas Education Agency and the Michigan Department of Education.

Data Sources

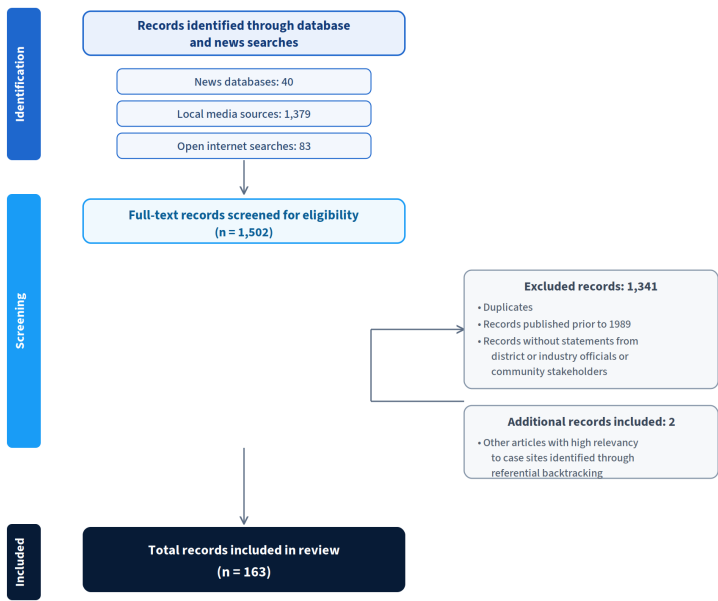
To identify news articles for inclusion in our analysis, we conducted a search, screening, and full-text review process, as visualized in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram in Figure 3. We began by conducting searches of EBSCO's Newspaper Source Plus database using the keyword strings "Chavez High School" AND Houston and "Mark Twain School" AND Detroit for all available dates. We then broadened our EBSCO Search beyond our identified schools by searching for media reports related to relevant neighborhoods and industry, using the keyword strings "East End" AND Houston AND "air quality" and "Marathon Petroleum" AND Detroit AND "air quality." Next, we applied these same keyword strings in searches of local media outlets for each case. For Houston, these outlets included the Houston Chronicle, Houston Public Media, the Texas Tribune, and the Texas Observer.

Figure 2: Location of Mark Twain School for Scholars



Note. Mark Twain School for Scholars in proximity to Marathon Petroleum Corporation.

Figure 3: PRISMA Diagram of Media Search and Screening Process



Note. Of 1,502 records identified, 1,341 were excluded during screening and 161 met the inclusion criteria. Two additional records identified through referential backtracking yielded 163 records included in the review.

For Detroit, these included the Factiva database as well as the Detroit Free Press and The Detroit News. Finally, we expanded our scope to include open internet searches using the same keyword strings. Our initial media search yielded 1,502 total records. We subsequently conducted a screening process by removing duplicates, excluding records published before 1989 (based on our case histories and timelines), and excluding records that did not include statements from district or industry officials, community members, or other relevant stakeholders. Our screening process yielded 161 records that met the inclusion criteria. These exclusion criteria allowed us to closely examine articles that directly addressed our research questions by focusing specifically on the impact of HVPs on selected school sites and, more broadly, on stakeholders' responses. While our analysis in the full-text review phase uncovered several articles that proved useful for contextualizing the sites and providing additional background information, we aimed for our final selection of included articles to be bound to the guiding research questions. We then engaged in referential backtracking by reviewing and incorporating relevant sources cited in other media (Alexander, 2020) throughout the full-text review phase to ensure that all relevant materials were included. This resulted in a full-text review and inclusion of two additional articles that met our eligibility criteria. In sum, the corpus of records selected for analysis included 163 media reports.

Data Analysis

The first phase of data analysis involved an inductive open coding process to identify major themes, concepts, and actors in each case (Merriam & Tisdell, 2016). The study's authors independently coded the two cases, resulting in separate codes for each context. We then met to review and compare codes across contexts. This step enabled us to establish intercoder consensus (Cascio et al., 2019) across codes, which we reached after detailed discussion and clarification. We did not aim to produce a quantitative reliability rating, given that we considered this process an "interpretive enterprise" (Saldaña, 2021, p. 54) devoid of enumeration (Harry et al., 2005). Although we generated some contrasting codes due to contextual differences between the two cases (e.g., the chronology of siting), we reconciled them by identifying similarities. In the second round of analysis, we engaged in theoretically informed deductive coding, applying the six constructs from Critical Policy Analysis (CPA) and the theoretical literature on critical spatial theory and colorblind racism. Specifically, we examined news media reports about each case using CPA-derived codes, including policy origin and evolution, rhetoric versus reality, inequality shaping policy, systems and circumstances, policy shaping inequality, and community resistance. Employing the constant comparative method (Glaser & Strauss, 2017), we synthesized our open codes with our CPA codes to identify three emergent categories of district leader and stakeholder actions and communications that addressed our research question.

Limitations

This study's data sources are limited to written, published news reports, which offer only a partial window into complex historical events that individuals experience differently. News media are also more likely to report on newsworthy conflict and less likely to examine issues that garner lower levels of public interest, such as the internal dynamics of school district and industry (in)action in response to

environmental justice concerns. Consequently, we cannot conclude that the corpus of news reports assembled here tells a comprehensive story about how school siting decisions in Houston and Detroit were implemented, justified, or challenged. While selected news articles featured selected statements from district and industry officials, we were not able to compare these against other statements that may have been made at internal district meetings, during school board meetings, or in other public settings. We therefore cannot confirm whether statements made by district communications officers and industry spokespeople are representative of broader communications strategies. Although news media can be effective in amplifying the voices of those typically silenced in school siting decisions, future research should examine additional data, such as deliberations at school board meetings, to establish generalizability and provide a comprehensive understanding of communication strategies. Future studies should also pair media sources with qualitative interviews to gain insights on the experiences of district officials and community members throughout school siting processes.

Findings

Our analysis of news media reports on the processes, implementation, and consequences of school siting decisions in Detroit and Houston uncovered three strategies that district and industry officials used to deny, normalize, and circumvent community concerns about the environmental and health risks of siting schools near hazardous sources of pollution. First, officials practiced institutional denial to downplay and dismiss the significance of environmental hazards being located in close proximity to schools. Second, officials performed the naturalization of racism, which manifested as disregard for issues raised by Black and Latinx communities and the trivialization of concerns about school-based pollution exposure. Third, officials engaged in superficial community involvement by using tactics of redirection and pacification, creating the appearance of inclusion and remediation while maintaining the status quo. Together, these strategies illustrate how, in the absence of state and federal school siting policy, district and industry practices perpetuated environmental racism and undermined authentic community engagement while marking communities of color as contaminated spaces.

Institutional Denial. Institutional denial occurred when district and industry officials minimized community members' concerns about siting schools dangerously close to environmental hazards. Even when presented with clear evidence of harm, these officials refused to acknowledge institutional responsibility for shaping these conditions. In Houston, institutional denial manifested in inadequate environmental testing and a pattern of downplaying the risks Chávez's siting posed to students and staff. After deciding in 1992 to construct Chávez at its present site, HISD performed only three environmental tests before opening the school eight years later (Mann, 2007). Though a 1992 ground pollution assessment found substantial evidence of industrial pollution, no steps were taken to remediate contamination. Yet in 1998, a separate study declared the area safe. The only air quality study of the site, conducted in 1992, detected toxic pollutants, including benzene. However, because air quality results from tests conducted at a nearby school campus failed to show significant differences from pollution levels measured at Chávez, district leaders declared the proposed site safe. Yet these air quality tests failed to measure for the carcinogen butadiene—a grave oversight, as tests conducted years later by the Texas Commission on Environmental Quality (TCEQ) and the Houston Chronicle found extreme levels of accumulated butadiene in the area (Cappiello, 2005; Olsen, 2005).

In recent years, accumulated pollution in neighborhoods surrounding Chávez has greatly exceeded the 1992 levels, and several of the area's HVPs have faced fines for excessive emissions even as they have sought approval to expand

production of chemicals such as butadiene (Blum, 2019; Watkins, 2021). HISD officials repeatedly dismissed calls from local activists for additional environmental assessments of the Chávez site by claiming that community members lacked the credentials to make such determinations (Makeig, 1996). District communications cast these activists as part of an “outside group” and positioned their concerns as “not coming from the community” (Markley, 2000).

District officials justified this stance by pointing to the presence of 37 other campuses located within three miles of Chávez, claiming that no children had been harmed at these sites. An HISD spokesperson declared: “If there is danger there [at Chávez], give me the name of even one student who has somehow been harmed by that at any of those other 37 schools ... They can't do that because there aren't any” (Abbott, as quoted in Markley, 2000). To date, HISD has refused to acknowledge community members’ requests for additional environmental assessments of the Chávez site, even as unauthorized air pollution emission events continue to occur with increasing frequency (Ferrell, 2024; Foxhall, 2020; Glenn, 2016). Media coverage of the Detroit site has focused on the impacts of the Marathon refinery on the neighborhood’s residents, specifically residential mobilizing and Marathon’s subsequent responses, or lack thereof. Institutional denial has been the dominant response to community resistance to the expansion of the oil refinery over the last decade. For instance, in 2012, Marathon initiated a home buyout program in the nearby majority-white Oakwood Heights neighborhood. Of the 294 properties identified, 266 owners participated (Taylor, 2020). However, Marathon did not expand the home buyout program to the majority-Black Boynton neighborhood, whose residents previously requested home buyouts for several years until a program was created in 2020 (Boyhtari, 2021).

Over nearly a decade of community mobilization for the buyout program, Marathon has denied responsibility for harming residents’ health, citing its efforts to reduce emissions (Costley, 2020) and minimizing the need for home buyouts. For example, in response to demonstrators in 2017, a Marathon spokesperson stated: “if you look back over the last 15 years, you will see drastic reductions in our day-to-day emissions. Ultimately we operate about 40% below on a daily basis of our permit limits here at the facility” (Leaver, as quoted in Newman, 2020). These claims directly contradict the refinery’s 2012 decision to expand operations, which increased Marathon’s capacity by 17,000 barrels per day (Lynch, 2014), as well as the numerous air permit violations the refinery has incurred over the years (Brooker, 2024). In an attempt to diminish community resistance to their ongoing expansion, institutional denial has played a major role in Marathon’s communications strategy.

Naturalization of racism. Applying Bonilla-Silva’s (2014) colorblind theory of racism as a conceptual tool, we found that the naturalization of racism functioned as a salient practice guiding the school siting process. The naturalization of racism dynamic emerged when district and industry officials framed the entrenched racial disparities structuring school siting decisions as natural consequences of existing conditions, absolving themselves of complicity in reproducing environmental racism. In Houston, officials justified Chávez’s construction near HVPs by framing the project as part of a strategy to revitalize the predominantly low-income, Latinx community the school would serve. District leaders claimed the new school would help alleviate overcrowding at nearby campuses and enhance the community’s overall well-being. One of Chávez’s lead architects described the project as “being part of the overall rejuvenation of the East End ... the whole idea of new growth and new life in the community is healthy” (Farrell, as quoted in Reeves, 1993). By citing the neighborhood’s lack of quality school facilities as a key factor contributing to its poor environmental conditions, HISD diverted attention from the actual cause of the community’s health problems—the presence of multiple HVPs. Community activists repeatedly highlighted the racialized dynamic structuring HISD’s school siting policy,

emphasizing that Chávez was being built near environmental hazards at the same time that another school on Houston's west side was being constructed to serve a predominantly white student population, far away from known pollution sources. Juan Parras, founder of Unidas Contra Environmental Racism (UCER), later renamed Texas Environmental Justice Advocacy Series (t.e.j.a.s.), framed HISD's disregard for the health and safety of Latinx students as an act of systemic racism: If all the industry was on the west side of the community they would have raised cane [sic] about it and the school (Westside High School) would have been built somewhere else.

Our community did protest, but the school was built anyway. When the Hispanic community protests, they are not heard. It is like they are speaking in silence... Why should Latino kids take a risk when nobody else has to?" (Parras, as quoted in Perez, 2001). District officials responded by reiterating a commitment to protecting students' safety, but limited their responsibility to addressing learning environments inside school buildings. A spokesperson for HISD confirmed: "Safety is our number one core value at HISD and just because a community is located near industry, does not excuse the district from serving them with the same quality learning environment that other communities within HISD enjoy" (Gomez, as quoted in Perez, 2001). Ignoring the racially inequitable distribution of environmental hazards across Houston, the district's response implied that Latinx students' disproportionate exposure to pollution was an inevitable—and naturally occurring—phenomenon. By narrowly reframing safety as a matter of providing a high-quality learning environment while excluding consideration of environmental concerns caused by school siting decisions, district officials normalized environmental racism and explained away poor Latinx communities' disproportionate pollution risk as natural. Within the Detroit case, the naturalization of racism is demonstrated in the home buyout program and absence of school siting policy. First, though Boynton residents experienced the same level of environmental harm as residents of Oakwood Heights, Marathon initiated a home buyout program for Boynton eight years after a similar program in Oakwood Heights (Boyhtari, 2021).

This decision came only after sustained community organizing and increased pressure on Marathon. While Marathon took a race-evasive position, citing seemingly neutral reasons for offering a buyout program in one area but not another, this disparity did not go unnoticed. One Boynton resident observed that, "If a white community gets upset about something, people will respond, and they will get a response. As a Black community, we have never been able to get an attorney to represent us in anything we try to do to get after Marathon. They do not care" (Lockridge, as quoted in Lynch, 2014). Naturalization of racism is also evident at the local and state level. A report urging Michigan state leaders to adopt a school siting policy found that environmental quality did not play a role in school siting decisions for Michigan school superintendents (Mohai & Kweon, 2020). By failing to take actionable steps that acknowledge environmental quality as a particularly important factor, school officials continue to perpetuate harm by adopting a race-evasive approach to school siting.

Despite institutional attempts to normalize the impact of environmental racism, community activists have not forgotten about the children. As one resident stated, "In that neighborhood over the years, many people have died and continue dying from cancer; people have high asthma, high blood pressure, and a lot of health disparities. So the children need to be protected. The future of this community, 48217 zip code, is our children. Our children are precious" (Leonard, as quoted in Burtka, 2021).

Superficial Community Involvement. Superficial community involvement occurred when officials narrowed community engagement to the implications of predetermined decisions and attempted to pacify rather than address concerns raised by community members. In Houston, community input on Chávez High School's siting

occurred only after the district had selected and purchased the site for its construction and was restricted to aspects of the school's facility design (Markley, 1993). HISD used the promise of constructing Chávez as a political tool, initially conditioning its construction on the successful passage of a \$390 million school bond, which voters ultimately rejected. In response, one Meadowbrook community leader described the community's rejection of the bond as a vote against the district's credibility: "Had they (HISD) constructed Chavez High School with existing funds, there would have been no carrot to hold in front of the noses of people in the east end. They would have lost their leverage" (Ryan-White, as quoted in Thomson, 1996). After Chávez opened, district leaders superficially responded to community members' concerns about its proximity to high-volume polluters by creating an environmental science magnet program at the school. In partnership with the U.S. Fish and Wildlife Service and local industries—including the TPC Group, the nearby petrochemical corporation responsible for releasing dangerous amounts of butadiene—Chávez students began participating in wetlands cleanup projects "to restore the area behind Chávez High School to an ecologically sound learning environment for students" (Gabriel, 2002).

By framing the school's environmental science magnet program as "an environmentalist's dream-come-true," district leaders deflected community concerns by redirecting attention to a narrow set of solutions enacted through school programming and curriculum. One district official even told local activists that the environmental science magnet program would give Chávez students the tools to "address the issues that you care about" (Gibbons, 2022). In effect, HISD shifted responsibility for remediating pollution from industries and district leaders to students themselves, reflecting a neoliberal strategy of superficial engagement that created the appearance of community responsiveness while maintaining the basic structures of environmental racism. Similarly, superficial community involvement occurred in the Detroit case. For example, in 2020, Marathon agreed to implement several community outreach initiatives, which included installing a central air filtration system in the Mark Twain School for Scholars, funding a new STEAM lab at the school, creating an online platform to share air quality data around the refinery with the public, and a home buyout program in Southwest Detroit (Evans, 2021). In light of the refinery's uptick in community engagement, Marathon's director of community outreach explained that "giving back is important to Marathon Petroleum Company because one of our core values is to be a good neighbor to our surrounding community, and it's also something our employees really care about" (Lockhart, as quoted in Evans, 2021).

While the rhetoric behind Marathon's initiatives was veiled as genuine interest in giving back to the community, it was not lost on residents that these initiatives, in addition to the \$81,853 violation fine that the company received, resulted from ongoing community resistance which led to a consent order (Stebbins, 2020). Residents remained skeptical of Marathon's newfound interest in community involvement, with one resident sharing that "they still got away with what I call murder. They were able to negotiate the fine down—\$300,000 is nothing to the decades of damage that has been done. Look at all the profits they were able to give their shareholders over decades" (Landrum, as quoted in Stebbins, 2020). Superficial community involvement is a disingenuous strategy that allows powerful institutions to evade real accountability. Transferring the Mark Twain School for Scholars to an area known to be heavily polluted is just one example of how the lack of regulatory practices and policies in place allows institutions to act with impunity. An opportunity for collaboration with families was missed when school leaders failed to consider the worries of parents who "refused to send their children because of their concerns about pollution" (Leonard, as quoted in Burtka, 2021) once the school transferred to the Boynton neighborhood.

Significance and Implications. In the absence of policies protecting communities from environmental racism, district and industry officials in Houston and

Detroit justified the siting of K-12 schools dangerously close to HVPs. Drawing on concepts from critical spatial theory (Soja, 2010) and the colorblind theory of racism (Bonilla-Silva, 2014), our CPA of news media reports on two schools sited dangerously close to environmental hazards identified three strategies used by district officials, industry representatives, and other leaders to justify the reproduction of environmental racism: institutional denial, naturalization of racism, and superficial community involvement. While our analysis does not generate novel concepts (e.g., the naturalization of racism), we contribute to the research by illustrating how existing constructs can be applied to examine school siting processes and policies. In this way, this study synthesizes and utilizes established concepts to detail the inextricable link between school siting policy, environmental justice, and racism. Although the Houston and Detroit cases contextually differ in terms of the chronology of the siting of the HVP (i.e., in Houston, Chávez was sited close to an HVP, while in Detroit, an HVP was sited close to Mark Twain), both cases reveal how district and industry officials employed the same communication strategies. This suggests that the strategies of institutional denial, the naturalization of racism, and superficial community involvement hold regardless of the direction of the siting, further emphasizing the need for school siting policy to be crafted and implemented at the state level.

Our findings thus point to the need for state-level policies that center environmental planning in school siting decisions. In alignment with EPA recommendations, all states should ensure a minimum level of protection for students when districts make school siting decisions. For schools like Mark Twain and Chávez, which have already been sited in close proximity to HVPs, simply closing these campuses and displacing students should be avoided, as this approach risks reproducing spatial injustice (Tieken & Auldrige-Reveles, 2019). Instead, districts should rebuild schools like Twain and Chávez in locations that reduce students' exposure to environmental harm. However, because school districts like HISD and DPSCD rely primarily on local funding for school capital projects, they face disproportionate challenges in financing the construction and renovation of school facilities (Filardo, 2021).

To address this gap, federal lawmakers should establish a capital improvement program that targets grants and bond authority toward relocating fence-line schools to areas where students' health and well-being is protected. A template for this approach already exists in the Rebuild America's Schools Act of 2023, which would have established a need-based grant program to aid districts in facility improvements and the adoption of green practices in school construction. We also highlight the critical role of grassroots organizers in holding leaders accountable for remediating the impacts of pollution on children's health and achievement. In Houston and Detroit, heightened risks of pollution exposure at Chávez and Mark Twain only came to the fore because of local activists' decades-long persistence in drawing attention to the environmental racism that structures school siting decisions. District leaders would benefit from engaging community members' concerns before school siting decisions are made and fostering collaborative relationships with environmental groups to support student learning. Finally, we find that a neoliberal, race-evasive ideology not only guided the design and maintenance of school siting policies but also enforced a division between environmental and educational concerns in policy discussions. We therefore encourage researchers to continue examining how environmental racism structures educational opportunity, as achieving racial justice in education requires intentional efforts to abate the environmental harms that impact children's learning. By attending to policies such as school siting that lie at the nexus of education and the environment, scholars can better understand the unequal geography of opportunity that structures education and formulate interdisciplinary questions that speak to critical gaps and absences in policy and research.

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