

Article

Centering Community Perspectives to Advance Recognitional Justice for Sustainable Cities: Lessons from Urban Forest Practice

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Abstract: Cities worldwide are grappling with complex urban environmental injustices. While environmental justice as a concept has gained prominence in both academia and policy, operationalizing and implementing environmental justice principles and norms remains underexplored. Notably, less attention has been given to centering the perspectives and experiences of community-based actors operating at the grassroots level, who can inform and strengthen urban environmental justice practice. Through ethnographic, participant-as-observer methods, interviews, and geovisualizations, this study explores the perspectives, experiences, knowledge, and practices of community-based urban forest stewards in Philadelphia, Pennsylvania (United States) who are invested in addressing environmental injustices through urban tree-planting and stewardship. Interviewees were asked how they were addressing issues of distribution, procedure, and recognition in urban forest planning and practice, as well as the socio-political and institutional factors that have influenced their perspectives and practices. Particular attention is given to how urban forest stewards implement recognitional justice principles. Findings from this study exposed several complex socio-political challenges affecting steward engagement in community-led tree initiatives and the broader pursuit of environmental justice, including discriminatory urban planning practices, gentrification concerns, underrepresentation of Black and Latinx voices in decision-making, volunteer-based tree-planting models, and tree life cycle costs. Nevertheless, urban forest stewards remain dedicated to collective community-building to address environmental injustices and stress the importance of recognizing, listening to, dialoguing with, and validating the perspectives and experiences of their neighbors as essential to their process.

Keywords: environmental justice; urban forest; community-led stewardship; recognitional justice; Philadelphia; redlining; structural racism; gentrification; sustainability; representation; engagement

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1. Introduction

Cities around the world are grappling with complex sustainability issues and urban environmental injustices. Environmental injustices arise when racialized, low-income, and other marginalized groups are disproportionately burdened by environmental risks or hazards, and/or experience inequitable access to environmental goods or amenities [1,2]. For instance, studies have shown disparities in transportation access [3], exposure to poor air quality [4], extreme heat exposure [5], and lack of access to healthy food and urban greenspace [6,7], with racialized and low-income groups widely reported as being

disproportionately negatively impacted [8]. Other research has highlighted the inequitable engagement of residents within urban planning decision-making processes [9]. Present-day environmental injustices are often a result of discriminatory and racist procedures, policies, and practices of the past (e.g., redlining, urban renewal), as well as institutionalized and systemic racism built into decision-making systems, which impacts how certain groups are recognized or treated [10,11].

To address urban environmental injustices, researchers and practitioners have begun to adopt and use an environmental justice framework that contains distributional, procedural, and recognitional justice as its integral pillars [12]. Distributional injustice is concerned with whether groups are in proximity to an environmental hazard or amenity. It is the most studied component of environmental justice and the physical representation or manifestation of procedural and recognitional injustices [2]. Procedural injustice is concerned with rectifying unfairness, lack of transparency, and accessibility barriers within decision-making procedures that shape distributional outcomes [13,14]. Recognitional injustice, the least investigated pillar of the three, occurs when the identities, experiences, perspectives, knowledge, and values of disadvantaged or neglected groups are overlooked or excluded during the development of policies and practices that influence both procedural and distributional outcomes [15,16]. Environmental justice scholars argue that there is a need for giving greater attention to procedural and recognitional elements of injustice to strengthen opportunities for fair and meaningful influence over environmental conditions regardless of race, ethnicity, income, citizenship status, sex, or gender and to prevent further injustices [1,17].

Environmental justice as a concept has gained considerable traction in academia, and justice-oriented goals and principles are starting to become more commonplace across the strategic plans and policies of public, private, and non-profit stakeholders [18,19]. Yet, despite this trend, we are only beginning to see the emergence of meaningful and durable change, with little attention given to documenting how to translate environmental justice principles, rhetoric, and norms into action through operationalization, and/or implementation practices. The few existing studies have typically focused on the experiences of government and other actors operating within formalized institutionalized channels [20,21]. For example, research has explored whether and how government institutions [22] and non-profits [23] are incorporating principles of environmental justice into official policy and planning documents. Others have examined the factors that enable and constrain the ability of municipal governments and non-profits to actualize environmental justice goals in implementation practice [21]. Yet, less attention has been given to centering the perspectives and experiences of community-based actors, and how their insights, practices, values, and experiences may inform and strengthen urban environmental justice practices and outcomes [7,24].

Centering the perspectives and experiences of community-based actors, especially those who are disadvantaged and/or neglected, is essential to developing sustainable solutions to existing urban environmental injustices [25]. Community-based actors possess an in-depth understanding of local community needs because their networks and relationships are inherently embedded within the community, and because they can draw upon their own lived experiences [7]. Further, community-based actors can help governments and more formalized institutions overcome silos, given that their understandings of environmental injustices are not filtered through restrictive department or sector-specific mandates [17]. The everyday lived experiences of community members grappling with urban environmental injustices (e.g., food insecurity, poor housing quality, lack of access to greenspace) also involve navigating interconnected socio-political challenges like affordability, systemic racism, and other structural inequalities that have historically not been considered to fall within the domain of environmental policy and management [22]. Engaging community members can also bring other governance actors to the forefront of environmental justice actions who are not often considered to be part of environmental sustainability decision-making spaces

(e.g., immigrant settlement agencies, social service organizations, cultural groups, community housing groups) [7].

Accordingly, we consider what lessons can be learned for urban environmental justice practice by centering the perspectives of community-based actors who have experienced injustices and are working to overcome them. We focus specifically on urban forest management in Philadelphia, Pennsylvania, one of the largest, poorest, most diverse, and most environmentally polluted cities in the US [26]. Through ethnographic, participant-as-observer methods and interviews, we explore the perspectives, experiences, knowledge, and practices of community-based actors who are invested in addressing environmental injustices through urban tree planting and stewardship. Urban forests are critical components of green infrastructure that provide a multitude of socio-ecological benefits such as decreased psychological stress [27], moderated temperatures [28], and reduced stormwater runoff [29]. Yet, urban trees tend to be inequitably distributed across city neighborhoods, with white and affluent areas often having more [30,31]. In addition, several US cities, including Philadelphia, rely heavily on community-based actors, many of whom are volunteers, to plant and care for trees because of underfunded municipal parks departments [32,33]. We refer to these community-based actors as urban forest stewards (or stewards) throughout this paper. The specific objectives of this research are to (1) explore how urban forest stewards perceive and are actively addressing issues of distribution, procedure, and recognition within urban forest planning and practice, and (2) investigate the socio-political and institutional factors that have influenced their perspectives, experiences, knowledge, and community-based practices. We pay special attention to how these urban forest stewards are enacting principles of recognition justice within their practice. We end with a discussion of how both government and non-governmental actors can learn from these stewards who are enacting principles of recognition justice.

2. Methods

2.1. Study Site/Context: Philadelphia, Pennsylvania, United States

Philadelphia is located in the northeastern region of the US and was built in a densely forested region. Following European colonization, this area experienced deforestation to make way for extensive manufacturing, industrial activities, and agricultural land uses [34,35]. After the city's population peaked at 2 million in the 1950s–1960s, during post-industrialization, Philadelphia's population dropped to 1.5 million in 2000 and expanded to 1.6 million in 2020 [33,34,36,37]. The post-industrial population crash resulted in a reduced tax base and substantial cuts to public services, including a 66% reduction in park staff, and was coupled with federal urban renewal policies that demolished housing, resulting in large areas of vacant unmanaged lands in residential neighborhoods and parks that became overgrown [33,38]. In the 1970s, overgrown, unstewarded park spaces became a source of fear in the context of community–police conflict and economic decline [39]. Today, Philadelphia is the sixth-largest city in the US, with a diverse population that is a plurality of Black people with a substantial Hispanic or Latino minority [40] (see Table 1).

Table 1. The 2023 demographic data for Philadelphia, Pennsylvania with comparator data for all of the US [40].

City/ Country	Population	Population Density (persons/sq mile)	Black Persons (%)	White Persons (%)	Hispanic or Latino Persons (%)	Post-Secondary Education (%)	Annual Household Income (median USD)
Philadelphia	1,567,258	11,937	40.1	33.5	15.7	33.6	57,537
United States	333,271,411	94	13.6	58.9	19.1	34.3	75,149

In more recent years, redevelopment has raised gentrification concerns among scholars and activists, especially in historically Black and lower-income neighborhoods

[41–43]. Gentrification is an extension of white economic power where white people relocate to historically Black and other racialized and lower-income urban spaces [44]. This exercise of power is significant in cities such as Philadelphia, where white populations are the minority but are controlling economic interests [45,46]. The gentrification and displacement of racialized and low-income communities in Philadelphia, as well as other patterns of racial injustice (e.g., police brutality), is not new. For instance, during the 1960s and 1970s, urban renewal policies helped institutions such as the University of Pennsylvania and Drexel University clear out homes considered to be ‘slums’ in West Philadelphia to grow their campuses and create additional housing for faculty and staff [41]. In 1985, the City of Philadelphia authorized the dropping of a bomb on a house in West Philadelphia occupied by members of the MOVE organization—a predominantly Black group—killing 11 people (including 5 children), destroying 61 homes, and displacing nearly 250 residents [47].

There is considerable variation in building and land use types across Philadelphia that influences the distribution of trees, as well as where new trees can be planted. The city includes dense residential and commercial properties where yard space is limited or nonexistent, making street trees the primary form of urban tree cover. Philadelphia’s Center City is high-density, while outlying neighborhoods tend to be semi-suburban in character with larger yards, park space, and overall greater tree canopy cover [33]. Philadelphia Parks and Recreation (PPR) is the municipal department that has jurisdiction over street tree planting and removal permits and is responsible for street tree maintenance [48]. However, property owners in Philadelphia formally own the street trees adjacent to their parcels and are responsible for maintaining their sidewalks “in a safe condition” [48].

Municipal disinvestment in urban parks and tree care led to an increase in community-led tree-planting and stewardship initiatives [33,38]. In partnership with the Fairmount Park Conservancy, PPR created a yard tree giveaway program called TreePhilly in 2012 [49]. TreePhilly prioritizes creating partnerships with community-based organizations and volunteer groups in neighborhoods with fewer trees with the intention of increasing tree canopy cover in these areas. Figure 1 shows an example of a TreePhilly event. TreePhilly has a track record of achieving greater equity in tree distribution compared to other urban tree giveaway programs [50]. Since 2014, TreePhilly has given away approximately 700 yard trees during each fall and spring planting season [49].

The Pennsylvania Horticultural Society (PHS), a leading urban greening non-profit in the Philadelphia metropolitan area, offers a street tree-planting and stewardship program called Tree Tenders [51]. The Tree Tenders program was founded in 1993 in response to municipal budget cuts [33]. The Tree Tenders program has a mission to address inequities in tree canopy cover by prioritizing plantings in low canopy areas, with in-house geospatial analysis supporting this prioritization starting in 2017 [52]. This program trains residents on tree-planting and maintenance best practices, as well as strategies for community organizing and stewardship networking. PHS Tree Tenders provides free street trees to property owners who agree to care for them; the trees are approved by PPR arborists and planted by volunteers. Volunteers who successfully complete the Tree Tenders course become certified leaders and can form groups in their neighborhoods to plant street trees. These groups function semi-autonomously: PHS staff help group leaders with logistics (e.g., arranging for concrete removals, site assessments by arborists), whereas Tree Tenders leaders are responsible for community engagement, recruiting volunteers, tree planting, maintenance, and stewardship [53,54]. In the past five years, Tree Tenders groups in the City of Philadelphia have planted around 700–1350 street trees annually. Figure 2 shows an example of the process involved, from picking the trees up from a distribution center to planting them in street tree pits. Residents play a critical role in growing the urban forest through both the yard giveaway and street tree-planting programs.

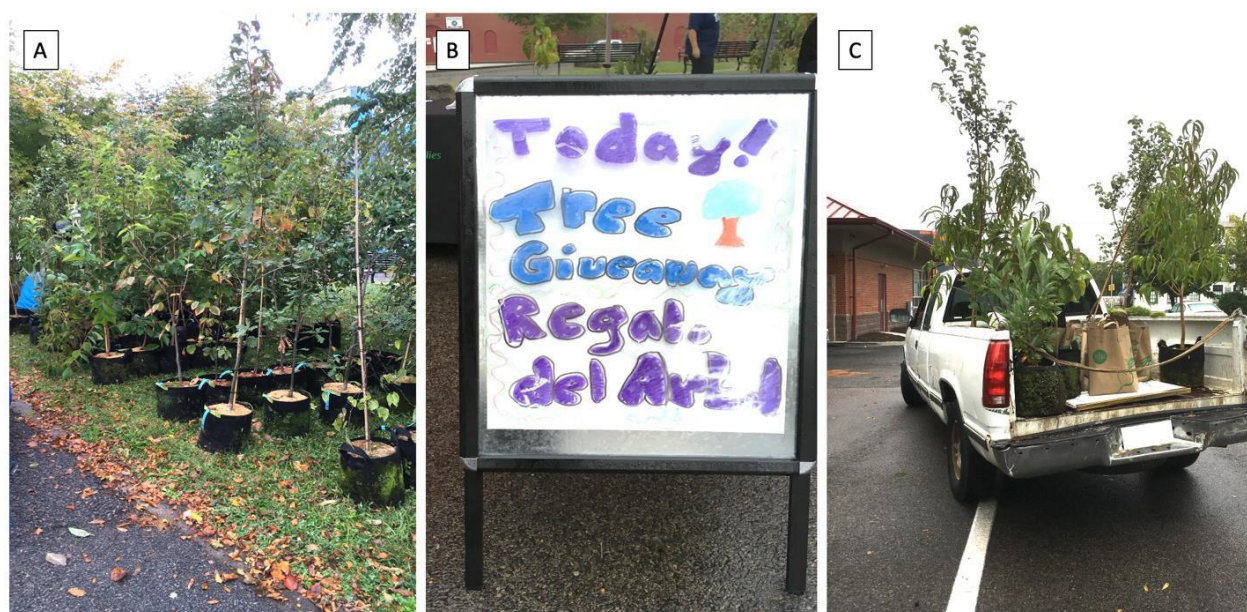


Figure 1. (A) Yard trees being given away at a community event. (B) A welcome sign introducing the giveaway event written in both English and Spanish. (C) A resident's truck with several yard trees from the event.



Figure 2. (A) Examples of bare root street trees being stored at a distribution center before community pick-up. The root systems of bare root trees are covered in hydrogel and then placed in bags to keep the roots moist until planting. (B) A resident's truck loaded with bare root street trees, stakes, and ties ready to be planted. (C) A row of street trees just planted by community urban forest stewards in Hunting Park, Philadelphia.

Importantly, PPR and PHS have made commitments to address environmental inequities. Beginning in late 2020, PPR hired the Hinge Collective, an urban planning and design firm focused on prioritizing equitable community engagement, to lead the process of developing the municipality's first urban forest strategic plan [55,56]. PPR released the Philly Tree Plan in 2023, which is intentionally focused on addressing urban forest-related environmental injustices in the city [48]. PHS, in collaboration with PPR, created a map

that identifies priority areas for tree planting at a street-level scale [57]. Local Tree Tenders groups are encouraged to use this map to prioritize their community outreach efforts on streets with fewer trees. The City of Philadelphia's Office of Sustainability also announced the release of a fund for grassroots community groups working to advance environmental justice [58]. PHS staff also have an ad hoc committee to address issues with green gentrification [52], they co-created a Spanish version of the Tree Tenders curriculum in 2018, and have a new green equity initiative that includes funding for workplace development in urban greening jobs [59].

2.2. Data Collection and Analysis

2.2.1. Participant-as-Observer, Interviews, and Positionality Statement from the First Author

To better understand the community-based urban forest stewardship work happening in Philadelphia, the first author of this study spent ten months between September 2019 and May 2022 participating in yard tree giveaways, street tree-planting events, invasive species removals, pruning clubs, and other community-based environmental events in Philadelphia (see Figure 3). An ethnographic, participant-as-observer approach is when the researcher becomes involved with the group that is being studied, and when the group is aware of the research activity [60]. This method was used to help establish trust between the researcher and the participants. The intention of being in community with the urban forest stewards was to reflect on the built/natural environment, how each event unfolded, and the interactions between community members. Field notes were taken after each event based on recollection to minimize disruption [60].

As the first author of this study, my social location (or positionality) influences and shapes my understanding and interpretations. I am a white, 31-year-old, English-speaking, queer, non-binary, first-generation student researcher from Canada who was raised in a low-income, working-class family with divorced parents who struggled with mental health and addiction issues. I embrace an embodied, feminist, postcolonial, and anti-racist approach to thinking through environmental injustices—such approaches value lived experiences and vulnerability [61]. Throughout the data collection process, I reflected on my social location and embodied knowledge to consider how I was taking up space and/or influencing the actions of others [60,62]. As someone who did not grow up in Philadelphia or the US, I lack a specific cultural and place-based understanding of local urban environmental inequities and lived experiences. I also recognize my power and privilege as a white researcher working within an institution and society that has and continues to oppress racialized communities [63]. I am actively engaged in continuous learning to challenge my own biases and assumptions (e.g., through readings, workshops, conversations with racialized environmental justice scholars and peers). Nonetheless, this work remains shaped by my positionality and lived experiences.

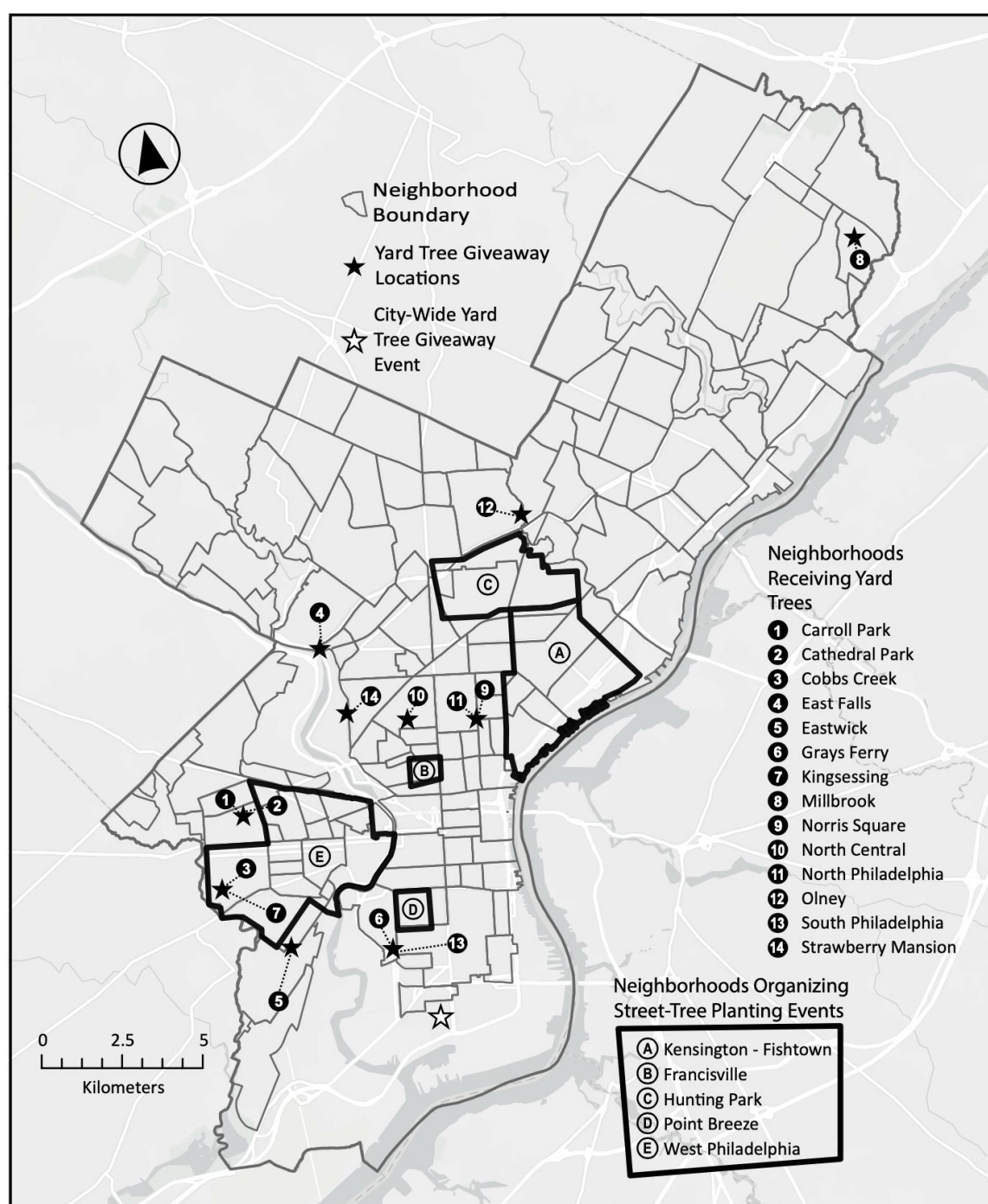


Figure 3. Locations of the neighborhood-based yard tree giveaways along with the neighborhoods receiving yard trees (association illustrated with dotted lines), the city-wide yard tree giveaway event (i.e., open to registrants from across the city), as well as the community-organized street tree-planting events [64] that the first author of this study attended and participated in.

Between October 2019 and May 2022, we recruited 23 urban forest stewards to participate in semi-structured key informant interviews. We used purposive and snowball sampling [65] to select participants who (1) were regarded as neighborhood leaders and were aware of local community needs and interests; (2) had knowledge of and/or experience with municipal and/or non-profit urban forest initiatives (e.g., TreePhilly, Tree Tenders); and (3) were involved in environmental justice activism and/or urban tree-planting and stewardship work in their neighborhoods. This involvement included planting street trees, giving away free yard trees, tree maintenance/stewardship (e.g.,

pruning, watering), invasive species removals, community engagement and outreach (e.g., canvassing, flyer, tabling at events), environmental justice advocacy and activism, and youth engagement and education.

Emphasis was placed on recruiting participants from neglected neighborhoods (i.e., those living in areas with fewer trees and/or those historically left out of urban forest-related decision-making processes). Of the 23 participants, 17 were racialized and 6 were white, 18 were women and 5 were men, and ages ranged from 20 to 70 years old, with most of the stewards in their early 30s to early 50s. The specific demographic details of individual participants whose statements are quoted are not provided for ethical reasons. However, future studies should use an intersectional approach to explore the unique experiences and perspectives of people with various intersecting identities.

The interviews conducted for this study were extensive, lasting between 60 and 180 minutes. All interviews were audio recorded and transcribed verbatim. Interviews explored the following: (1) how urban forest stewards were working to address tree-related environmental injustices in their neighborhood; (2) whether and how tree-planting and stewardship initiatives offered via the municipal government or through non-profit partners supported community efforts in addressing urban forest-related environmental injustices; and (3) the socio-political factors that influence community participation (see Appendix A for interview guide). Urban forest stewards received \$25 USD for their participation in the interviews. The first author's host institution ethics board approved this study in September 2019.

Interview transcripts and participant observation notes were analyzed thematically using NVivo 12 [66]. Meaning units and codes were derived deductively from relevant theories and concepts (e.g., environmental justice, racial capitalism, the neoliberalization of responsibility) and inductively to allow for new codes to emerge from the datasets [67]. To ensure the accuracy of the coding scheme and subsequent analysis, two coders engaged in an iterative coding process [68]. First, each researcher independently coded the dataset. Afterward, the researchers convened to deliberate on their interpretations of the identified themes. Any disagreements that arose during this process were resolved through discussions until a consensus was reached.

2.2.2. Redlining Geospatial Analysis

As part of our efforts to give greater recognition to important historical contexts in Philadelphia that shape prospects for environmentally just urban forest management, we investigated the legacy of redlining and its association with distributional inequities in tree cover using geospatial analysis. Redlining was a discriminatory and racist practice implemented by the Home Owners' Loan Corporation (HOLC), which was created and endorsed by the US federal government. Between 1935 and 1940, the HOLC used color-coded maps to grade residential neighborhoods across hundreds of US cities based on race, ethnicity, religion, socio-economic class, housing quality, proximity to industry, and recent rental and property value history [69]. The presence of immigrants, racialized, and low-income groups was viewed by appraisers as unfavorable, and therefore these neighborhoods were scored lower [70,71]. Grades were assigned on a scale of A through D, with class A areas colored green and considered the "best", class B areas colored blue and denoted as "still desirable", class C areas colored yellow and labeled as "declining", and class D areas colored red and characterized as "hazardous" [72].

Using a GIS and following methods similar to Grant et al. [21], we overlaid the HOLC residential security map classifications of A through D with US census block boundaries containing (1) the percentage of residents living in poverty; (2) the percent of persons of color; and (3) tree canopy cover [72–74]. In some instances, the geographic boundaries of the census block groups did not align with those of the historical HOLC security map classifications. Where this occurred, we assigned a HOLC security map classification to the block if over 50 percent of its area included a specific security map classification. In this paper, the percent of persons of color refers to the total population of a census block

minus the population of “white alone, non-Hispanic or Latino” individuals (i.e., those who responded “no, not Spanish/Hispanic/Latino” and who reported “white” as their only entry in the race category question in the US Census) [73]. The maps were used to investigate socio-economic and environmental disparities across different urban areas in Philadelphia using the historical HOLC map classifications. All three variable distributions, the percentage of residents living in poverty, the percentage of persons of color, and the percentage of tree canopy cover, did not meet the assumption of normality. Therefore, potential differences within each according to HOLC classifications were assessed using a non-parametric Kruskal–Wallis test [75]. In cases where a significant difference was identified, a post hoc Mann–Whitney U test was used to assess which specific HOLC classifications differed from each other.

3. Results

3.1. Historical and Present Injustices in Urban Planning Decisions

Several historical urban planning decisions have been negatively remembered by long-term Philadelphians. In many cases, those who had negative experiences with municipal service delivery or City institutions described feeling disenfranchised and/or having a lack of trust. Whether directly related to urban trees or not, historical practices have impacted residents’ willingness to agree to plant a tree in front of their home or in their yards. Long-term residents shared stories about when the City planted London planetrees (*Platanus × hispanica*) and neglected to properly care for them. A steward from North Philadelphia explained:

“They didn’t talk to arborists, they just planted these huge trees that messed up people’s sidewalks and pipes... They didn’t consult residents, and that’s why they [community members] are upset”.

Another steward from Centennial-Parkside added: *“People are not always interested in getting a free tree because they remember the London planes that were here and were eventually taken down”.*

Many participants discussed the impacts of redlining, neighborhood-level flooding, poorly funded public schools, the siting of noxious facilities in their neighborhood, the opioid crisis, and the over-policing of historically Black neighborhoods as underlying contributors to a lack of trust in municipal government and a history of systemic racism that functions on many levels. For example, an urban forest steward from Cobbs Creek (West Philadelphia) shared the following:

“We know now that trauma lives in your DNA, and they’re just generations of people that are born into distrust. Our schools are terrible. We had the MOVE bombing, which the City never dealt with properly. Policing is out of control. Cobbs Creek Parkway is deadly. This area was redlined, and even though redlining was outlawed, those practices are still there. Black peoples’ homes aren’t appraised for as much as white peoples’. All of this really adds to the disenfranchisement here”.

A different urban forest steward who volunteers in several neighborhoods but is based in Cobbs Creek shared similar feelings:

“For the people that I know here, there’s no trust... and I think it lingers into how people make their decisions. Why would I become Block Captain? Why would I attend City council meetings? Because you’re [the City] not going to do anything, you’re just going to hurt me. So why would I? Why would I plant a tree? They ain’t gon do shit to support me. They not gonna care. They might bulldoze me out of my home soon. And so why would I invest in you [the City] if you don’t invest in me? ... I still love this city to the core, and I believe in this city, but I don’t trust it”.

Urban forest stewards who were interviewed were acutely aware of inequities in tree distribution (see Figures 4 and 5) and how these interrelated with other historical injustices such as redlining. For instance, an urban forest steward from Hunting Park shared:

“This area was redlined. A lot of factories were built here, and the houses were built without thinking about greenspace or the health of the people living here. We are not only dealing with the fact that we don’t have trees, but that we also have so many different sources of contamination. We have junkyards, we have Burns [Recycling Center] right here, so there’s dust flying everywhere. We’re suffering from asthma; we’re suffering from skin conditions. There’s a lack of trees here to help filter the air... and this was done systematically”.

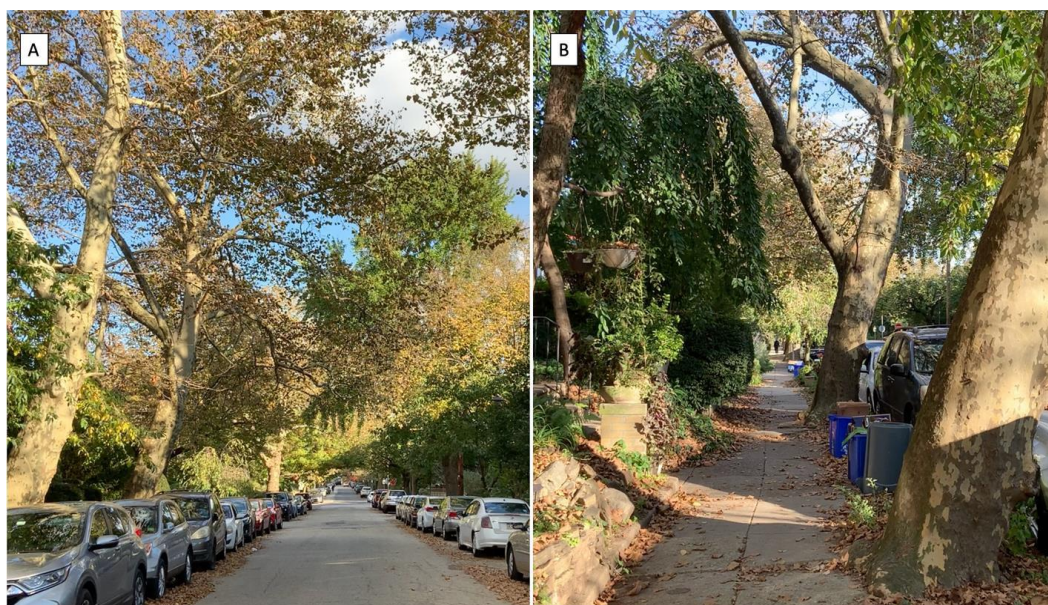


Figure 4. (A) Large London planetrees (*Platanus × hispanica*) cover a street and (B) sidewalk in Spruce Hill, a relatively affluent area of West Philadelphia.

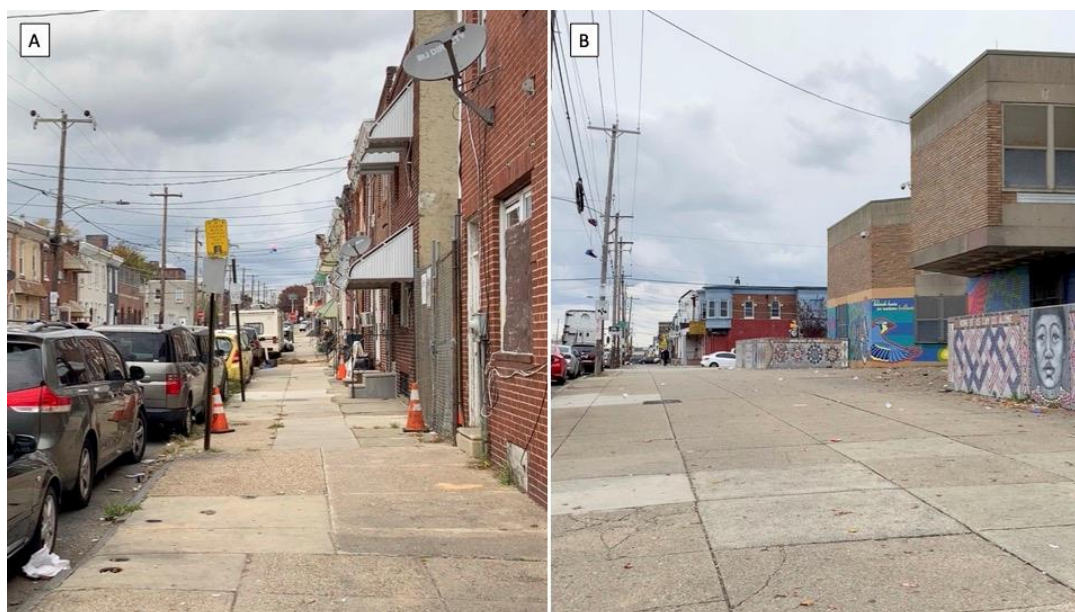


Figure 5. (A) A residential street and (B) sidewalk alongside an elementary school with few to no trees in Kensington, Philadelphia, a working-class neighborhood.

Despite feelings of disenfranchisement, several urban forest stewards described being invested in planting trees in their neighborhoods to strengthen recognitional justice and awareness about environmental distributional inequities (e.g., extreme heat, the siting of toxic waste facilities, neighborhood-level flooding, the opioid crisis). For example, PhillyThrive, a group of community organizers whose work led to the permanent closure of the Philadelphia Energy Solutions (PES) oil refinery in South Philadelphia, partnered with TreePhilly to give free trees away to local community members in Grays Ferry and within the 19145 ZIP code and to promote their “Contesting for Closure” (or “Right to Breathe”) campaign (see Figure 6 for campaign materials).



Figure 6. (A) Promotional materials for PhillyThrive’s tree giveaway event (partnered with TreePhilly) in Grays Ferry and (B) campaign materials for PhillyThrive’s “Contesting for Closure” or “Right to Breathe” campaign—a community-organized environmental justice campaign aimed at demanding recognitional justice and shutting down the PES oil refinery.

3.2. Redlining and Distributional Justice in Philadelphia

Our investigation into the socio-economic and environmental disparities across different urban areas utilized the historical HOLC map classifications as a basis for analysis. Table 2 shows the average values of US census variables for areas designated by HOLC residential security map classifications. Employing a Kruskal–Wallis test, we discerned a statistically significant variance in poverty levels across the HOLC categories, with a notable $\chi^2(3)$ value of 97.77 ($p < 0.001$). Subsequent detailed analysis through a post hoc Mann–Whitney U test revealed distinct disparities in poverty incidence based on these classifications, revealing that areas designated as A (“best”) exhibited significantly lower poverty rates compared to HOLC categories B, C, and D (“hazardous”), with the latter being 2.5 times more likely to house individuals living in poverty. Further, our exploration extended to demographic composition, showing a significant differentiation in the distribution of persons of color among these classifications, evidenced by a $\chi^2(3)$ value of 14.17 ($p = 0.003$), specifically highlighting a disparity between the C and D categories. There was little difference in the proportion of inhabitants identifying as a person of color in HOLC classifications A and B. The environmental dimension, assessed through tree canopy cover, also mirrored this pattern of inequality, with a $\chi^2(3)$ of 54.63 (p

< 0.001), showing a pronounced gradient in canopy cover favoring A-classified areas (almost three times more tree canopy than other HOLC classes) (see Figure 7).

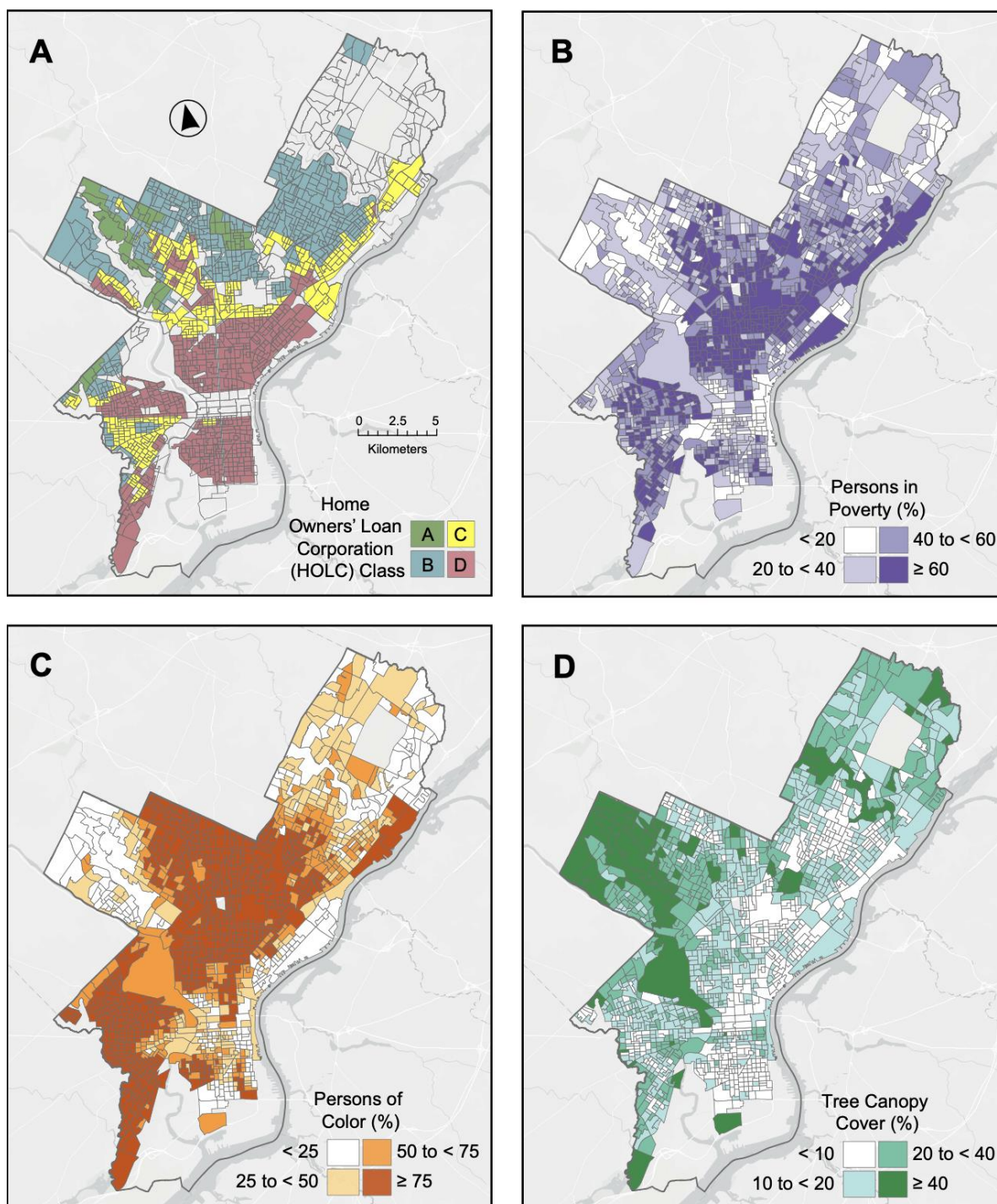


Figure 7. Philadelphia, Pennsylvania maps of (A) historical HOLC neighborhood classification and present-day census blocks with distribution of percent, (B) persons in poverty, (C) persons of color (all people who are not white, non-Hispanic), and (D) tree canopy cover [72–74].

Table 2. Median and interquartile range (IQR) for percent of persons living in poverty, percent of persons of color, and percent of tree canopy cover for each of Home Owner’s Loan Corporation (HOLC) classifications A through D in Philadelphia [72–74].

HOLC Class	Persons Living in Poverty (%) median (IQR)	Persons of Color (%) median (IQR)	Tree Canopy Cover (%) median (IQR)
A (“Best”)	20.0 (20.0 to 40.0)	81.4 (41.1 to 95.0)	39.0 (20.0 to 51.0)
B (“Still Desirable”)	40.0 (30.0 to 60.0)	84.1 (49.9 to 97.9)	14.0 (9.0 to 21.0)
C (“Declining”)	60.0 (40.0 to 70.0)	91.4 (61.2 to 98.3)	14.0 (10.0 to 22.0)
D (“Hazardous”)	50.0 (40.0 to 70.0)	80.0 (43.8 to 96.4)	12.0 (8.0 to 18.0)

3.3. Concerns about Gentrification and Displacement

Some stewards mentioned that when they spoke to their neighbors about the potential of receiving a free street or yard tree, they were met with opposition because residents feared gentrification and subsequent displacement. Some shared stories about how after volunteers planted street trees for homeowners who had agreed to receive them, other residents came to remove them in fear of potential gentrification. An urban forest steward from West Philadelphia explained the following:

“For some people here there’s this thought that oh, we’re talking about trees, and you want to line the street with trees and so you’re getting this area ready for folks who have never been here because you didn’t care about it all this time and now you do? So, there’s a huge conversation around trees being the soft sign of coming gentrification. So, I am navigating conversations where I have to be aware and responsible for how I present information. I get a lot of side eyes like, here we go, tell me anything, I know it means gentrification”.

In response to green gentrification concerns raised by residents, urban forest stewards reiterated the importance of listening to their neighbors and not forcing trees onto those who do not want them.

“I spend a lot of time making sure that folks are aware of having free street trees. But it’s for the residents to determine and prioritize... You know, like, whatever you want, if you don’t want a tree, that’s fine. Maybe we can talk about other greening options? No? You think it all means gentrification? Ok, maybe we’ll talk next year, that’s okay, but I’m not gonna force anyone”—an urban forest steward from West Philadelphia.

Some urban forest stewards expressed struggles about participating in certain street tree-planting events themselves because they were also concerned about gentrification. An urban forest steward who volunteers in several neighborhoods but is based in Cobbs Creek (West Philadelphia) shared a story about when they were invited to plant street trees in Fishtown, a neighborhood north of the central business district that is rapidly gentrifying. They said the following:

“I can’t plant trees there—a neighborhood where all the trees we planted were for folks who just got here. And I hate to be like that, I want anybody to come to this city and feel welcomed... But y’all just got here. And you get the tree? And you’re raising taxes and everything on your neighbor who can’t afford it? You’re actively pushing people out.... And it’s really hard because you know it’s right [to plant trees]. But how can it be better?”.

Urban forest stewards from Hunting Park, a predominantly Hispanic and Black neighborhood, are working on solutions to protect their neighborhood from gentrification and subsequent displacement. One proposed solution was to implement a land trust model, which is known for helping to preserve long-term affordable housing, increasing residency lengths, and preventing displacement of long-term residents. An urban forest steward involved in a community-based Latinx non-profit organization shared:

“We are working on a Land Trust Model to protect Hunting Park from gentrification. Our model is unique in that we’re thinking about a rental land trust because we want to

keep the neighborhood affordable for years to come. We're working on acquiring some land and some properties to get that going. It's a big project, but we want to be prepared".

3.4. Whiteness in Urban Forestry and Under-Recognition of Black and Latinx Experiences, Perspectives, and Bodies

Several urban forest stewards who self-identified as Black, Hispanic, and/or Latinx raised concerns about their communities being under-engaged, under-informed, and/or left out of planning and decision-making processes surrounding urban trees and environmental management more broadly. An urban forest steward from Hunting Park shared:

"I think sometimes people think that the Hispanic community is not interested in greening or in environmental work. But what happens many times is that they're not aware. Because there's a lot of barriers. Whether that is the information is not getting to them, or the information is not accessible, it's not bilingual, it's not in their language or that no one is reaching out to that population".

A different urban forest steward from North Philadelphia shared reflections about how Latinx experiences and/or relationships to nature are not often recognized. They said the following:

"Climate change and urban forestry have a very white face despite these [Latino] communities doing a lot of work... Latinos often view the environment as something sacred and special, but their experiences and the way they view their relationship with nature is not highlighted because people aren't coming into these neighborhoods to talk about this or to amplify their experiences".

Recognizing community needs, urban forest stewards from Spanish-speaking neighborhoods hand out print resources in both English and Spanish to better share information and resources about tree species, tree benefits/burdens, and stewardship practices (see Figure 8 for a Spanish example). These stewards also ensure there are bilingual stewards available at tree giveaways and street tree plantings. Some Hispanic or Latinx-serving organizations, such as Esperanza and Impact, have also partnered with PHS to offer the Tree Tenders course in both Spanish and English.

Many urban forest stewards participate in city-wide meetings about neighborhood tree-planting events. These stewards emphasized the underrepresentation of marginalized groups within these meetings as well as broader planning, policy, and decision-making processes in Philadelphia. An urban forest steward from West Philadelphia shared:

"I have never been the "only one of" in more meetings than in my time as [an urban forest steward]—like the only woman, the only person of color, the only Black person... And so, I'm acutely aware of that and I think that kind of mirrors the absence of folks that are impacted by a lot of environmental decisions in the city."

Another from Overbrook Park added:

"There are too many white people. There should be more representation from people of color, people from different cultures, people from other countries. Those voices should be there. It's too white".

Another urban forest steward from East Mount Airy added:

"It's not out of the realm of possibility to conceive of areas being prioritized [for planting] because they are white. Racism isn't always about being against other people, it's also being for the people who are like you. If the people in power are white and live in neighborhoods with white people, that's where they focus on. It's very real for people to gravitate to who they relate to best, and even if you look at the [urban forest] meetings we have, how many Black people or people of color are there? It's hard to fix that, and I

feel torn sometimes about who has the responsibility to fix that. But if it's city-funded, they have a responsibility to be equitable".



Figure 8. An example of literature written in Spanish handed out to residents at a tree giveaway event (community-led, in partnership with TreePhilly) in North Philadelphia.

Several urban forest stewards noted that gentrifying and historically Black neighborhoods (i.e., neighborhoods with a growing number of white and affluent residents) tended to have a more active and engaged volunteer base. These neighborhood steward groups were comprised mostly of white stewards who were comfortable putting out city-wide calls searching for volunteers to help with larger-scale street-tree-planting events (see Figure 9 for example). On the contrary, urban forest steward groups in historically Black neighborhoods run by long-term Black residents tended to rely on volunteers from their immediate neighborhood group rather than looking for volunteers elsewhere. Some urban forest stewards further expressed concerns about how systemic racial and economic inequalities manifest in tree-planting practices, even if well intended. For instance, in reference to a volunteer tree-planting event in Fishtown, an urban forest steward who is based out of Cobbs Creek shared the following:

"At that event, I was not happy. For me as a Black woman walking into a space to do something I feel good about, but then I see no other Black people, and not just seeing no other Black people, I'm not even servicing any other Black or Brown people? I'm not serving anybody who looks like me? Who has been treated like me in this city or in this country or in this world? I see nothing but a sea of white and it's like... ok, you want me to do labor? What? What is this? Like, I'm not enjoying this".



Figure 9. Some urban forest stewards teach a group of predominantly white volunteers how to plant a bare root tree in a tree pit on a residential street in Point Breeze, Philadelphia—a predominantly Black neighborhood that is rapidly gentrifying.

3.5. Access and Affordability Challenges of Tree-Planting and Stewardship Initiatives

While many urban forest stewards expressed gratitude for having the experience of planting and caring for a tree, meeting their neighbors, and feeling as though they are contributing to something meaningful, several stewards expressed concerns about the predominantly volunteer-based model and the time, energy, and resources needed for greening. For instance, an urban forest steward from Passyunk Square in South Philadelphia shared:

“I can afford to do this... I think about that a lot, in terms of what I take on, and what I model as what feels reasonable for a volunteer to do... Because I wouldn’t be able to do this if I had a full-time job... And it’s a lot, what’s expected of us... sometimes it’s unrealistic or it’s very vague in terms of what we need to be taking care of and what we are responsible for, and that can feel very overwhelming. Organizing is about relationship building, which to do that well you need to be consistent. It’s a lot of work”.

Several commented that they were exhausted and wished the city would invest in a tree-planting and maintenance program that did not rely on volunteers. For example, a steward from Point Breeze said the following:

“While I greatly appreciate the work that PHS has done for so many years, there are things that they [PHS] and its volunteers cannot address alone. There are things that the City needs to solve—for example, the problem of liability... The City should be maintaining its infrastructure, and trees should be viewed as infrastructure. In an ideal world, there is a program where trees are planted and cared for by the City”.

Another urban forest steward from Cobbs Creek echoed this point:

“I personally can’t do this work beyond my block because I am trying to avoid exhaustion... We’re doing work that really the City could find money for...”

Still, many appreciated the community-building aspect of engaging in tree planting and care work. Some participants also emphasized that when a community is involved in planting a tree, they end up taking care of it, as well as other trees in their neighborhood, which in turn helps with tree survival. However, not all neighborhoods are able to participate in tree-planting and care activities equally due to time and resource constraints. An urban forest steward from North Philadelphia explained:

“It’s easier for the old ladies and friend groups from more affluent neighborhoods to prioritize tree planting than people in other neighborhoods who would be willing to do this for free. It’s something that we really struggle with because we’re in a neighborhood where people are in survival mode”.

Many urban forest stewards mentioned that part of their community engagement process involved providing their neighbors with information about the benefits of urban trees. Yet, some stewards stressed the real issue is neighbors are concerned about the costs associated with the lifecycle of a tree. For instance, an urban forest steward from West Philadelphia shared:

“I hear this a lot, like we’ve got to make the case for the trees, we’ve got to tell people why trees are beneficial. Folks understand why trees are beneficial. There is financial risk, though, in taking on that benefit”.

Another steward from East Mount Airy added:

“Trees are not cost-free. The City doesn’t take care of them... I tell people, well, by the time this tree is big enough to be a problem, you’re not going to be here, but they don’t want to hear it. They say, “It’s going to push up my sidewalk” or “Who’s going to pay for it when it needs to come down?”.

Some stewards also noted that their neighbors were unwilling to plant a tree in their yard because of other burdens or disservices associated with them (e.g., leaf litter, unwanted wildlife).

TreePhilly is motivated to increase tree cover in neighborhoods with fewer trees and therefore prioritizes partnerships with community groups based in low-canopy neighborhoods to deliver tree giveaway programs. Yet, some urban forest stewards were concerned with where the free yard trees were being planted after giveaway events. One steward from Germantown shared:

“I was kind of disappointed to find out that most of the trees were going to people that didn’t live in our neighborhood... most of the trees left, only about 33% stayed here”.

Other stewards from lower canopy neighborhoods questioned whether the yard tree giveaway program was appropriate for them. Some suggested that investing more resources into street tree planting may be more effective in areas where there is minimal private yard space and an abundance of paved surfaces. Stewards highlighted the importance of recognizing, listening, and proactively thinking through neighborhood needs. An urban forest steward from West Philadelphia shared:

“If you’re promoting trees to a catchment or a community where 30% of the blocks in that community can even qualify for a tree, it’s like you’re not really talking to me, you’re talking at me”.

3.6. Recognition Justice in Building Community for Growing Environmentally Just Urban Forests

Urban forest stewards situate their tree-planting and stewardship efforts within the context of what is important to community members. Notably, the stewards stressed the importance of meaningfully connecting with their neighbors and creating space for each other to voice and gain recognition of their concerns, values, experiences, preferences, and perspectives surrounding trees. One steward from West Philadelphia noted:

“There is enthusiasm around being engaged with trees in our neighborhood—but that engagement is not like “hey, will you plant a tree?” instead, it’s like “hey, let’s talk about trees”. Because people want to voice their grievances. People have stories like, I love trees, but the City did this and the City did that. And so, we need to start there. We need to hear those stories and learn about how people are feeling before we can move forward”.

Creating space for dialogue and deep listening was a recurring theme among the interview participants. An urban forest steward based in Eastwick stated:

“Real progress takes time if you’re focused on equity. The process needs to go both ways. It’s not just us educating someone else as if we know everything. It’s a two-way street. We need to listen to our neighbors too”.

Several participants noted low digital literacy rates in their neighborhoods and commented on how this influences the outreach strategies they use. For example, one urban forest steward from North Philadelphia shared: *“we have a high-touch, low-tech approach, meaning that we’re more on the ground through flyer-ing and canvassing”.* Others commented on the creative community-based outreach strategies they use such as writing positive tree stories for the local neighborhood newspaper and having grocery store employees announce the dates, times, and locations of tree giveaways and street tree-planting events.

Most urban forest stewards stressed the importance of establishing or building trust and credibility when engaging with community members about trees. Several stewards highlighted the importance of representation when conducting outreach, especially with regard to race, class, and length of time spent living in a neighborhood. For example, a steward based in Brewerytown/Strawberry Mansion shared:

“You can’t just show up expecting to help out in a neighborhood because it is poor and because you want to feel better. You need to build connections. I talk to my neighbors about what it is like living here, I clean up the sidewalk, I say hello at the bus stop... It’s important to people who live here that volunteers are born in Philly, that their parents are from here, that they are people of color... It’s the credibility you need”.

4. Discussion

Over the past several years, the concept of environmental justice has gained considerable traction in urban forestry [25,76], with the notion of ‘tree equity’ being a major focus of federal and philanthropic funding [77–79]. Justice-oriented goals and practices are also becoming increasingly commonplace within official urban forest plans

and policies [48,80,81]. This is reflective of similar trends unfolding more broadly across other domains of social and environmental sustainability, including those related to food systems, housing, transit, and parks and greenspace access [1,22,82]. Existing research argues that strengthening procedural and recognition justice in environmental governance and public engagement processes is critical to advancing urban sustainability and addressing environmental inequities [12,25]. Yet, despite these trends, there has been little focus on how to effectively translate environmental justice principles, rhetoric, and norms into actionable goals for implementation and operationalization. In particular, little emphasis has been placed on centering the perspectives and experiences of community-based actors and how their insights, practices, values, and experiences may inform new approaches to addressing urban environmental injustices [7,24]. In urban forestry, most research has centered on government and other actors operating within established institutional frameworks and the factors that facilitate or hinder their ability to identify and implement environmental justice [20,21]. To date, few studies focused on environmental justice in urban greening have highlighted the perspectives and experiences of community residents from neighborhoods with few trees (see: [83,84]).

Our research addresses this gap and contributes more broadly to scholarship on urban environmental justice by (1) centering the perspectives and experiences of community-based actors who are actively working to address local environmental injustices; and (2) exploring how community-based perspectives are essential to strengthening recognition justice in environmental governance and management practice. Specifically, we explore lessons learned from urban forest stewards and how they are working collectively to advance environmental justice in their neighborhoods, with special attention placed on recognition justice, which includes a need for widespread acknowledgment of unjust histories and contemporary circumstances, and genuine investment in building relationships, dialogue, and trust with neglected communities.

Trust is an essential component of relationship building, strengthening community engagement, and advancing urban tree-planting goals. Research has shown that if trees are not properly maintained, it can give the impression that the local government is unable to care for future trees, which can lead to distrust among residents and thus resistance to tree planting [83]. Our findings highlight the many different types of unjust events and/or practices that have cumulatively impacted resident trust, many of which have little or nothing to do with trees (e.g., redlining, the siting of hazardous facilities, localized flooding, over-policing of Black neighborhoods, poorly funded public schools), in addition to the removal of trees from neighborhoods that could not afford to care for them. Our findings are consistent with other work based in Philadelphia that found community mistrust in local government to be a significant barrier to tree planting [85]. For urban foresters (e.g., arborists, urban planners, ecologists, decision-makers) seeking to strengthen trust with community residents, our research suggests that it is essential to take time to recognize, reflect on, and take accountability for the environmentally unjust and racist events and practices that have impacted community trust. Importantly, municipal foresters in Philadelphia have outlined some strategies for how to do so (e.g., developing a proactive maintenance cycle for public trees, improving communication with residents, and hiring community organizers) [48]. Future research should explore the impact of such strategies in Philadelphia and other cities around the world on community trust and willingness to plant and care for future trees.

Our findings underscore the intricate interplay between racial capitalism and gentrification, where processes of racialization are central to how urban space is occupied, shared, and constructed [44,86]. Policies and practices such as historic redlining, urban renewal, and, more recently, gentrification, are not racially neutral. They maintain racialized populations as the underclass who are neglected and tied to disinvested urban spaces (e.g., poor housing, poor infrastructure) [87,88] while normalizing investment in white and affluent communities. In this process, Black and racialized people are unrecognized and devalued as humans [89]. Without proper anti-displacement policies,

long-term Black residents may contribute to upscaling neighborhoods not for themselves and their own sovereignty, but to facilitate capitalist accumulation in the form of increased property values [89]. Put simply, white newcomers (gentrifiers) may reap the benefits of urban greening while long-term Black and Brown residents endure its negative consequences. Certain city policies increase the likelihood of gentrification and displacement. For example, Philadelphia's 10-year tax abatement program has been shown to speed up gentrification processes by exempting developers and homeowners from paying taxes on new construction and renovation projects for ten years [90]. Our findings emphasize the need for greater collaboration between municipal government, urban foresters, relevant non-profit groups, community activists, and housing organizations to co-develop anti-displacement policies and practices, like community land trusts [91,92], such as the one being explored in Hunting Park. Still, there remains a need for giving greater consideration to how different city policies and strategic plans influence how patterns of urban (re)development, racial capitalism, and environmental justice play out, in addition to the significance of other key contextual factors (e.g., size of community, existing infrastructure, socio-demographics/diversity, existing tree canopy/ecosystem health, government resources) that can differ greatly across cities. While this study explored Philadelphia in great depth, future research should focus on comparative analysis across diverse (sub)urban contexts to further examine the degree to which our findings hold up in other places.

Many urban forest stewards deeply appreciate the experience of community street tree planting and recognize the many benefits of urban trees. Several described positive experiences of building community with their neighbors and felt as though they were contributing to something significant. Yet, at the same time, some raised concerns about the predominantly volunteer-based street tree-planting model, noting that the responsibilities and workload can be overwhelming. Tensions or contradicting arguments about the transformative power of community stewardship and the neoliberal downloading of responsibility from the state to community actors are not new to (or confined to) urban greening research or practice [93,94]. Under a neoliberal approach to environmental management, uneven power dynamics can emerge, and additional burdens may be placed on groups already experiencing socio-economic and environmental inequities, which can undermine environmental justice further [95,96]. Gentrifying neighborhoods with lower canopy and/or those with a growing number of white and affluent residents tended to have more active and robust volunteer steward groups in comparison to historically Black, low-canopy neighborhoods that were not yet gentrified. Urban steward groups based in more white and affluent neighborhoods were able to tap into broader networks by putting out city-wide calls for volunteers (e.g., via email channels, university student groups) often inviting anyone from outside the neighborhood to participate in tree plantings. These callouts are a result of need—more white and affluent neighborhoods often secured a higher number of tree applications from homeowners who were willing to accept a street tree, and therefore required more volunteers to plant those trees. These patterns highlight the structural inequities embedded within a street-tree-planting program that both relies on volunteers and places the responsibility and liability of sidewalk maintenance onto homeowners. Existing distributional inequities in both tree cover and community engagement may widen if over-resourced neighborhoods are able to participate more than under-resourced neighborhoods [97]. Implementing community land trusts, providing cash honorariums to volunteers, creating more paid positions for stewards, and subsidizing and/or absorbing tree maintenance costs may help to reduce the consequences of a neoliberal approach [48,91].

Urban forest stewards also shared concerns about the under-engagement and underrepresentation of Black and Latinx communities in decision-making processes related to urban trees. Aligning with Nesbitt et al. [76] and Campbell et al. [25], we suggest that strengthening procedural and recognition justice in municipal engagement

processes is critical to advancing environmental justice. For example, PPR (via the Hinge Collective) ran a comprehensive community engagement process for the Philly Tree Plan that utilized creative outreach strategies (e.g., virtual self-guided presentations about redlining, neighborhood ambassadors, photo challenges) and was centered around the principles of environmental justice and equity [98]. In another example, the City Plants program in Los Angeles, California invested in a paid Tree Ambassador or Promotor Forestal program where trusted local community members are hired to advance tree stewardship in their communities [99].

Strengthening recognitional justice requires challenging the role of whiteness within urban forestry; whiteness is a process that prioritizes white experiences and values over those of racialized people [10,100]. Urban forestry as a field of practice has documented challenges with racial diversification [101], which creates tensions given the diverse urban populations served by this profession. While some urban forestry advocacy organizations have recently supported equity-centered workforce development [102], there is still a great need to diversify hiring practices within urban forestry and invest more resources into recruitment and training, as well as broader community engagement efforts, especially within historically Black, Hispanic, and/or Latinx neighborhoods. Other work has pointed to the importance of adopting anti-racist and anti-colonial approaches to community engagement in urban greening [100,103]. Such approaches aim to challenge white conceptions of “nature”, seek out multiple ways of knowing, and revise municipal policies that have harmed disadvantaged and neglected groups [100].

Despite the range of challenges that were identified, urban forest stewards in Philadelphia remained largely hopeful and dedicated to greening their neighborhoods and advancing environmental justice. While all three pillars of environmental justice were important to urban forest stewards, they notably embraced principles of recognitional justice within their practice. This is important to highlight since recognitional justice is particularly lacking in urban forest planning and practice. Stewards emphasized the importance of being in dialogue with their neighbors as well as listening to, validating, and creating space for their values, experiences, perspectives, and knowledge. They also emphasized that listening to each other takes time and commitment in order to build credibility and trust.

Campbell et al. [25] point to a community-centered approach that prioritizes historically neglected and disadvantaged communities and amplifies their perspectives and experiences by supporting existing stewardship efforts on the ground, expanding community organizing to build coalitions for justice, and reimagining the role of the urban forest. Grant et al. [80] suggest adopting an equity-focused approach to knowledge translation, where power dynamics are acknowledged and challenged among stakeholders, and where transparency and humility become integral in communications between urban foresters and community-based actors. That study also provided a conceptual diagram of the three pillars of environmental justice (i.e., distribution, procedure, recognition) and includes prompting questions for each pillar that are relevant to urban foresters. Building on Grant et al. [80], we recreated this diagram to include prompting questions that could also be relevant to community-based actors, as well as urban foresters who are seeking to learn about the contributions of stewards and community residents more broadly (see Figure 10). We believe that these prompting questions may help facilitate a deeper understanding of how urban forest stewards are enacting environmental justice in their neighborhoods.

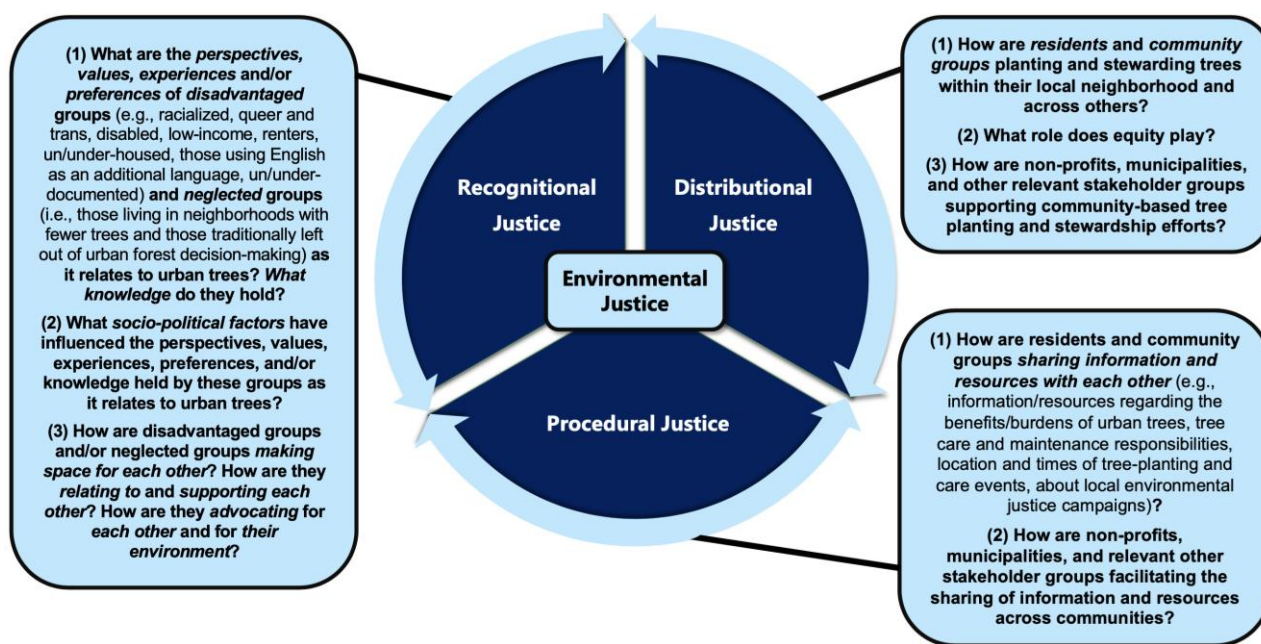


Figure 10. Conceptual diagram of the three pillars of environmental justice theory and prompting questions to apply each pillar to urban forest planning and practice. The prompting questions intended to guide reflections for urban foresters, community-based urban forest stewards, and urban residents more broadly.

5. Conclusions

This research explored the perspectives of community-based urban forest stewards in Philadelphia who were involved in community tree planting and/or environmental justice activism. We sought to gather insights about how these stewards were pursuing distributional, procedural, and recognitional environmental justice within the specific context of urban forest planning and practice.

While our research focused specifically on urban forest planning and practice in Philadelphia, the findings from our study offer valuable lessons for sustainability in cities globally—particularly those that are grappling with how to address complex urban environmental injustices. We emphasize the importance of building relationships and establishing trust with community members, especially those who are disadvantaged and/or have been neglected, to begin addressing urban environmental injustices. The process of establishing trust starts with environmental governance actors (e.g., municipal planners, non-profit staff) acknowledging the historical, systemic, and structural inequalities that have shaped current policies and practices, and therefore the perspectives and lived experiences of community members (regardless of whether these factors appear to have anything directly related to trees or the issue at focus or not). This process requires relevant governance actors to reflect on, identify, and revise or replace current policies and practices that could (re)produce injustices.

Trainings or (self)education events rooted in anti-racist, anti-colonial, and anti-oppressive thinking can help environmental governance actors imagine more sustainable and just futures, and support in the process of building trust with communities. Engaging racialized community advocates and hiring them into influential positions or decision-making roles will help address whiteness and the lack of diversity among environmental organizations and across the environmental sector. We believe these lessons extend beyond urban forestry and may help to address current and/or reduce future inequities in other areas of environmental sustainability or city planning (e.g., food insecurity, housing unaffordability, transportation inequities, park and greenspace access). Considering that recognitional justice is specifically lacking in urban environmental management, and given the localized nature of city planning, environmental governance

actors in other cities should consider turning to community-based actors who are working to address local injustices and compensate them for their time and insights to further inform the development of context-specific implementation strategies to collectively move toward more just and sustainable cities.

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Appendix A

- A. Contextual, individual/organizational, and neighborhood questions:
 - (1) Please state your name and organization/group name.
 - (2) What is your personal motivation to engage in urban forest stewardship and/or your broader organizational function or mandate?
 - (3) What role do you play in the urban forest community in Philadelphia?
 - (4) If you are part of an organization, what role do you play within it? How long have you been with your organization?
 - (5) How do you feel about your neighborhood? How do you feel about the number of trees in your neighborhood? Could there be more trees in your neighborhood?
- B. Where are trees planted, where will they be planted and how are they cared for:
 - (6) Are you involved in tree planting and stewardship? What role do you play?
 - (7) What factors do you consider when deciding where to plant trees? How is it decided where your plantings will occur?
 - (8) Do you consider resident access to nature in your decision-making and delivery of tree planting and stewardship efforts?
 - (9) How do you define equitable tree canopy cover?
 - (10) Given your definition of equitable tree canopy cover, do you think trees are planted equitably in Philadelphia? If yes, how so? If no, how are you addressing these inequities? Through what means?

- (11) If you are part of the Urban Forest Strategic Team, do you think your practices are going to be incorporated into the Philly Tree Plan? If yes, how? If no, why not?
- C. Decision-making and engagement strategies regarding urban forests:
- (12) Are you involved in urban forest decision-making? If yes, what role do you or your organization play? If no, why not?
- (13) How do you engage community members or your neighbors in urban forest decision-making, stewardship, or broader tree-planting initiatives? What outreach strategies do you use? When and where do these plantings/events happen?
- (14) When engaging your neighbors in tree planting and stewardship, is much thought given to targeting specific demographics? If so, who?
- (15) Do the participants/neighbors mirror the socio-demographic characteristics of the neighborhoods you serve (e.g., gender, race, ethnicity, occupation, education)?
- (16) Are there certain demographics (groups/populations) that are not well represented?
- (17) Do you perceive any barriers to participation? If yes, what might those barriers be?
- (18) Are you or your organization giving thought to how to overcome these barriers?
- (19) Do you or your organization reflect on the city's historical planting practices (e.g., individually, via group trainings)? If yes, what does reflection look like to you? If not, how come?
- (20) Do you think the City or other non-profit partners reflect on these histories? If yes, what do you think this reflection looks like? If not, how come?
- (21) In your opinion, what is equitable decision-making?
- (22) Given your definition of equitable decision-making, would you say that the City and other non-profit partners are promoting equitable decision-making? If yes, how? If no, why not? What are some of the perceived barriers?
- (23) What would you say are the best practices for engaging your neighbors in tree planting and stewardship? What can other cities learn from the work you are doing?
- D. Support for and barriers to stewardship practice:
- (24) How do you collaborate with other organizations or neighborhoods? Who (which organizations/individuals) do you engage with? Which organizations help guide your practice (either locally or at broader levels of jurisdiction)?
- a. If applicable, how does this support the achievement of your objectives?
 - b. How formal are these relationships, how frequently do you interact?
- (25) What type of assistance do you receive from the City or other non-profit partners to support the stewardship work you are doing?
- (26) Have there been any barriers to your stewardship practices? If so, what are they?
- (27) Have community members ever raised concerns about gentrification in relation to your greening efforts? If so, what are those specific concerns?
- (28) Have localized examples of environmental injustices (e.g., the siting of toxic facilities) influenced the stewardship work you do? If so, how?
- (29) Have local histories, policies, and practices impacted your relationship to greening and stewardship (e.g., redlining, MOVE bombing)? If so, how?

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