THE TROUBLE WITH TREES? SOCIAL AND POLITICAL DYNAMICS OF GREENING EFFORTS IN DETROIT, MICHIGAN

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ABSTRACT

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Across the United States, cities including Detroit, Michigan have established ambitious goals to increase the urban tree canopy to achieve multiple ecological and social benefits. However, a non-profit organization responsible for planting street trees on city-owned property in residential neighborhoods throughout Detroit, Michigan received “no-tree requests” (NTR) from 24 percent of residents between 2011 and 2014. This example reflects divergent views between participants regarding street tree-planting programs, and a barrier to urban tree canopy improvement. The literature points to a need to examine perspectives of diverse urban forestry participants on tree-planting programs, particularly in regards to decision-making power. Decision-making power structures are a key contributor to environmental injustices according to urban political ecologists, and shared decision-making among diverse participants is a defining feature in models of urban and community forestry models in the U.S. It is currently poorly understood how perspectives on these factors differ among types of participants involved in urban greening, such as non-profit organizations and residents.

This study sought to gain a deeper understanding of perspectives on current and desired involvement of participants in street tree-planting programs from city residents eligible to receive a street tree and relevant staff, board members and volunteers within The Greening of Detroit (TGD). Diverse neighborhoods in terms of proportion of residents who submitted NTR were purposively sampled to gather data from a range of residents who received trees and

submitted NTR. Data were collected through a variety of qualitative methods including individual interviews, group discussions, and participant observation of community events. Data collection focused on understanding perspectives on power dynamics of street tree-planting, and heritage narratives, which are "broad renditions of a community's history…the character of its people (both past and present), and its trials and triumphs over time" (Bridger, 1996, p. 355).

The results for this study demonstrate that submission of a "no-tree request" (NTR) is not an adequate indicator of residents' satisfaction or long term engagement with a street tree planted in front of their house, since not all who received a tree were happy with the result. Heritage narratives of residents showed the importance of "upkeep" as an identifying characteristic of neighborhoods. Residents who had negative experiences with trees and city services, and lacked resources to address issues of upkeep in the neighborhood, expressed a greater desire for involvement in tree-planting decision-making processes. While many within TGD acknowledged a lack of citizen involvement in tree-planting decision-making, expansion of this involvement was limited by a perceived lack of resources for outreach and a heritage narrative that described residents as unaware of the multitude of benefits of trees.

This study provides insights that can help in the cultivation of shared goals and means to improve the health and sustainability of the urban tree canopy among forestry professionals and city residents. The results point to a need to explicitly uncover and transform power dynamics among participants to allow for a vision of urban and community forestry that accounts for, rather than suppresses, heritage narratives of city residents. This can lead to greater collaboration and improved ecological and social outcomes for entities that seek to improve the health and equity of the urban tree canopy for all residents.

To all who seek a strong and authentic connection with their communities and themselves.

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--Detroit resident, quoted in (Reindl, 2014)

"Injustice anywhere is a threat to justice everywhere."
--Dr. Martin Luther King, Jr.

CHAPTER 1: INTRODUCTION

Urban environments have long embodied attempts to separate human society and nature, given their traditional production-focused roles within a capitalist economic system (Millington, 2013; Natcher and Hickey, 2002). Rather than respecting the limits of nature, industrial culture (derived from the scientific revolution) has created a relationship between humans and "natural resources" in which limits are merely obstacles to remove or control (Trauger et al., 2008). As Gaard (1997) points out, this dominating view of nature relates strongly to gender roles and relations, since men have been raised and socialized to not "depend" on a woman, and by the same token, not depend on nature. In this context, nature and human society are not viewed as interconnected and interdependent components of the same system, and decisions about nature are driven by principles of capital accumulation and profit maximization (Shiva, 1992). This Cartesian dualism between nature and human society creates a conception of nature and wilderness as rare, far-off places where boundaries between human and nonhuman are more tenuous than in cities (Cronon, 1996). This dualism is also what perpetuates power structures that result in gains for elite members of society through profit on investments in nature as a commodity, to the detriment of less privileged populations who disproportionately experience the consequences of industrialization.

Beginning in the early 1970's, studies documenting these environmental injustices emerged in the U.S. (Brulle and Pellow, 2006; Bullard and Wright, 1992), including the Council on Environmental Quality's 1971 report to the President recognizing the correlation between toxic risk and income that disproportionately impacted the urban poor (Lester, Allen, and Hill, 2008). As environmental justice scholarship progressed past identifying environmental harms and toward ways of remediating those harms, environmental justice advocates began to incorporate consideration of urban greening efforts as a way to improve degraded environments and communities affected (Anguelovski, 2013; Flocks, Escobedo, Wade, Varela, and Wald, 2011; Halfacre, Hurley, and Grabbatin, 2010; Landry and Chakraborty, 2009). In fighting for a healthy environment for marginalized populations, advocates now seek to not only mitigate environmental harms, but also actively procure environmental benefits provided by trees and other vegetation (e.g. cleaner air, storm water management). Unlike approaches to mitigating environmental harms that focused on legal battles to hold polluters accountable for cleaning up damage, contemporary urban greening efforts emphasize community engagement to achieve environmental improvement.

The community-based forestry movement emerged in the early 1990's, stemming from a larger citizen-based environmental movement demanding an increased role in decisions regarding natural resources (Cheng, Danks, and Allred, 2011; Glasmeier and Farrigan, 2005; Gray, 2007). The reasons for this movement are multi-fold including feelings of alienation from traditional decision-making structures, increased access to information among more sophisticated interest groups (Bixler, 2013; Buchy and Hoverman, 2000), and realization that top-down management approaches are ill-equipped to manage for multiple objectives within a

patchwork of property ownership patterns across diverse environments (Firehock, 2011). Gender-related dynamics have also contributed to the growth in grassroots environmental movements, which challenge dominant views and approaches to nature. Bell and Braun (2010, p. 794) note, “Women generally initiate, lead, and constitute the rank and file of environmental justice activism.” This differs markedly from the male-dominated leadership prevalent in traditional, national-level environmental organizations (Taylor, 2002).

Community development literature outlines many positive effects of urban greening on residential neighborhoods and activists, including the ability to build social cohesion and social capital through participation in these endeavors (Flora, 1998; McDonough and Vachta, 2005). However, as with other community revitalization efforts, ‘greening’ is often funded and guided by elite members of society, such as politicians, corporate interests, and foundations. When elites outside of a community make decisions regarding greening, urban political ecology (UPE) scholars contend that capitalist values often guide their decisions, and will lead them to invest in greening projects that are the most profitable, with negative consequences for community residents in politically and economically marginalized neighborhoods. For example, well-maintained green spaces raise property values in neighborhoods that are largely occupied by lower income residents, which provide greater revenue to the city through increased property taxes and also benefits developers through profits on investments in the area (including investment in the natural environment). However, residents must shoulder the financial burden to provide these revenues, and often those in lower income areas (whether home owners or renters) cannot afford to stay in the neighborhood, resulting in *ecological* gentrification (Anguelovski, 2014; Byrne, 2012; Hagerman, 2007).

Therefore, in an effort to attract wealthy investors, residents, and tourists, decision makers within the city will transform the natural landscape through the strategic creation of well-maintained green spaces (Bryson, 2013). For example, those with decision making power and access to financial resources will often invest a larger amount of resources in maintenance of some green spaces to attract those with greater wealth (e.g. to downtown areas), but not invest as much in the development of social capital and networks of low income populations (e.g. in residential neighborhoods), which may contribute to greater economic and ecological equity in the city. When racial tensions in cities like Philadelphia and Detroit escalated in the mid-20th century, wealthier whites fled the city for the suburb, and financial resources that were previously allocated to maintenance of green spaces and parks were redirected toward these new areas of economic growth (Anguelovski, 2014; Brownlow, 2006; Sugrue, 2010; Ward, 2007). The result was disproportionately poor access to safe and well-maintained urban parks, green spaces, and forests, in neighborhoods inhabited primarily by non-white residents in the U.S. (Brownlow, 2006; Byrne, 2012; Conway, Shakeel, and Atallah, 2011; Landry and Chakraborty, 2009).

Since investments in tree planting on publicly owned land in residential areas in Detroit, Michigan now often focus on the initial planting and three years of maintenance, it is unclear if the municipal government will fulfill long term maintenance responsibility or shift responsibility directly to community residents. Some scholars note trends toward the latter (Goodson and Phillimore, 2012), particularly given a loss of tax base to fund public works across U.S. cities in the past three decades (Perkins, 2015).

From a UPE perspective, because elites have the power to decide where and how to conduct greening through their investments, these decisions will reflect capitalist values rather than a genuine effort to help the residents improve (and stay in) their neighborhoods. This reinforces power dynamics that are the root cause of environmental injustices since elites address ecological causes of environmental degradation through greening (e.g. Emerald ash borer), but fail to reform the decision-making process to meaningfully engage marginalized neighborhoods targeted by greening programs.

In Detroit, the impact of racial inequalities on human society and nature within the city is all too apparent. Tracing the historical roots of the city, the dialectic between natural and human elements illuminates the ways in which prevailing power structures shaped the urban landscape. From the late-19th to mid-20th century, Detroit was a much different city—known as "The City of Trees" (American Forests, 2012; Austin and Kaplan, 2003), with more trees per capita than any other industrial city in the world (Dietz, 1994). In the 1950s, although also known as a car town, Detroit was distinctive from other northern big cities in the U.S. like Chicago, Boston or New York, primarily because of the number and size of trees in the city. Dietz (1994, p. 377) describes the major influence of trees on Detroit's identity at that time:

> Detroit had trees. Not little, spindley, half-dead trees like the ones that grew in Brooklyn; Detroit had real trees. Big trees. Full grown trees. Spreading, shady, over-the-top-of houses trees. Oak and maple and walnut, but mostly big stately elms. Detroit had trees in the front and back of nearly every house and school. Trees enough so that almost every family had at least one.

This reputation did not last, however, as Dutch elm disease, urban expansion, and neglect led to the demise of over 500,000 trees in Detroit by 1980 (American Forests, 2012).

It is no coincidence that race relations in the city also increasingly deteriorated from the 1950's onward, shortly after the city's population peaked. Industrialization following WWII brought an influx of poor, primarily African American immigrants from the South to Detroit seeking factory jobs (McDonough and Vachta, 2005). As the city's population grew, the suburbs arose to provide housing for those in the automobile industry. Those with enough wealth to buy cars and have greater mobility were white, whereas the working class with limited transportation options was predominately African American (Dietz, 1994). While whites relocated to the affluent suburbs, along with many businesses, blacks were forced to stay in the city with few opportunities for economic success (Vachon, 2009). The 1967 race rebellion solidified the divide between lower income blacks in the city and wealthier whites in the suburbs, who had little interest in helping to address the city's problems (Solomon, 2013). As more affluent whites abandoned Detroit, the size of the city's Forestry Division also dwindled, despite the immense threats facing elms and other large trees for which the city was known (Dietz, 1994).

Current demographic profiles reflect this contentious history. The population in the city of Detroit is about 82.7% African American, in contrast with the state of Michigan as a whole, in which 14.2% of the population is African American (U.S. Census Bureau, 2010). Detroit also has the highest percentage of lower income residents in the country (with incomes less than $25,000 per year) (New Detroit, Inc., 2014). It is primarily lower income African Americans who must cope with the numerous, interrelated stresses of Detroit's downfall, including poverty,

threats to environmental quality, and public health concerns. For example, the lack of public transportation in Detroit during the industrialization era reflects racist decision-making, and its continued inadequacy today reinforces racial and class-based inequities by limiting access to gainful employment, health care services, and healthy food (White, 2011). Detroit is afflicted not only by environmental justice issues, but broader issues tied to well-being of city residents.

To specifically help reverse the trend of declining environmental quality and restore a healthy tree canopy in the city, a non-profit organization called The Greening of Detroit (TGD) began planting trees in 1989. To date, the organization has planted over 85,000 trees in the city of Detroit (Greening of Detroit, 2014). Trees provide numerous benefits to urban areas, including mitigation of air pollution and stormwater run-off, reduction in noise, and decreased crime (Kuo et al, 1998; Kuo and Sullivan, 2001). However, organizations like TGD face challenges in their efforts to expand the urban tree canopy, including the resistance some residents demonstrate to having trees planted on the city-owned street property in front of their houses. Given the historical circumstances that led to the current state of Detroit, an urban political ecology perspective suggests that resistance to urban greening initiatives may represent resistance to prevailing power structures that shape the natural environment in marginalized neighborhoods, since these power dynamics often result in negative consequences for residents of these neighborhoods.

Problem statement

Across economic, social, and environmental realms in the U.S., the biggest challenge remains providing meaningful opportunities for people to participate in collective decision-making regarding issues that affect them (Baker, 2003). This challenge has given rise to several

community-based social movements, including community forestry (Baker, 2003; Cheng et al., 2011; Glasmeier and Farrigan, 2005; Gray, 2007). However, in the U.S. as a whole, community forestry manifests as collaborative initiatives between government agencies and local organizations, with little direct involvement of citizens affected (Bullock and Hanna, 2012). This has led to a preponderance of quantitative research studies to assess strictly *ecological* issues in urban forest research, excluding community voices and reflecting the priorities and values of those with authority in the realm of urban forest management (McLean, Jensen, and Hurd, 2007). More recent research focuses on understanding residents' perspectives on the benefits and challenges associated with urban and community forest management, to create sustainable urban forests across a patchwork of property ownership and governance structures among stakeholders with varying knowledge and priorities (Conway, 2016).

Urban political ecology suggests that by failing to address social issues that arise among participants in urban and community forestry, elite stakeholders perpetuate traditional power dynamics, which results in non-attainment of social and ecological goals. In Detroit, residents who submit "no-tree requests" (NTR) to TGD reflect the incongruence that exists between diverse participants regarding the problem with, and solutions to, street tree-planting programs. As a result, fewer trees are planted and residents are largely excluded from the decision-making process, as their only mechanism for providing feedback currently is by submitting NTR.

To achieve social and ecological goals, all stakeholders must cultivate shared purpose and language around tree-planting programs. As Vachta (1999, p. 18) notes, "The activities of participatory development should foster the consolidation of a shared vision for the community

and collective effort in achieving that vision, in addition to providing opportunities to build new skills and greater understanding of the role and impact of existing power dynamics affecting the community." Creating opportunities for city residents to have voice in the process of urban and community forestry initiatives is particularly vital in marginalized neighborhoods, where many efforts to increase urban tree canopies currently take place.

The purpose of this study is to advance knowledge of residents' perspectives on urban greening programs, especially those who have submitted "no-tree requests", while also developing a mechanism to transform traditional power dynamics and incorporate a diversity of values into urban forest management. This has practical implications for improving community engagement strategies and achievement of ecological goals of TGD.

Additionally, this study fills an important gap in knowledge about urban environments, since little research to date appears to have engaged city residents demonstrating resistance to urban greening in examination and transformation of power dynamics to achieve greater procedural justice. To this end, this study used a primarily qualitative approach (supported by quantitative data for sampling and gaining some residents' perspectives) which engaged residents throughout the research process since it allowed the researcher to understand the meaning that participants attributed to certain events, and the ways in which these interpretations influenced their behavior (e.g. submitting a no-tree request or not) (Maxwell, 1998).

Chapter 2 reviews the literature on environmental justice, urban political ecology, shared meanings and heritage narratives, and the development of urban and community forestry in the U.S. with an emphasis on participation dynamics between different groups.

Chapter 2 also describes relevant aspects of the history of Detroit, including the creation of TGD, and the current context in which urban 'revitalization' is taking place (including urban and community forestry). Lastly, Chapter 2 presents the conceptual model for this study and associated research questions, followed by the methodological approach to answering these research questions in Chapter 3. Chapter 4 presents results for each research question, and discussion of important connections to the literature and conceptual model. Chapter 5 includes a summary of the study, conclusions drawn from the data, limitations, areas for future research, and applications to the practice and policy of urban and community forestry.

CHAPTER 2: LITERATURE REVIEW

Several bodies of research can help to guide investigation of research participants' perspectives on the current problem with tree-planting efforts in Detroit, Michigan as well as reasons for those views and ideas on possible solutions to these problems. First, two theoretical frameworks (environmental justice, urban political ecology) propose particular concepts that relate to one another to explain power dynamics and mobilization of participants in activities like tree planting. Environmental justice (EJ) has evolved as a field to examine a variety of topics that affect marginalized populations, including disproportionate access to well-maintained environmental benefits like green space. Across these topics, scholars note that environmental justice is a type of social movement with particular components that impact the actions of those involved. Thus, it provides a vital body of work to guide investigation into factors that influence dynamics in urban tree planting efforts.

Urban political ecology scholars specifically discuss the power dynamics between actors that have resulted in environmental injustices, and are inherent in the components that EJ scholars contend influence mobilization in these issues. This body of literature provides questions useful to uncover power dynamics, particularly as they are expressed in each of the important components that affect mobilization in an environmental justice issue.

Several other bodies of work describe concepts that are contained in the aforementioned theoretical frameworks, and provide tools to examine these concepts. For example, several scholars point to the role of shared meanings held by all participants involved in community-based efforts like residential street tree-planting programs in determining their success. It is necessary to understand why shared meanings are important, and how those

meanings are created and expressed. Heritage narratives are one way that individuals express shared meanings associated with community-based activities. These are stories of the past used to develop identity in the present in response to particular issues like tree planting. Such selective narratives about the past shed light on the reasons participants frame a problem in a particular way and behave in a certain way according to those frames.

Finally, background on urban and community forestry in the U.S. illustrates the roles that power and participation have played in forestry initiatives involving multiple groups and interests. It is necessary to examine the elements that gave rise to urban and community forestry to see what the major components of this movement are and how they are evident or not in the current case of tree planting in Detroit. This helps a researcher to understand what specific behaviors are associated with power sharing and participation in urban and community forestry.

Environmental justice

In 1998, the Environmental Protection Agency defined environmental justice as "the fair treatment and ***meaningful involvement*** of all people regardless of race, color, national origin, or income with respect to…" environmental policies (emphasis added). Several scholars have argued that environmental justice is a particular kind of social movement that has successfully used an injustice frame to mobilize action (Benford and Snow, 2000; Pellow, 2000; Snow and Benford, 2005; Taylor, 2000). In contrast to traditional environmental movements, environmental justice discourse raises the importance of environmental issues as a priority in communities of color because it is linked to more core ideas of civil rights and power (Taylor, 2000).

Traditional environmental justice studies which emerged in the 1970's focused on documenting inequitable distribution of environmental harms, like toxic waste siting (Brulle and Pellow, 2006; Bullard and Wright, 1992). The 1980's saw further identification of environmental injustices through both scholarly work and grassroots protests, resulting in many legal victories for affected communities (Anguelovski, 2014). Evidence unearthed in the 1990's bolstered these legal cases, showing that these injustices were directly linked to *deliberate* forms of race and class-based discrimination due to historical patterns of spatial segregation that placed disadvantaged populations in harm's way (Brulle and Pellow, 2006). For example, Hird and Reese (1998) conducted a nationwide study of the relationship between environmental quality and various demographic variables like race and ethnicity, income, and political mobilization using county-level data. Based on their model of pollution distribution, race and ethnicity were shown to be strongly associated with low environmental quality, even when controlling for the effect of other variables. Such scholarly work helped to advance re-conceptualization of "the environment" away from traditional notions of distant, pristine landscapes, to include the places where people live, work, and recreate (Flocks et al., 2011; Mohai and Bryant, 1998; Taylor, 2000).

In the 2000s, the field began to broaden to include inequitable distribution of environmental benefits, such as access to healthy, safe parks and urban green spaces (Holifield and Williams, 2014; Landry and Chakraborty, 2009; Mohai, Pellow, and Roberts, 2009; Whitehead, 2009). It is important to draw attention to specific focus on *healthy and safe* parks and urban green spaces, and not just the mere existence of urban green space. While some studies identified a significant link between higher household income and greater tree canopy

cover (Flocks et al., 2011; Heynen, 2002), others note that this is an inadequate measure of the justness of the urban tree canopy (Kondo, Han, Donovan, and MacDonald, 2017).

Rather than simply the *distribution* of tree canopy, the management of the canopy also warrants examination to assess environmental justice. For instance, Troy, Grove, and O'Neil-Dunne (2012) found higher crime rates in neighborhoods that have a significant interface zone between industrial and residential land and considerable amounts of unmanaged stands of trees between these two land uses. Other studies have also found a correlation between dense vegetation and higher rates of criminal activity (Kondo et al., 2017). Holifield and Williams (2014) provide some evidence as to why this may be the case, as parks in predominately lower-income and minority areas often experience neglect due to decreased public funding, and problems with crime or perceptions of crime.

Discussions of environmental justice have expanded beyond issues of distributional justice (i.e. proximity to fewer environmental benefits, like well-maintained green spaces based on income and race) to address procedural justice concerns (i.e. involvement in decision-making processes about the natural environment), since active involvement of citizens is a key determinant of how green spaces function in the community. Jennings, Johnson, and Gragg (2012, p. 3) state that "Even though promoting participatory landscape development can be a long term learning process, it is also a key element of promoting environmental justice."

Studies emerged to examine meaningful stakeholder participation in decisions about appropriate use of urban space (Halfacre et al., 2010; Poe, McLain, Emery, and Hurley 2013). In Detroit, White (2011) conducted a case study of an urban farming initiative in which activists utilized a community-based model to involve residents in increasing access to healthy food. In

regards to tree-planting programs, Donovan and Mills (2014) suggest a need to tailor such efforts to specific neighborhoods, particularly less affluent areas, and hire canvassers from neighborhoods where programs are implemented to improve the efficacy and thus, environmental justice, of tree planting. This points to a need to understand the perspectives of residents, especially in less affluent neighborhoods and those that are predominately non-white, regarding appropriate and preferred methods of engagement in tree-planting programs.

It is clear that urban greening efforts, including tree planting, are partly in response to an environmental justice concern. The environmental justice paradigm offers an important way of understanding why different stakeholders in a community impacted by inequitable access to healthy green space have varying levels of involvement or mobilization in these issues.

As with other social movements, Taylor (2000) states that three factors primarily influence mobilization dynamics: (1) Framing processes in which stakeholders articulate beliefs and meanings to guide action; (2) Ability to mobilize resources to organize; and (3) Political opportunities available to change the current system. Framing is a three-pronged process of identifying and assigning blame for the current unjust circumstances, outlining a proposed solution, and creating agency for citizens to act (Benford and Snow, 2000; Taylor, 2000). Agency may be invoked by communicating the severity or urgency of a collective problem, as well as through instilling a sense of efficacy or duty in potential movement participants (Benford and Snow, 2000).

One's social location (i.e. position in society; influenced by gender, race, income and other factors), affects the resources available for participating in movement activities (Burns, Schlozman, and Verba, 2009), the second key factor that influences mobilization in

environmental justice issues. These resources may include time, money, and knowledge of collective action tactics and strategies. Therefore, it is necessary to examine which of these factors influence resources available for citizens to engage in tree planting decision-making processes in various ways, and thus, may inhibit participation of some community members. For instance, one's status as employed or retired can significantly impact the time available to engage in more meaningful decision-making processes. According to Taylor (2000), there are four aspects that define political opportunities, the third factor that influences mobilization in environmental justice issues: (a) the relative openness or closure of the local political system, (b) the stability or instability of the political system, (c) the presence or absence of "elite allies", and (d) government institutions' capacity and tendency for repression of transformations to the system.

An environmental justice paradigm shows that residents' involvement may be impacted by how they frame the problem with tree planting efforts, access to resources to participate in this movement, and political opportunities to become involved. Urban political ecology suggests a framework to examine each of these components, since it focuses on the root cause of environmental injustices—power dynamics at play in the urban environment. The next section will examine the key elements of urban political ecology and how it can help to investigate mobilization of participants—including residents and entities that carry out tree-planting programs—in environmental justice issues.

Urban political ecology

Political ecology emerged as a field in the early to mid-1980s to explicitly address the disregard within the social sciences for "how human society and the environment ***shape each***

other over time" (Walker, 1998, p. 1; emphasis added), and helped to theorize why environmental injustices happened in the first place, adding greater depth to our understanding of mobilization and participation dynamics. In 1961 Jane Jacobs (p. 443) stated that urban environments "are as natural as colonies of prairie dogs or beds of oysters". Yet systematic application of political ecology to urban environments did not gain traction until 1996 with Erik Swyngedouw's assessment of the simultaneously bio-physical and symbolic role of water in the urbanization process, as well as David Harvey's assertion in the same year that "there is nothing *unnatural* about New York City" (Angelo and Wachsmuth, 2014; Harvey, 1996; Heynen, Perkins, and Roy, 2006).

Cities are built out of "socially mediated natural processes" (Heynen et al., 2006, p. 5), and with a capitalist economy at the helm, this socially structured process transforms nature into a commodity whose use is determined by elites with access to resources and decision-making power (Perkins, Heynen, and Wilson, 2004). As a result, "elite" members of society will make decisions about greening to maximize profit and capital accumulation (Brownlow, 2006; Byrne, 2012; Conway et al., 2011; Landry and Chakraborty, 2009).

Marginalized groups, who lack meaningful control over capitalist processes, often suffer environmental injustices as a result (Heynen, 2003), which can include inadequate access to *sustainably* managed environmental benefits. For example, recently scholars noted how traditional urban forestry decision-makers tend to value trees and make the case for investment in urban forestry based on quantifiable characteristics (e.g. carbon sequestration, stormwater flow management) which (1) omits some of the most prominent socio-cultural values associated with trees like beauty and cultural heritage that cannot be quantified

(Campbell, 2015; Konijnendijk van den Bosch, 2015), and (2) does not consider costs associated with maintenance of different species of trees and how those costs will be distributed over time. In this context, "participation" of community residents serves to achieve greater productivity at a lower cost rather than influence decision-making to improve community well-being holistically (Campbell, 2015; Rahnema, 1992).

Urban political ecology scholars seek to reveal power dynamics of various participants to understand how 'nature' and society create one another in urban contexts, and examine the justness of urban greening efforts. Such scholars do so through exploration of three important questions: who wins, who loses, and who decides on how community revitalization occurs (Heynen et al., 2006).

Inherent in each of the theorized components of a social movement like environmental justice—how the issue is framed, the ability to mobilize resources to participate, and political opportunities to change the system—are power dynamics of participants. This includes whose frames guide action, differences in access to resources to participate in the issue, as well as status within the political system that in turn determines opportunities to change the system. Recent environmental justice literature approaches the field through an urban political ecology lens, investigating perspectives on power dynamics, including: who benefits and loses from nature and its management in the city, as well as who decides on the way nature is produced (Anguelovski, 2013, 2014; Poe et al., 2013).

Stakeholders' perspectives on (and the researcher's observation of) these three issues—who wins, who loses, and who decides—give insight into any differences in framing the tree planting issue, ability to mobilize resources to participate (e.g. community residents who are

employed and have less time to participate may "lose" in the current system), and political opportunities to change the current system to address any injustices.

An urban political ecology framework suggests that elite stakeholders who have access to resources to make decisions regarding the structure and function of the natural environment (such as non-profit organizations and city government) favor profit maximization and capital accumulation. In the context of tree planting, this means prioritization of planting species that maximize ecosystem service provision, while not considering cultural values and preferences or how the costs of maintaining trees are distributed over time.

It is important to examine how residents and elite stakeholders frame the problem with tree planting to ascertain if particular frames are favored and guide investment of time, money, and staff members more than others. This includes how each type of participant feels they win or lose in the current system, and their involvement in decision-making processes. To investigate these frames, it is necessary to understand how participants in urban greening develop shared meanings and the reasons they hold particular meanings toward tree planting through the stories they share about the place they inhabit.

Shared meanings and heritage narratives

Collective action frames such as those used in the environmental justice movement, are not just aggregations of individual attitudes and beliefs, but are a result of negotiating shared meaning among stakeholders (Benford and Snow, 2000). Symbolic interactionism posits that people act toward things based on the meaning they hold, and that meaning is created through social interactions (Paveglio, Carroll, Absher, and Robinson, 2010). As Giovannini (1986, p. 4) states, "…social interaction is defined as a communication process where individuals

symbolically convey messages about themselves, the other actors, and the social setting." Others support this, claiming that social cohesion fosters shared values and visions for a neighborhood (McDonough and Vachta, 2005). Repeated social interaction facilitates the development of shared meanings about an issue which results in collective action frames.

As urban political ecology demonstrates, landscapes are created by cultural groups that use different symbols with different meanings for the same physical objects or conditions (Greider and Garkovich, 1994). Given the numerous historical issues surrounding trees in Detroit, including millions lost to diseases like the Emerald Ash Borer and Dutch Elm Disease (Greening of Detroit, 2014), trees may symbolize hardship for residents, and possibly even failure of government agencies to properly manage environmental issues.

It is important to examine the meaning attributed to tree planting that residents and The Greening of Detroit (TGD) create through social interactions with one another via the tree-planting program. This can help with identification of any conflicting aspects of these frames participants employ (e.g. disagreement over the nature of the problem, who to blame, or the proposed solution) that could preclude mobilization.

One way to approach understanding shared meanings is through heritage narratives. In the case of tree planting, heritage narratives can reveal shared meanings that certain groups attribute to urban greening initiatives. Heritage narratives are "broad renditions of a community's history…the character of its people (both past and present), and its trials and triumphs over time" (Bridger, 1996, p. 355). These are selective representations of the past, and not politically neutral (Smith, 2006). Rather, they are an important mechanism through which individuals express shared meanings that have been negotiated through social

interactions. Anguelovski (2014, p. 53) notes that this area warrants further scholarly examination, stating, “More attention should be given to activism, engagement, and the underlying meanings of local struggles.” She goes on to state (p. 229) that, “Historical narratives [recognize] that feedback loops are important in decision making and that historical changes and events reshape the preferences of actors…”

Such narratives can have a profound impact on public discourse and constrain land planning practices when proposed actions are in conflict with a community’s dominant heritage narrative (Bridger, 1996). Since differing frames among participants in urban greening can preclude mobilization of some and ultimately impact the success of activities like tree planting, it is important to understand how participants develop shared meanings toward these activities, which can be gleaned through examination of heritage narratives. Examination of the evolution of urban and community forestry in the U.S., is helpful in assessing how power, participation, and shared meanings have manifested in this field. One can also examine the degree to which these dynamics are present or absent in the case of residential street tree planting in Detroit, Michigan.

Urban and community forestry

Town forests in New England were established in the late 1800’s, which allowed towns, villages, and school districts to purchase land for timber production (Lyman, Danks, and McDonough, 2013). These forests developed due to the traditions brought from European settlers to the United States and established the urban roots of community forestry (Baker, 2003). This movement encouraged communities to set aside land for public use, which included recreational, education, and ecological benefits (Lyman et al., 2013).

Despite these early roots for urban and community forestry, the development of the urban forestry movement came about gradually, spurred on in particular by the spread of Dutch elm disease starting in the 1930's (Armstrong, 2003). It was not until 1967 that an urban *and community* forestry program was created within the U.S. Forest Service (Armstrong, 2003). The expansion of the term to include "community" came due to the fact that residents of towns and small cities did not consider themselves urban, though the term 'urban forestry' was intended to be inclusive of all municipalities regardless of size (Kuser, 2006).

In 1989, the American Forestry Association launched the Global ReLeaf campaign to focus on local action as a means of addressing global environmental concerns (Armstrong, 2003). This event was at the start of a community-based forestry movement which emerged in the early 1990's, stemming from a larger citizen-based environmental movement demanding an increased role in decisions regarding natural resources (Cheng et al., 2011; Glasmeier and Farrigan, 2005; Gray, 2007).

Contemporary definitions of community forestry emphasize the inclusion of residents at the local level. Bullock and Hanna (2012, p. 4) state, "Typically, community forestry is implemented to produce more democratic and participatory decision-making processes that include citizens more directly than was previously done under industrial forestry regimes." Lyman et al (2013) indicate that community forestry projects in New England explicitly include community participation in management and stewardship decisions.

With this focus on participation of residents in forestry decision-making at the local level, community forestry aims to address the same types of questions deemed vital by urban political ecologists in transforming power dynamics: (1) Whether ecological sustainability is

conducted in the best interests of local people who depend on forest resources, (2) the benefits of forest management (timber and non-timber) are distributed to local people, and (3) "the local people have a meaningful role in forest decision making" (Bixler, 2013, p. 156). This reflects acknowledgment that political ecology is a persistent problem in community forestry across diverse contexts that warrants further examination (Shrestha and McManus, 2008).

Degree of citizen power over decision-making is integral in the definition of participation (Propst, Wellman, Campa, and McDonough, 2000). The process of participation is also vital to the development of shared meanings among participants. Local residents who engage directly in community forestry can build cohesion with one another through these activities by working to identify collective interests and capacities (McDonough and Vachta, 2005). Community engagement in greening efforts can be more than just a *means* to achieve an externally determined goal (i.e. industry or government priorities), it can be an *end* itself, aimed at empowering communities and building their capacity to address challenges (Propst et al., 2000).

When this shift occurs—to employing engagement as an <u>end</u>, not just a means to accomplish other goals—a community is able to retain greater control in the greening process, including increased involvement at critical decision-making stages (Buchy and Hoverman, 2000). Even when communities don't have collective rights to the land in question (the case with many greening projects), community-based approaches can help to increase and improve dialogue and participation in natural resource decision-making (Flint, Luloff and Finley, 2008).

Urban and community forestry has roots in providing citizens at the local level with opportunities to participate in and make decisions regarding forestry projects. This participation

has also led to development of shared meanings among participants about the purpose and governance structure for forests, which include management for recreational, education, and ecological benefits. However, Perkins (2015, p. 30) notes that, "…a lack of participation in forestry programs by people living in minority communities is highly problematic in relation to the goal of increasing canopy cover equity across the city." This points to a need to examine how residents are involved in urban tree-planting programs, particularly in regards to decision-making power, as this is a defining feature of urban and community forestry in the U.S.

The city of Detroit

From the late-19th to mid-20th century, Detroit was known as "The City of Trees" (American Forests, 2012; Austin and Kaplan, 2003), with more trees per capita than any other industrial city in the world (Dietz, 1994). Numerous issues, including urban expansion and Dutch elm disease, led to the demise of over 500,000 trees in the city by 1980 (American Forests, 2012). Race relations also declined during this time period, with white residents gradually relocating to the suburbs while black residents were forced to stay in the city with few opportunities for economic success (Vachon, 2009). The population of Detroit peaked at close to 1.85 million people in 1950, comprised of 16.2% African Americans. By 2000, the population had declined to 951,270, comprised of 81.2% African Americans (Metzger and Booza, 2002). In 2010, the proportion of African Americans in the city was 82.7% (U.S. Census Bureau, 2010).

Noteworthy is the city's financial status during this time of demographic shift. In 2009, the city brought in the same amount of revenue as in 1952, after adjusting for inflation ($1.3 billion), yet the city's debt went from a low of $1.4 billion in 1985 to a high of almost $9 billion in 2008 (DeSilver, 2013) Therefore, it is primarily lower income African American residents who

must cope with the stresses accompanying conditions of economic and ecological decline in the city.

In 1989, a non-profit organization called The Greening of Detroit (TGD) was created to improve the urban forest through a collaborative effort involving four state universities in Michigan as well as philanthropists, historians, landscape architects and even federal judges. This collaboration was essential to development of a holistic and strategic approach to increasing the tree canopy in the city. As the founder of the organization said, "It seemed the first step was to conduct a tree survey…to see what trees existed, where trees were needed…we needed to do this in a scientific way."

While TGD has planted over 85,000 trees in the city of Detroit (Greening of Detroit, 2014), a challenge faced to increasing the tree canopy is the submission of "no-tree requests" from residents in neighborhoods where the organization plants trees. A staff member at TGD indicated that there are around 20,000 'hazard trees' in Detroit awaiting attention from city officials, which in the meantime present a financial burden to residents to maintain.

The city of Detroit is at a unique crossroads in re-inventing its identity and prospects for the future. On the heels of a 16-month bankruptcy process, the legal system has restructured the city's finances to shed $18 billion in liabilities and provide for $1.4 billion to improve the lives of residents (Detroit Free Press, 2014). This reformed fiscal situation brings with it many investors eager to be a part of the city's re-birth, with economic growth a key goal of their activities (Detroit Free Press, 2014). Urban political ecology offers reasons to be wary of the direction in which such investments will lead Detroit. Without deliberate attention and effort paid to transforming power dynamics, the city is at risk of simply reifying the status quo power

dynamics, whereby elites with access to resources and decision-making power coopt community development, utilizing community engagement in a neoliberal vein to gain efficiencies rather than empower residents.

Many studies have outlined the history of Detroit, including circumstances that led to its decline and possible pathways to emerge from these plights (Dietz, 1994; Gallagher, 2010; Galster, 2012; Vachon, 2009). Some have even examined types of urban greening activities (i.e. urban gardening) that are an example of resistance to dominant power dynamics (White, 2011). However, no studies to date appear to have utilized a community-engaged research approach to investigate resistance *to* urban greening as an expression of resistance to traditional urban power dynamics, despite the growth in literature outlining how these dynamics produce and reproduce uneven urban environments and social injustices in cities like Indianapolis, Indiana (Heynen, 2002), Milwaukee, Wisconsin (Heynen, Perkins and Roy, 2006), Philadelphia, Pennsylvania (Brownlow, 2006) and Los Angeles, California (Byrne, 2012).

Conceptual model and research questions

Environmental justice scholars contend that mobilization in efforts like urban greening are influenced by how participants frame the issue, the resources available to become involved, and political opportunities to change the system so that their perspectives are heard (e.g. presence or absence of elite allies with access to resources to implement urban greening initiatives). Urban political ecology notes that power dynamics among participants influence each of these components in an environmental justice movement, such as whose frames guide action.

The development of shared meanings among participants in urban and community forestry is important to the success of these initiatives. To develop shared meanings requires participatory processes in which citizens have the opportunity to make decisions about the purpose and stewardship of such projects, as evidenced by the development of urban and community forestry in the U.S. The city of Detroit, Michigan is undergoing rapid change following a bankruptcy process, which has reinvigorated investments in the city, including greening activities like tree planting.

The Greening of Detroit began as a collaborative effort to increase the city's tree canopy in 1989, but has faced resistance from some residents. The history of the city's decline is imbued with racial tensions and associated uneven power dynamics with economic and ecological consequences apparent. These factors require examination to adequately understand the dynamics between participants involved in residential street tree-planting programs.

Bringing multiple perspectives and knowledge to a project enhances efforts to address problems with several layers of influence (Hage, Leroy, and Petersen, 2010; Ward and Moore, 2010), as is the case in urban greening. Additionally, Ward and Moore (2010) note that too often, community voice is excluded from the dialogue on University-community partnerships. Participation in community-engaged research, particularly in the city of Detroit with a complex and multidimensional history, provides citizens with a mechanism for addressing issues of importance in their community, while also helping to advance understanding of community perspectives on university-community partnerships.

Different stakeholders vary in their views on the benefits and costs of street tree-planting programs (Dilley and Wolf, 2013). Diverse views on greening result from many factors, including one's situated local knowledge and experiences (based on an intersection of characteristics such as race, gender, income, and roles within the political sphere), symbolic meaning of trees, and heritage narratives that stakeholders bring to the process (Alkon, 2004; Serda, 2003). It is currently poorly understood how these factors differ among types of stakeholder groups involved in (or affected by) urban greening, such as non-profit organizations and residents.

The conceptual model for this study posits that elite stakeholder groups who guide and implement urban greening efforts (i.e. non-profit organizations and associated funding entities) reflect historical tendencies in environmental justice to consider only *ecological* causes of (and solutions to) environmental degradation. A political ecology perspective suggests that such elite stakeholders will focus on capital accumulation and profit maximization. With a focus on achieving ecological goals, such as percentage urban tree canopy restored or total number of trees planted, urban greening projects address the proximate, rather than structural and social, causes of environmental degradation. This results in solutions to issues like "no-tree requests" that focus on educating residents on the ecosystem service values of trees, reflecting an emphasis on 'blaming the victim' for their life choices and resulting consequences, as opposed to placing responsibility with the dominant hierarchical power structures (Knopf-Newman, 2004).

Moving toward sustainable urban and community forests requires considerations of social power dynamics explained by urban political ecology, since social issues can preclude

achievement of ecological goals (as evidenced by “no-tree requests” in Detroit), and a singular focus on ecological goals perpetuates social injustices. When a major stakeholder group type, like city residents, is not meaningfully involved in guiding greening choices, decisions are made from an incomplete perspective on benefits and costs of choices. This can cause conflicts during implementation of tree planting initiatives, such as divergent views on whether the program is effective in improving the tree canopy, and whether there are positive impacts on residents who are involved in maintaining trees.

Increasing success of greening efforts requires understanding perspectives of impacted residents, as well as organizations implementing greening programs, on the current problem(s) and appropriate solution(s). This is the first step in cultivating open dialogue between stakeholders and, ultimately, achieving the diverse social and ecological goals of ***all*** involved. To achieve socio-ecological goals, all stakeholders must cultivate shared purpose and language around tree-planting programs (Paveglio et al., 2010; Theodori, 2005).

Urban and community forestry and urban political ecology share questions that are important to examine in order to reveal and address prevailing power dynamics, including: (1) Who wins? (2) Who loses? And, (3) who decides? The conceptual model presented here posits that shared symbols and meanings about trees and their governance, as well as socially situated knowledge, influence perspectives of different stakeholders on the answers to these questions. Additionally, these answers influence how different stakeholders frame the problems with the current tree-planting program, and appropriate solutions. This distinction in stakeholder views is reflected in different behaviors in greening activities. Whereas residents who submit “no-tree requests” may frame the problem as a lack of decision-making power for residents affected, the

non-profit and supporters of their greening efforts may frame the problem as a lack of resident knowledge regarding the benefits of trees.

Given these differing problem frames, perspectives on appropriate solutions and the justice of various outcomes will also vary by stakeholder group. Framing is an important component of any social movement, including urban greening, since conflicting aspects of different frames (e.g. disagreement over the nature of the problem, who to blame, or the proposed solution) could preclude mobilization to achieve a common goal of community revitalization. Community-engaged dialogue facilitates recognition of the ways in which symbolic interactionism and situated knowledge manifest in framing the issue of urban greening.

Conceptual model

This study sought to uncover the multiple, situated knowledges of those involved in street tree-planting efforts of TGD to better understand diverse perspectives on and behaviors in this program. The conceptual model posited that three major groups of stakeholders—those within TGD, city residents who received trees, and city residents declined trees—have differing local knowledge and experiences which are reflected in different heritage narratives and meanings associated with trees (Figure 1).

Based on these narratives, stakeholder groups will express different responses to the questions deemed important by urban political ecology (UPE) in revealing power dynamics that guide urban greening programs: Who wins? Who loses? And who decides? The model suggests that residents who decline trees do not necessarily feel that they win, and sometimes they lose, and they do not make decisions about the program's goals or implementation. Therefore, the

current problem with street tree-planting is a lack of shared decision-making power between residents and TGD. This could be decision-making power about which types of trees are planted in particular locations, and/or the stewardship regime after the tree planting. The model proposes that TGD and city residents who receive trees feel that everyone wins in the tree-planting program, no one loses, and TGD's forestry professionals ("experts") make decisions about the tree planting and stewardship. From this perspective, the problem with tree-planting program is a lack of citizen understanding about trees and the benefits they contribute to one's neighborhood and the city.

The conceptual model suggests that perspectives on the problem with the tree-planting program directly influence one's behavior in the program (e.g. declining or accepting a tree), perceptions of the program's justness, and perspectives on solutions to improve the efficacy of the tree-planting program. For example, residents who decline trees are predicted to want increased decision-making power about tree planting. TGD and residents who receive trees are likely to feel the solution lies in better educating residents about the benefits of trees as a means to increase the proportion of residents who accept trees.

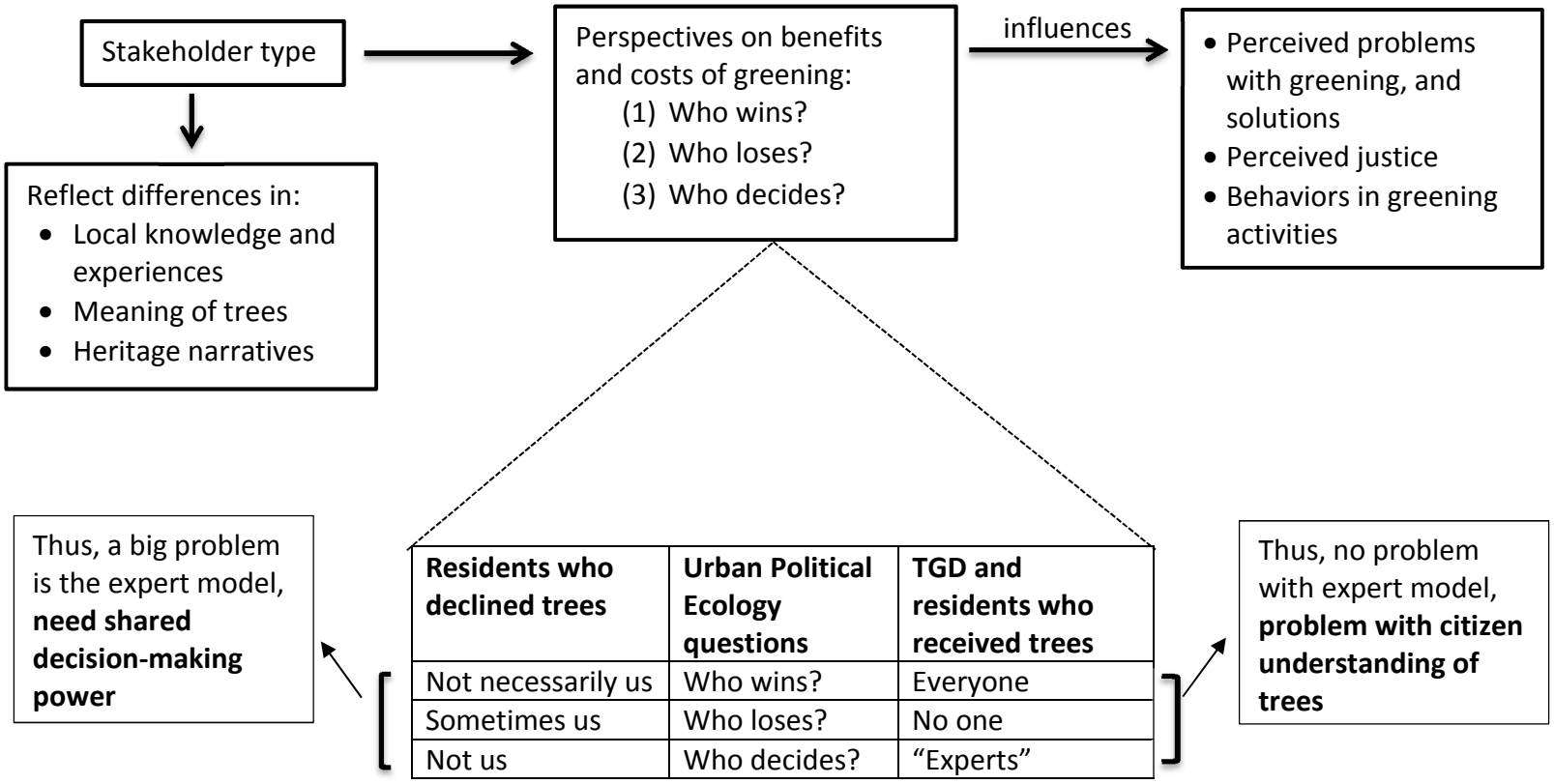


Figure 1. The conceptual model outlining hypothesized factors that influence *decisions* about urban greening efforts, and perspectives on program *results*.

Research questions

Three specific research questions flow from the conceptual model. These questions are:

1) How do stakeholders frame the problem(s) with urban tree-planting programs?
2) What are the historical, cultural, political, and ecological factors that contribute to differing frames among stakeholders regarding urban tree-planting programs?
3) What are stakeholders' perspectives on appropriate solutions to these problems?

The relationship between the conceptual model and these three research questions is summarized in Table 1.

Table 1. Conceptual model elements reflected in the study's research questions.

Conceptual model element	Research question
Perspectives on benefits and costs of greening efforts: (1) Who wins? (2) Who loses? (3) Who decides?	(1) How do stakeholders frame the problem(s) with urban tree-planting programs?
Stakeholder types reflect differences in: • Local knowledge and experiences • Meaning of trees • Heritage narratives	(2) What are the *historical, cultural, political and ecological* factors that contribute to differing frames among stakeholders regarding urban tree-planting programs?
Perceived solutions • Perceived justice • Behaviors in greening activities	(3) What are stakeholders' perspectives on appropriate solutions to these problems?

CHAPTER 3: METHODS

Introduction

Qualitative methods are particularly suitable when the focus of research questions is process (such as social and political processes), and the researcher aims to find out how and why things happen (Maxwell, 1998; Rubin and Rubin, 2005). This study utilized primarily a qualitative approach to data collection and analysis, informed by interactions with community stakeholders throughout the research process, since it allowed the researcher to understand the meaning that participants attributed to tree planting events and the ways in which these interpretations influenced their behavior (e.g. submitting a no-tree request or not).

A model of urban forest sustainability developed in the 1990s identified three elements necessary for an urban forest to continue to produce benefits at the same level over time: (1) a healthy vegetative resource, (2) a supportive community, and (3) an adequate management regime (Dilley and Wolf, 2013; Vogt, Watkins, Mincey, Patterson, and Fischer, 2015). As the field grows to recognize the importance of community voice in the management and decision-making process surrounding urban forests (Conway and Bang, 2014; Lawrence, De Vreese, Johnston, Konijnendijk van den Bosch, and Sanesi, 2013; Schusser, 2013), researchers are utilizing qualitative methods to gain greater depth and diversity in understanding the issues at hand. For example, (McLain, Poe, Hurley, Lecompte-Mastenbrook, and Emery, 2012) reviewed documents and websites to assess policies on acceptable uses of urban forests and supplemented this through interviews with community organizations as well as city officials and employees. This approach suited the purposes of their study, which sought to understand how various stakeholders conceptualize the purposes and functions served by urban forests.

Qualitative research also includes an emphasis on reflexivity, which allows the researcher and participants to influence one another and the study itself (Maxwell 1998). This reduces power hierarchies between the researcher and other research participants, and therefore produces greater insight into the social and political processes that influence the phenomenon under investigation, such as residential street tree planting, rather than restricting the study's findings to the researcher's initial paradigm (Esim, 1997). Finally, qualitative research faces fewer constraints to data collection methods, which enables participants to provide insights in the ways they are comfortable—whether it is through written notes, group dialogue, or one-on-one interviews—which creates a more representative sample that does not exclude individuals based on the means through which they prefer to communicate (Gatenby and Humphries, 2000).

For this study, different research participants actively guided the methodological approaches utilized at certain points in the research process. The initial stage of sampling neighborhoods to include in the study and identification of community leaders in those neighborhoods involved consultation with The Greening of Detroit (TGD) staff. Dialogue with key informants in each neighborhood (e.g. block club leaders) informed methods used to invite residents to participate in the research. Finally, resident feedback and preferences shaped approaches to collection and interpretation of interview and focus group data. Qualitative methods that bring diverse stakeholders together (e.g. focus groups) also provided the opportunity to develop appropriate strategies to address residents' concerns once identified.

Feminist approaches to research

This study intentionally utilized a methodology informed by feminist approaches to research to enhance the validity of the findings. For example, Haraway (2001) describes feminist objectivity as situated knowledge—the idea that every person is subject to limited social location and knowledge, emphasizing the need for any search for the truth to include an understanding of partial perspectives and the embodied nature of all vision. Rather than seeking a single vision (purported by both relativism and positivist objectivity), situated knowledge advocates a critical perspective that can yield meaningful, "accurate," and (therefore) objective knowledge based on multiple, diverse voices.

Further, ecofeminism as a theoretical framework builds upon this concept by emphasizing the important (socially constructed) role gender plays in shaping one's situated knowledge, particularly in relation to the environment. As Li (2007, p. 352) notes, "…the sex/gender role system has been entrenched within the major social institutions…which in turn shape the *interhuman* and the *human-earth relations*" [emphasis added]. Such theoretical frameworks help to guide inquiry into multiple forms of interrelated oppression (Li, 2007). In her mixed methods study of community forestry in Nepal, Nightingale (2003, p. 81) also observed the importance of situated knowledge and gender relations in understanding community forestry dynamics, stating that "…variations in the histories different people told me to some extent reflected how they were positioned differently in relation to the land and control over it, and to me."

Standpoint theory also acknowledges situated knowledge, but focuses more specifically on how the researcher and research participants are socially situated in relation to one another,

and how these positionalities may affect the research process and findings (Harding, 2001), as Nightingale (2003) noted in her study of community forestry in Nepal. This framework acknowledges the historical, cultural, and political character of every set of beliefs, and endeavors to understand individuals' perspectives within these cultural and historical contexts. As a white, female researcher and 'outsider' to Detroit communities, gender dynamics and intersectionality with other characteristics to some extent impacted the histories different participants shared with me regarding their neighborhood, the city, and the role of trees in these historical relationships.

Together, these three feminist approaches to research (situated knowledge, ecofeminism, and standpoint theory) align with the principles and goals of community engaged research, which seeks to fully and accurately represent the lived realities of research participants. These approaches also enhanced the validity of the findings by informing the approaches to data collection which sought multiple, diverse voices and did not ignore but rather paid close attention to gender dynamics that emerged in the histories and identities research participants shared with me. This is particularly vital in the profession of urban forestry, which is predominately populated by white males while women primarily lead grassroots environmental and community-based organizations (Perkins, 2015).

Existing data to guide neighborhood sampling

TGD maintains a database of residents who submit "no-tree requests" (NTR). Although the vast majority of requests are collected in-person on planting days, residents can submit NTR when staff place door hangers throughout the neighborhood 2-3 weeks prior to planting, or when trees are dropped off a few days prior to planting. Residents may also submit NTR by

telephone after they receive a door hanger. Staff members estimated that an average 10 percent of eligible residents in tree planting areas have submitted NTR (ranging from 5-25 percent per planting event). Upon examination of spreadsheets containing NTR collected by TGD between 2011 and 2014, the average proportion of NTR received from all eligible residents was actually 22.7 percent, ranging from 3.5 percent to 56 percent per planting event. In total, TGD received 1,834 NTR between 2011 and 2014 on planting days, demonstrating that this is not a rare occurrence.

For all NTR, TGD staff and volunteers record the address of the resident. For those who submit requests over the phone, TGD staff members often also collected the planting event ID number, the resident's name, telephone number, and reason for submitting the request. Given the short interaction associated with submitting NTR, the reasons provided by residents and the exact causes of their concerns are unclear (Figures 2 and 3). Additionally, these reasons are only captured for those who submit NTR over the phone, not on planting days.

Although lacking explanation, a cursory examination of reasons for submitting NTR helped to prepare the researcher for some of the issues residents raised. For instance, a large proportion indicated that they "just don't want one", which may reflect their lack of desire to engage in dialogue over the phone with TGD staff members over their true concerns, and reinforced the need to build relationships to encourage honest dialogue. Additionally, some residents mentioned concerns with "roots", reflecting historical experiences with trees and urban forestry decision makers who in the past planted species with root systems that caused property damage.

The databases of "no-tree requests" provided a starting point to identify residents to engage with in the research process. Databases are particularly useful to achieve a more representative sample than use of personal networks alone (Goodson and Phillimore, 2012). However, with such a large number of requests spread over different areas of the city, it was necessary to purposively sample neighborhoods for inclusion in the study.

Geographic Information Systems (GIS) provided a platform to map the no-tree requests and examine their distribution across the city along with other relevant variables (e.g. length of residence, home ownership), as determined through discussions with TGD staff. Their in-depth knowledge of the city's environment, and experiences within various neighborhoods in the city, helped to guide sampling of neighborhoods for inclusion in the study. A purposive sampling approach was used to select of *information-rich* cases that support the study's purpose of understanding and addressing concerns with current urban TGD practices (Bailey, 2007; Patton, 2001).

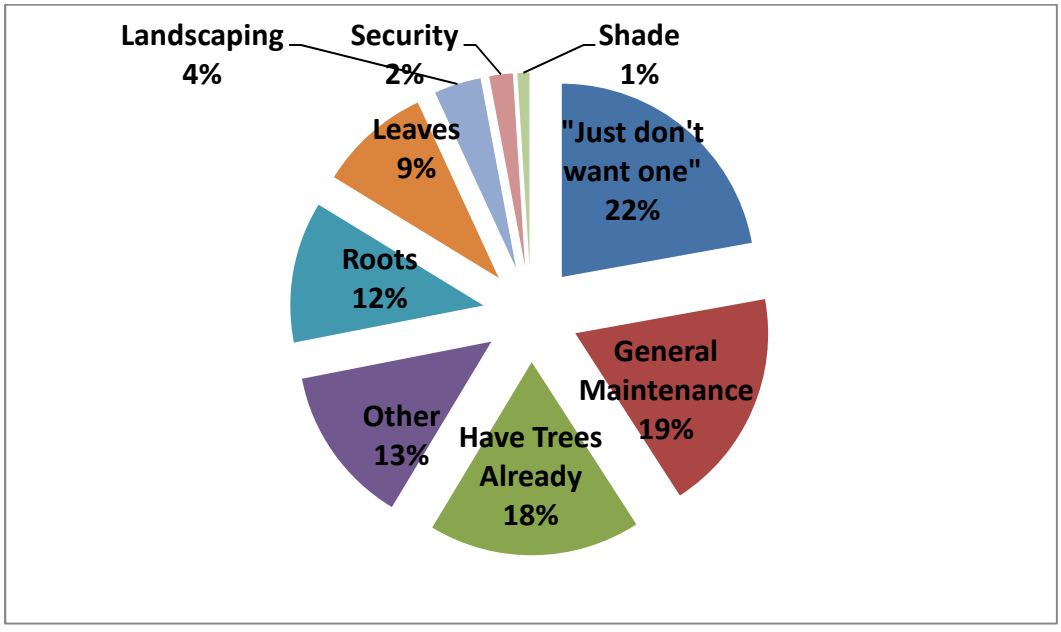


Figure 2**.** Reasons residents provided for submitting no-tree requests by telephone during the *Fall 2011* planting season (n = 203).

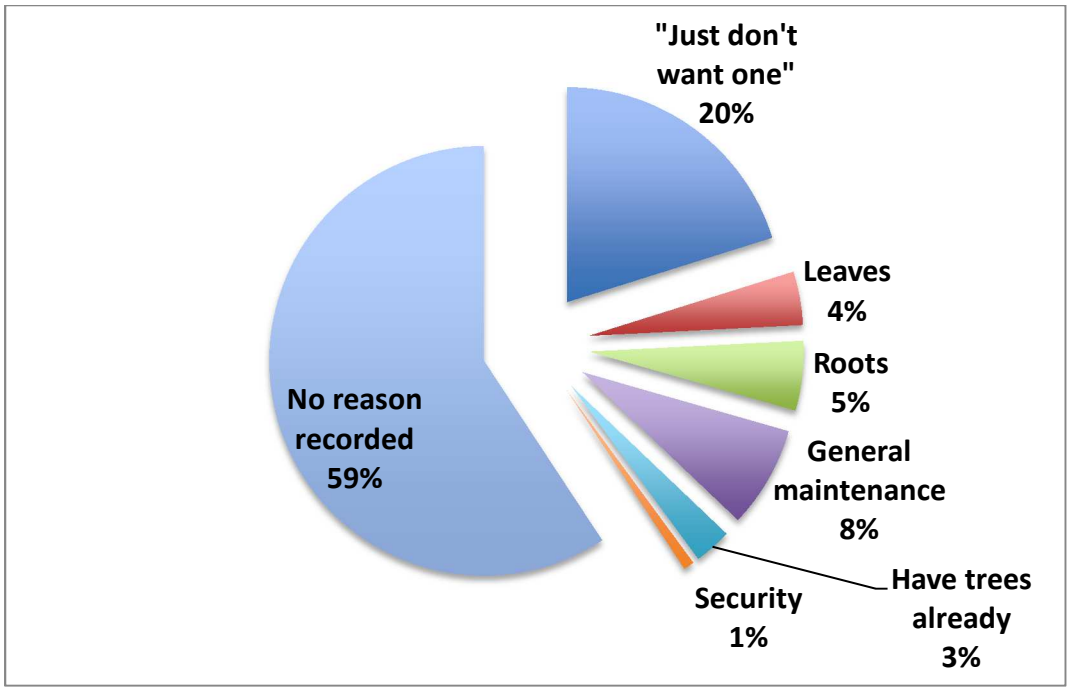


Figure 3. Reasons residents provided for submitting no-tree requests by telephone during the *Fall 2012* planting season (n = 248).

Neighborhood sampling strategy

Four purposive sampling techniques were utilized to select initial study neighborhoods, which helped to show how findings could be applicable to other contexts and facilitated comparisons among study neighborhoods: Criteria-based sampling, maximum variation, typical case, and stratified sampling (Kuzel, 1999). First, neighborhoods needed to fit the following criteria: (1) Included in a TGD tree planting event, (2) presence of residents who submitted no-tree requests, and (3) not included in any dendroremediation activities as this could seriously confound any other factors influencing submission of no-tree requests. These criteria ensured that residents included in the study would provide perspectives to answer the research questions, aimed at understanding residents' perspectives on urban greening programs, especially those who have submitted NTR.

Next, to select a typical case, all neighborhoods within 10 percent of the 2011-2014 average proportion of NTR (i.e. 20-25 percent of residents submitted NTR) were examined. Examination of a typical case neighborhood (i.e. average proportion of NTR) helps to "challenge the 'taken for granted' assumptions that guide normal behavior in typical cases" (Kuzel, 1999, p. 40).

Maximum variation was used to capture as many perspectives on street tree planting within residential neighborhoods as possible to understand the range of reasons that residents submit NTR or accept trees, and any important common patterns that cut across these variations (Patton, 1990). First, neighborhoods that exhibited maximum variation in the proportion of residents who submitted NTR—low and high proportions of NTR—were examined. For the low NTR neighborhoods, neighborhoods with the lowest percentage of NTR that had more than 10 total NTR were identified, to increase the chances of conducting interviews. For high NTR neighborhoods, the top 10 sites in terms of proportion of NTR with more than 10 total NTR were assessed.

Stratified sampling helped to ensure that diverse narratives were heard from both residents who accepted trees and those who submitted NTR (Kuzel, 1999). To achieve a stratified sample, the three sites within each type of neighborhood (low, average, high) with the greatest number of NTR were compared based on the percentage of residents who moved in before 2000 and after 2000, as well as the percentage of renters and owners, as determined by 2010 U.S. Census at the block level. Length of residence and home ownership were variables that TGD staff indicated may influence residents' narratives regarding trees. Therefore, the aim

was to include neighborhoods with a mix of newer and older residents, as well as homeowners and renters.

Given that the census data were 5 years old at the time of the study, the top three sites in each type of neighborhood were also visited to see if any looked very different from the others in terms of greenness or amount of vacancies, so those that appeared the most similar could be selected, as these factors may affect perceptions of tree planting. This process of ground-truthing resulted in the selection of three sites total, one from each proportion of NTR (low, average, high) (Table 2).

Table 2. Neighborhoods originally selected for inclusion in the study based on proportion of NTR, number of NTR, home ownership, resident move-in date, and site appearance (vacancy, 'greenness').

Year	NTR group	# of NTR	% NTR	Census data on move-in date and home ownership	Site visit summary
2012	Low	32	16%	Covered two census blocks: 74% moved in after 2000 (block 1) and 50% in block 2. 30% renters (block 1) and 27% renters (block 2)	Not many vacant properties visible, lots of smaller trees, some large trees. Houses and properties look well kept.
2012	Average	44	24%	Moved in after 2000 (40% block 1, 52% block 2) and 31% renter (block 1), 23% renter (block 2)	Not many vacant properties visible, mostly small brick houses, lawns pretty well kept. Some large trees in yard and/or street, some areas with no trees.
2012	High	58	32%	50% moved in between 2000-2009, 30% after 2010 (20% before 2000). 66% renters	Not many vacant properties visible, properties appear well kept. Some large and small trees. Some large trees not in good condition.

In the initially selected low NTR neighborhood, several community group meetings were attended to solicit interviews, but primarily residents felt more comfortable sharing information in a group conversation and this limited the depth of response received from each individual. Therefore, residents from low NTR sites (less than 15 percent NTR) from the previous year who had contacted TGD were called to gather data over the phone or schedule an in-person audio-recorded interview when the resident was amenable to this request.

Another unforeseen complication of sampling involved the diversity of residents at community meetings. Initial sampling of "neighborhoods" was based on TGD tree-planting events, which spanned several blocks. However, neighborhood organizations that serve these blocks also serve several other blocks that encompass different TGD of Detroit tree-planting events. Several times residents met at community meetings were interviewed who had actually been offered a tree in a different event with a different calculated proportion of NTR (which was discovered after obtaining their address during the interaction).

Since the main purpose of this study was to understand why residents submitted NTR or accepted trees, this realization regarding the data that could be obtained through various methods caused expansion of the sample to include residents from neighborhoods outside those originally selected, as long as fit the criteria of either receipt of a tree or submission of an NTR for a TGD event. Ultimately, residents were interviewed from one high NTR neighborhood (32 percent), two above average neighborhoods (26-30 percent), three typical case neighborhoods (20-25 percent), and three low NTR neighborhoods (0-16 percent) (Figures 4 and 5). This development allowed for achievement of a greater degree of variation in participants. For instance, through discussion with participants in each of the three low NTR

neighborhoods, it became apparent that these neighborhoods had a low proportion of NTR for different reasons, as explained in the results section of this dissertation.

% NTR:	0%	**12.5%***	16%	21.2%	22.4%*	**24.7%***	27.1%	29.7%	**32%***
n (NTR)=	0	1	1	1	2	8	2	0	5
n (R) =	1	2	4	0	3	6	0	1	4

Figure 4. Number of interviews conducted with those who submitted NTR (n= 20) or received trees (R) (n= 21) and lived in one of nine areas where TGD planted trees between 2012 and 2015. An asterisk and bold font denotes a neighborhood originally selected for inclusion in the study.

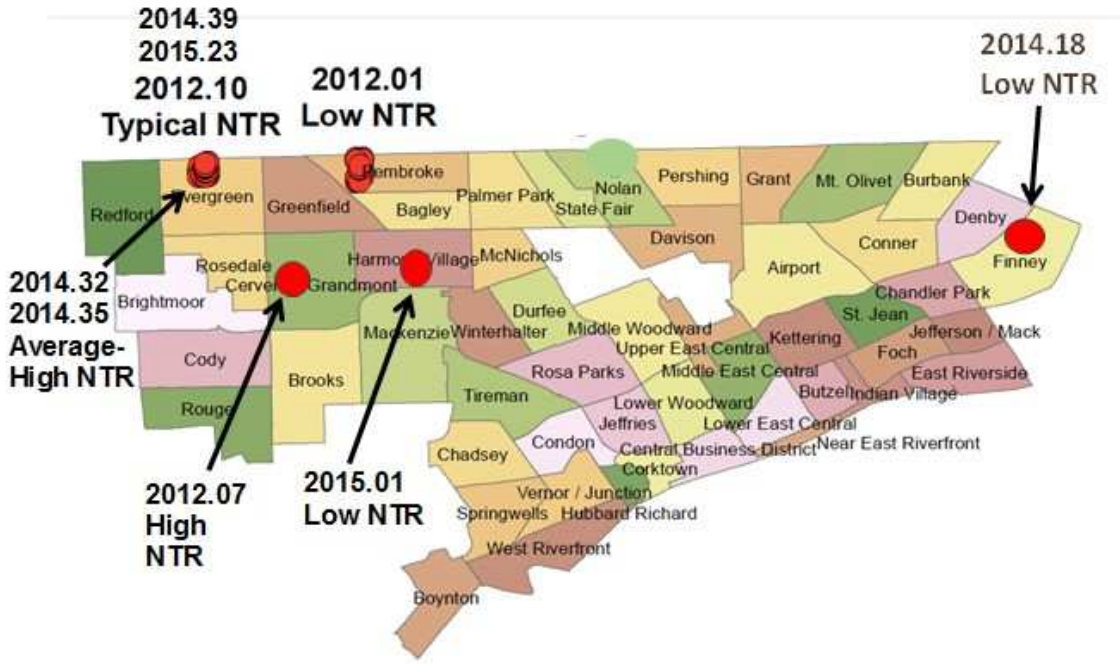


Figure 5. Final neighborhoods selected for inclusion in this study, based on event year and number (e.g. 2014.39) and proportion of NTR submitted (e.g. low NTR).

Gaining entrée

A significant, and *ongoing* process, within a community-engaged research effort is gaining entrée within communities (Berg, 2001; Ochocka, Moorlag, and Janzen, 2010). Creswell

and Miller (2000) explain that prolonged engagement in the field facilitates the process of gaining entrée over time and thus, validity of the study, since the researcher can build trust and rapport with participants who are then more comfortable sharing their perspectives. To gain entrée with TGD, the researcher volunteered in two separate 4-hour tree planting events in Detroit from spring through fall 2014, and met with TGD staff on multiple occasions to discuss the research design and goals.

Prolonged engagement also allows the researcher to reciprocate by giving back in various ways to participants, so the relationships are less hierarchical and one-way, in keeping with feminist approaches to research. For instance, in this study copies of flyers for community meetings were made free of charge for groups that allowed the researcher to attend at their meetings and use a portion of their meeting time to discuss this research and solicit interviews from their members.

From January to May 2015, the researcher lived in Detroit half of each week to experience neighborhood dynamics as well as the social and cultural fabric of the city through visits to local businesses, public parks and other sites, and meetings with connected individuals, like a University of Detroit—Mercy professor who helped with community engagement during a strategic plan produced by Detroit Future City. A full-time living arrangement in Detroit took place from July to December 2015 for the purpose of data collection, which relied heavily on building relationships with numerous additional gatekeepers and key informants.

Gatekeepers, or individuals who are well respected and connected within the community, serve a vital role since they can control (formally or informally) the flow of interactions a researcher has in a setting (Bailey, 2007). These individuals have experiential

knowledge and relationships that a researcher must understand and build from to have meaningful interactions and successful data collection approaches in a neighborhood. These individuals provided general advice on how to invite study participants to the process (McDonough, Russell, Burban, and Nancarrow, 2003), for example, by attending a scheduled block club meeting or community event.

A researcher's social positioning is the way that others in a setting perceive and then interact with them based on characteristics that are either visible or shared through conversation and hold some meaning. For example, this can include gender, race/ethnicity, nationality, regional affiliations, religion, marital status, age, and education. Gatekeepers illuminated some of these social norms to the researcher and initiated interactions with study participants. For instance, in one community, some participants expressed concern about the presence of demographic questions on questionnaires, particularly related to race. Therefore, the voluntary nature of the questions was reiterated. This helped to prevent or address any misunderstandings that could have precluded effective data collection (Giovannini, 1986).

Snowball sampling for research participants

Gatekeepers and key informants were identified within sampled neighborhoods primarily through snowball sampling. TGD staff members and volunteers suggested well-connected individuals to contact via telephone (e.g. block club leaders, city of Detroit staff within particular neighborhood districts) since they work with leaders in many of these neighborhoods to organize planting events. Additionally, through attendance at community events open to the public, the researcher met a community organizer who provided contact

information for a high NTR community association leader, as well as the leader of a low NTR neighborhood group.

Gatekeepers provided introductions to particular individuals who submitted no-tree requests or received a tree, or became study participants since they received a tree or submitted an NTR. Attendance of community meetings was also utilized to identify research participants. To gain insights from those who did not attend community meetings but lived in sampled neighborhoods, some gatekeepers went door-to-door with the researcher.

Snowball sampling was also utilized to identify relevant TGD staff, volunteers, and board members to interview. Those initially involved in discussions of the research purpose and approach suggested key individuals to interview, who then suggested additional interviewees. This process took place until no new individuals were identified.

Data collection

Data were collected from two key groups—city residents eligible for street trees in neighborhoods where TGD conducted plantings and relevant staff, board members, and volunteers *within* TGD who are actively involved in the street tree-planting program. Approximately 60 percent of city residents interviewed were women, and about two-thirds of city resident interviewees were retired home owners (Table 3). All city residents interviewed were non-white ethnicity. For TGD, the majority of interviewees were employees and had been with the organization 5 years or less (Table 4). Eight of 14 TGD respondents were women. Additionally, less than one third lived in the city of Detroit.

Table 3. Demographic characteristics of city residents *interviewed* across study neighborhoods (n=43)[1].

Demographic characteristic:		**Low NTR (n=9)**	**Average NTR (n=21)**	**Average-High (n=3) and High NTR (n=10)**	**Total:**
Gender	Female	5	12	10	27
	Male	4	9	3	17
Age group	Retired	8	10	11	29
	Working age	1	6	1	9
	Unknown	0	5	1	6
Home ownership	Own	5	9	13	28
	Rent	1	3	0	3
	Unknown	3	10	0	13

Table 4. Demographic characteristics of TGD staff, board members, and volunteers *interviewed* (n=14).

Demographic characteristic	**Categories of response**	**Number of TGD respondents**
Length of time with the organization	5 years or less	9
	6-10 years	1
	11-15 years	0
	16-25 years	4
Role(s) within the organization	Employee	10
	Former employee	1
	Board member	3
Status as a resident of Detroit, Michigan	Never have lived in the city	6
	Former resident of the city	4
	Current resident of the city	4
Gender	Female	8
	Male	6

[1] Two individuals (couples) were interviewed at the same time on two occasions: Once in an average NTR site, and once in a high NTR site. Therefore, although 41 interviews took place, demographic data was collected from 43 individuals.

As Buch and Staller (2007) note, ethnographers rely on three basic forms of empirical evidence which include: (1) "ethnographic talking to informants" either formally through interviews or through informal conversations, (2) observations, and (3) social artifacts which often include documents people produce. Multiple methods of data collection ensured a more representative sample that did not exclude participants based on how they could be reached (e.g. community meetings, door-to-door) or their preferred means of communication (e.g. group conversations, one-on-one interviews) (Table 5). For example, since individuals who submitted "no-tree requests" did not participate in planting events and many did not attend community events or block club meetings, participant observation was not a desirable means for gaining their perspectives. In this case, door-to-door interviews or phone calls were more effective. Interview questions for each type of respondent are presented in Appendix A.

Participant observation was appropriate for those who engaged in dialogue with TGD on planting days, particularly if the individual did not want to talk with the researcher separately. Montell (1999) notes that participant observation is particularly appropriate for identifying issues not on the researcher's initial agenda, since s/he does not direct conversation or activities toward a particular research question. The researcher is able to gather data through her reflections on the activities observed, aided by a protocol (Appendix B). In keeping with feminist approaches to research, which seek to be less hierarchal, participant observation provides the opportunity to better understand the priorities of research participants (Gatenby and Humphries, 2000).

Table 5. Means of data collection from study participants to answer each research question, categorized by participant group.

	Detroit residents				**Detroit residents interacting with TGD**		**The Greening of Detroit (TGD)**	
Research question:	Participant observation [2]	One-on-one interviews	Dialogue at community meetings	Focus groups for member checks	Community events and meetings[3]	Flyering	Participant observation [4]	One-on-one interviews
1. How do Detroit residents and relevant staff members within The Greening of Detroit frame the current problem(s) with urban tree-planting programs?	X	X	X	X	X		X	X
2. What are the historical, cultural, political, and ecological factors that contribute to differing frames regarding tree-planting programs?	X	X	X	X	X	X	X	X
3. What are research participants' perspectives on appropriate solutions to these problems?		X	X	X	X	X		X

[2] Interactions **among residents** at community meetings and events the researcher attended

[3] Interactions between residents and TGD during tree planting and community meetings or events

[4] TGD Green Infrastructure Committee meeting and Board meetings

Average NTR neighborhood

Data in the average NTR neighborhood was collected through several means. Audio-recorded and telephone interviews took place with members of a neighborhood block club (Table 6). Participant observation between residents and TGD staff also occurred at the block club's "back to school bash" event. A city of Detroit staff person also went door-to-door with the researcher on two occasions to interview residents who had submitted NTR in the average NTR neighborhood. In all cases outside of audio-recorded interviews, data were recorded through detailed field notes.

Table 6. Means and amount of data collected from residents in Detroit, Michigan by study site.

Means of data collection	Low NTR sites (3)	Average NTR sites (3)	Average-High NTR site (2)	High NTR sites (1)	Supplementary sites
Community meetings and events attended	4	3	1	3	10
Individuals who provided data at meetings	13	2	4	8	34
Phone conversations	3	4	0	3	1
Door-to-door interactions	0	11	0	5	
Audio-recorded interviews	2	5	0	6	1
Questionnaires	5	30	0	21	
Total participants:	**23**	**52**	**4**	**46**	**36**

High NTR neighborhood

Audio-recorded interviews occurred with residents in the high NTR neighborhood, in addition to participant observation of community group meetings recorded through detailed field notes. Based on a community group leader's suggestion, data from residents in one

neighborhood group were collected through surveys, including whether the individual had been eligible for a tree from TGD, their response to the planting, and any potential positive and negative impacts of tree planting.

Low NTR neighborhoods

Data were collected from members of a low NTR community association through detailed field notes made at two of the group's meetings, either through group discussion or one-on-one informal discussion after the meetings. Although one-on-one audio-recorded interviews with residents were solicited at meetings, no attendees were interested in this option. One resident conducted a telephone interview, which was recorded through detailed field notes. The last of the group's meeting was audio-recorded.

At another low NTR community group meeting, participant observation of TGD staff interactions with residents as well as informal conversations with residents led to data collection through detailed field notes. Data were also collected via surveys and an audio-recorded interview with one resident. In a third low NTR neighborhood, an audio-recorded interview was conducted, and detailed notes were taken during two telephone interviews.

The Greening of Detroit

Interviews with relevant TGD staff, board members, and volunteers began in mid-August 2015, and continued through May 2016 (Table 7). Informal interactions with TGD of Detroit staff also occurred by phone, email, or in person throughout the research process, which provided additional data on their perspectives as well as the dynamics of urban and community forestry decision-making in Detroit. Data via field notes were collected at several TGD events provided through informal interactions with TGD staff members and residents, and

participant observation of TGD's interactions with one another and community members at these events. These included: a fundraiser for The TGD, four tree planting events, a Detroit Land Forum (resource fair for residents), and a meeting for the Community Development Advocates of Detroit (a trade association for nonprofit, community-based development organizations in the city).

Participant observation of a Green Infrastructure committee meeting and two TGD Board meetings also resulted in detailed field notes. At this point, insights gleaned from interviews with staff about how they framed the problem(s) with tree planting and appropriate solutions, could be examined in the context of these meetings to verify information or identify any inconsistencies. Additional perspectives were gained through field notes taken during observation of training and dialogue, and conversations with staff and trainees at TGD's annual training for "citizen foresters", which are volunteers who are trained to lead other volunteers in proper tree planting techniques on the day of these events. Field notes were also made while observing and interacting with TGD staff on one occasion when they hung flyers on residents' doors.

Table 7. Amount and type of data collection mechanisms used to gain insights from TGD staff, board members, and volunteers.

Means of data collection	Number
Audio-recorded interviews	14
Tree planting events attended	4
Office interactions	several
Committee meetings attended	1
Board meetings attended	2
Community outreach events attended	4

Supplementary community and related events

Events in the study neighborhoods provided another venue to identify broader heritage narratives within the community to see the extent to which issues raised were similar to or different from research participants. For example, observation of discussion at a "coffee hour" held by a Detroit City Councilman within the city, resulted in field notes about issues in the surrounding neighborhoods, which were compared to what information shared in the low NTR block club meeting. Conversations with those at the event who were not in the study sites also allowed for assessment of the degree to which their perspectives on tree planting were similar to or different from the low NTR neighborhood residents. This helped to determine the applicability of study findings in other contexts.

By "following" the low NTR block club on Facebook, an advertisement for a picnic for community leaders in a park near to the low NTR neighborhood was found. At this event, field notes resulted from informal conversations with community residents and leaders, some of whom had been approached by TGD for a tree planting (although not in one of the neighborhoods selected for this study) and some of whom simply had experiences with trees in their neighborhood that could be compared to the narratives received from participants in the study sites to identify similarities or differences.

In the late fall of 2015, a National Park Service fellow in Detroit provided notification of a workshop held at nearby Wayne State University which would feature discussion of urban and community forestry among academics and professionals, including those from other cities, like Baltimore, Maryland. Field notes were gathered to document relevant discussions, particularly to assess how grassroots groups and neighborhood residents are represented in discussions

about urban greening. After this meeting, further dialogue took place via email with city of Baltimore forestry staff members to ascertain the issues they faced and recent successes with funding efforts like tree maintenance to see how this compared to the circumstances in Detroit.

Documents

Documents on water and sewer infrastructure via the city of Detroit government and news media websites were analyzed to identify any information available on approaches to greening to see how conflicts between underground infrastructure, whether manmade or from greenery, are addressed. Additionally, a news article about tree planting on vacant properties owned by the city of Detroit was assessed, as this was a partnership effort with TGD and contained several quotes from the city of Detroit's planning staff and TGD's president. This data was compared to feedback gained during interviews with TGD's staff regarding problem(s) with and solutions to tree-planting programs, particularly to understand if perspectives differed depending on whether tree planting occurred on street easements in residential neighborhoods or on vacant properties.

Data analysis

A key dilemma in data analysis is how to accurately represent the lives of participants while a researcher interprets and presents the results of the study to other audiences. Kirsch (1999) echoes Esim's (1997) assertion that researchers must take responsibility for mitigating power differences in the research process to the extent possible—for example, by examining how we represent others, who is affected by the research we conduct, and what the potential consequences are for participants involved in the study.

In the process of analyzing interview data, this means not rushing to edit or "clean up" data, since the researcher could disregard key information this way. Devault (1990) discusses her observations of times when women had difficulty articulating their thoughts (hesitations in speech, using the phrase "you know" a lot). While traditional transcription and interpretation of interviews may involve "cleaning up" these areas of the interview to be more coherent, these "messy" aspects of the conversation serve as important clues that the dominant language used to discuss a topic may not be sufficient to describe experiences for those in the study, primarily minority populations living in an urban setting. Throughout transcription and data coding, close attention was paid to "messy" aspects of the dialogue rather than eliminating them.

All audio-recorded data from interviews and group meetings were transcribed and subsequently coded in Nvivo, a qualitative data analysis software, along with typed field notes from observations and informal conversations. Interview data were auto-coded in Nvivo using headings for each section of the interview that related to particular theory-driven codes (e.g. perspectives on: Who wins? Who loses? Who decides?). In the next phase, both the researcher and research assistant manually coded the interview transcripts for any additional data outside of these auto-coded sections that fit within each theory-driven code, and manually coded field notes for data that fit within these theory-driven codes.

Through this process, themes emerged from the lived experience that did not fit into theory-driven codes, so in a final phase of coding data-driven codes were created and all sources of data were coded relevant to these emergent themes. For instance, prior to data collection, the researcher identified two outcomes from tree planting based on existing data: a resident received a tree or submitted a "no-tree request." However, six categories of response

to tree planting emerged during analysis, which then were utilized to compare data related to the theoretical framework (e.g. Who wins? Who loses? Who decides?). This coding was an iterative process in which the researcher reviewed and coded each source of data until no new ideas emerged (Emerson, Fretz, and Shaw, 2011), and then, as appropriate, used focused coding to further reduce the data by identifying and combining the initial coded data into larger categories that subsume multiple codes (Bailey, 2007) (Table 8).

Table 8. Codes developed for residents and TGD respondents to answer the three main research questions.

Research questions	**Residents' codes**	**TGD codes**
1) How do research participants frame the problem with the tree-planting program?	1. Categories of response to tree planting 2. Potential positive impacts of tree planting 3. Potential negative impacts of tree planting 4. Means of involvement in tree planting a. Means of notification b. Decision-making authority given	1. Benefits to the current approach to tree planting 2. Goals of the tree-planting program 3. Challenges faced to achieving goals 4. Potential negative impacts of tree planting 5. Involvement of residents in the tree-planting program
2) What are the *historical, cultural, political, and ecological* factors that contribute to differing frames among stakeholders regarding tree-planting programs?	1. Special aspects of the neighborhood 2. Challenges faced in the neighborhood 3. Activities one is involved with in the neighborhood 4. Thoughts and feelings about trees	1. Challenges faced to achieving goals a. Characteristics of the organization b. Characteristics of city governance c. Characteristics of residents 2. Thoughts and feelings about trees 3. Measures of success 4. Funder requirements
3) What are stakeholder perspectives on appropriate solutions to the problems identified?	1. Information needs 2. Process or decision-making involvement suggestions	1. How to improve the current approach to tree planting

Ensuring data quality and rigor

To ensure the quality and rigor of the research process, from sampling to data collection and analysis, the researcher relied on Lincoln and Guba's (1985) four main criteria (Table 9). At least two strategies were used for each criterion.

Table 9. Qualitative criteria for assessing research quality and rigor.[1]

Qualitative term[2]	Strategy employed	Citations
Credibility: The findings and interpretations are credible to those who construct the multiple realities represented.	• Prolonged engagement in the field	(Creswell and Miller, 2000)
	• Modified member checks	(Creswell and Miller, 2000; Maxwell, 1998)
	• Identification of gatekeepers	
	• Use of key informants	
Transferability: Showing that the findings have applicability in other contexts.	• Provide thick, rich description	(Creswell and Miller, 2000; Emerson, Fretz, and Shaw, 2011)
	• Purposive sampling	(Crabtree and Miller, 1999)
Dependability: Research findings can be tracked and repeated by outside reviewers of the process.	• Create an audit trail	(Anfara, Brown, and Mangione, 2002; Creswell and Miller, 2000)
	• Compare data across sources and methods	(Bailey, 2007)
Confirmability: The extent to which study findings are shaped by the respondents, not researcher bias, motivation, or interest.	• Practice reflexivity	(Emerson et al., 2011; G. Kirsch, 1999)
	• Compare data across sources and methods	(Bailey, 2007; Creswell and Miller, 2000)

[1] Table adapted from: (Anfara et al., 2002).
[2] Definitions adapted from: Lincoln and Guba (1985) and http://www.qualres.org/HomeLinc-3684.html

As described in the sampling and data collection sections of this chapter earlier, the researcher utilized four purposive sampling strategies to demonstrate transferability of the research findings, and undertook prolonged engagement in the field by living in Detroit for 6 months during primary data collection in fall 2015 to develop credible findings. Composition of

field notes throughout the research process served three purposes which enhanced the transferability, dependability, and confirmability of results—(1) creation of an audit trail, (2) development of thick and rich descriptions, and (3) a means to regularly practice reflexivity, which involves active awareness and contemplation of our own desires and goals in the research process so that one can avoid unintentionally projecting those views onto others. Self-reflexivity is emphasized by the American Anthropological Association in their statement on ethics, outlining the need for researchers to think through the possible ways their research may cause harm prior to working in a community (Clark and Kingsolver, 2002).

During data analysis, interview and focus group results were compared with participant observation to the extent possible (Bogdewic, 1999; Buch and Staller, 2007; Nightingale, 2003). Although this process of comparison sometimes identified consistency in results obtained from different methods of data collection, it also elucidated conflicting accounts of the current and historical circumstances. Fine (2008) found this in her study of REO auto workers in Lansing, Michigan, whose life history narratives did not always reflect the archival records of events in that community. Whether comparison of results across different methods of data collection provided confirmatory evidence or disagreement on the circumstances under investigation, it served as a useful tool to develop a richer and fuller perspective of the research topic.

Additionally, the lead researcher and research assistant separately coded portions of the same data (e.g. residents' thoughts and feelings about trees) to examine the dependability of the coding scheme and ensure codes developed were clearly defined to accurately capture themes in the data. For example, both researchers identified codes for general positive feelings about trees (e.g. "I like trees") and specific benefits associated with trees (e.g. "it makes things

beautiful"), in addition to negative opinions of trees located in one's neighborhood (e.g. "in our neighborhood they're [trees] not being maintained"). This process ensures that other researchers would arrive at the same findings by applying the codes developed to the same data that the lead researcher and research assistant examined.

Modified member checking

In addition to prolonged engagement in the field, member checks increase the credibility of qualitative research since they provide an opportunity for participants to consult with the researcher during the data analysis process. This provides a space to negotiate meaning and thoughtfully interpret data (Kirsch, 1999) and ensure that any conflicts in interpretation are appropriately addressed before the results are reported to a wider audience (Maxwell, 1998). Anfara et al (2002) note that researchers often do not describe in detail the process used to engage in member checks. Yet openness is necessary to understand the ways member checks enhance study validity and the limitations of this approach to validating results. Described below are the procedures used for member checking in this study, the rationale for this approach, and the usefulness of the findings.

After analyzing interview responses, the researcher and research assistant facilitated discussions with the average NTR community association and one of the high NTR community associations. The purpose of these meetings was twofold: (1) to check the degree to which the six categories of response to tree planting were accurate and comprehensive, and (2) to assess potential approaches to address concerns voiced about tree-planting programs to answer research question 3 regarding appropriate solutions to problems with the tree-planting program.

At these meetings, the researchers provided a survey describing the six categories of response to tree planting and asked respondents to mark which category (or categories) they identified with, or write a comment to indicate if none of the categories were appropriate for them (Appendix C). These were modified member checks, since respondents were primarily those who did not provide the original data collected and used in development of categories and solutions. This strengthened the validity of the results, particularly transferability, by examining the degree to which the results were applicable to a larger group of residents rather than only those interviewed originally. At least half of the respondents in each group were over the age of 60 (Table 10). There was a greater proportion of males at the average NTR group compared with the high NTR group, though still a greater number of women identified at both meetings. The majority of respondents owned their homes and on average residents in both groups had lived in their neighborhood for about 35-36 years.

Respondents were also asked to complete a second survey with Likert-scale questions, open-ended questions, and categories of responses to solutions identified during interviews (Appendix C). The meetings included discussion of the questionnaires so that those who preferred to respond verbally could do so and not be left out. These meetings were audio-recorded and transcribed for analysis in addition to quantitative analysis of questionnaire data. The low NTR community group did not hold a meeting during the study timeframe, but at the last of three visits to this group, the researcher did check some results with the members related to solutions to tree planting issues that they had previously identified. However, the categories of response to tree planting were not checked since this phase of analysis had not yet occurred at the last of the three meetings.

Table 10. Demographic characteristics of participants who completed surveys in member checking focus groups in the average and high NTR neighborhoods (n=41).

Demographic characteristic:		**Average NTR group (n=30)**	**High NTR group (n=11)**
Age group	41-50	2	2
	51-60	1	1
	61-70	6	3
	71-80	8	4
	81 or older	1	1
	Unknown	12	0
Gender	Female	11	10
	Male	7	1
	Unknown	11	0
Home ownership	Own	17	9
	Rent	0	2
	Unknown	13	0
Average length of residence		36.7 years	35.6 years

Summary

A qualitative research approach allowed for a greater understanding of the range of meanings that participants attributed to tree planting events and the ways in which these interpretations influenced their behavior (e.g. submitting an NTR). Purposive sampling of neighborhoods led to data collected with city residents who received trees and submitted NTR across nine TGD tree-planting events with a maximum variation in response to tree-planting (i.e. varying proportions of NTR submitted).

Through prolonged engagement in the field, relationships with gatekeepers were established which aided with snowball sampling of city residents and selection of diverse means of data collection and ensure a more representative sample. In particular, leaders and members of neighborhood groups provided an important venue to gain entrée and solicit interviews with city residents who submitted NTR or received a tree. Snowball sampling also provided a means

to identify appropriate TGD staff, board members, and volunteers involved with the tree-planting program.

Participant observation of supplementary events within study sites, and of TGD events (e.g. fundraisers) enabled comparison of themes identified through other means, such as individual interviews. This process enhanced the validity of the results. Field notes contributed to the study's validity by creating an audit trail, thick descriptions, and aided in the process of reflexivity to ensure accurate representation of respondents' lived realities. Finally, modified member checks with individuals who attended the average and high NTR neighborhood groups provided a means to ensure accurate interpretation of data initially collected from city residents.

CHAPTER 4: RESULTS AND DISCUSSION

The results and discussion are organized in the following way. First, data are presented by research question. For each research question, results are reported based on the type of participant that provided the data—residents of Detroit, and TGD staff, volunteers or board members. Within the sections that report Detroit residents' perspectives, data are compared across respondent characteristics such as response to tree planting (e.g. received a tree or submitted an NTR) as well as neighborhood of residence (low, average, high proportion of NTR).

Research Question 1: How do research participants frame the current problem(s) with urban tree-planting programs?

Categories of responses to tree planting

An initial objective of the study was to understand how perspectives on trees and involvement in tree-planting programs were similar or different among residents who accepted trees and those who submitted "no-tree requests" (NTR). However, it turns out that it is not easy to categorize residents simply as "no-tree request" or "accepted a tree" for several reasons:

- Some residents submitted NTR prior to or on the planting day, but then received a tree (either willingly or due to a miscommunication)
- In one case, a resident wanted a tree but was mistakenly marked as "NTR"
- Some residents received a tree but did not know they could submit an NTR (did not receive or respond to the door hanger), were out of town when the tree planting happened, and/or would have preferred a different type of tree.

Six major categories of responses to tree planting emerged (Table 11). Of the 41 participants who provided data on this theme, 28 aligned with only one category (68%) while 13 aligned with two or three categories (32%). Therefore, the categories are not necessarily mutually exclusive. There was no overlap in respondents who did not want a tree at all (Category 1) and those who were happy to accept any tree planted (Category 6).

An important result was that of the 41 respondents, 19 submitted NTR (46%) while 22 received trees (54%). However, only 14 respondents (34%) were happy to accept the tree planted through the current street tree planting approach utilized by The Greening of Detroit (Category 6). The sustainability of a healthy urban canopy relies, in part, on the existence of a supportive community (Clark et al, 1997), and the data suggest that this cannot be accurately measured through counts of "no-tree requests" alone. In this analysis, over half of the respondents received trees, but only one-third were satisfied with, and therefore supportive of, the tree planting approach currently used. It is also important to note that three respondents in Category 6 still wanted more information about the tree planted, including how to care for the tree, the rationale for species selected, what the tree will look like as it grows, and who will care for the tree and how.

Table 11. Categories of responses toward tree planting (n = 41) expressed by those who submitted an NTR or received a tree (R). Number of respondents for each theme is provided in parentheses. An * and orange font denotes a theme mentioned by residents in low, average, and high NTR neighborhoods.

1. Would not accept a tree (16 NTR, 1 R) • Root damage concern: sewer and/or sidewalk* (10) • Don't want to be responsible for maintenance: raking leaves, pruning* (8) • Canopy impairs vision of neighborhood: safety concern (1) • Not enough space (1)	**2. Would accept a tree with maintenance of tree and/or infrastructure** (3 NTR, 4 R) • General tree care (3) • Pruning (2) • Watering (2) • If underground pipes are replaced with PVC (1)
3. Would accept a tree if I could choose the type of tree (1 NTR, 8R) • Prefer flowering or smaller growing tree species* (6) • Prefer trees with lush green leaves (1) • Prefer tree without berries to clean up after (1)	**4. I want more information about a tree planted** (4 NTR, 5 R) • How fast and/or tall it will grow* (4) • How to care for the tree*[1] (3) • What will the tree look like? (1) • Root growth patterns (1) • Who will care for the tree for how long? (1) • The benefits of having trees planted (1) • Why plant oak trees? (1) • How determined who got which tree (1) • Does the city trim trees? • Who to contact if something is wrong with the tree (1)
5. Once a dead tree is removed from the area, I would accept a new tree (1 NTR, neighbors of 1 R) • Safety or nuisance concern (1) o Also noted by a community group that did not have a tree planting event (3 residents) and Low NTR community meeting attendee • Not enough space for new tree (1)	**6. Happy to accept any tree planted** (14 R) • Valued benefits over possible issues and/or maintenance (6) • Willing to care for the tree* (3) • Believe the trees planted will be better than problem trees planted previously (3) • No cost for trees (2) • Lack of trees in the area (2) • Able to choose preferred tree (1)

[1] Only mentioned by people who were also happy to receive a tree (Category 6)

1. Would not accept a tree

For most (10/17 respondents), the reason to not accept a tree related to root damage concern. Four residents mentioned specific concerns with basement flooding or sewage issues that could result from root damage to underground infrastructure, while three mentioned concerns about sidewalk damage from roots. Eight residents in this category specifically mentioned that they did not want to have to maintain the tree and assumed that they would be left with responsibility for maintenance. As a retired female NTR resident in an average NTR neighborhood said, “Everybody wants beauty in their neighborhood and they like to see the trees but, yeah, I don’t want to be responsible for those trees.”

2. Would accept a tree with maintenance of tree and/or infrastructure

Three of 7 people in this category noted pruning needs, while three noted watering needs. One resident who received a tree in a high NTR neighborhood summed up this response stating, “yeah it looks nice and I think it helps the community by having trees, the only thing is you know when the limb dies on a tree, or whatever, it should be taken off. Kind of keep the tree up, because certain parts start to die and then it starts to look bad, but as long as it’s kept up and looks nice I think it helps the neighborhood.”

3. Would accept a tree if I could choose the type of tree

The issue of maintenance also influenced some residents’ desire to be able to choose the type of tree planted. A block club leader who received a maple tree referred to size in terms of aesthetics and ease of maintenance, “when I think about bringing a tree to your neighborhood, again, my mind went to the small, beautiful, blooming tree that don’t grow very tall…So just say that um the maples and elms and all that, we do not need those on these small

pieces of property." This is in line with results from a study by Conway (2016) which found that private property owners based tree planting decisions on aesthetics and ease of maintenance.

Another resident in a low NTR neighborhood who did not have a choice in the type of tree, but was very happy to receive a flowering tree said, "I probably would've been less excited if it didn't get flowers on it…you know if it was like a really big huge tree I would've hoped that they wouldn't have done that you know what I mean, like a medium something like that." Overall, six of eight people in this category wanted a smaller growing tree species. As previously stated, many residents interviewed for this study were retired, and other scholars have also found older residents to express concern about living among tall trees (Conway and Bang, 2014).

4. I want more information about a tree planted

All individuals in this category identified with other categories as well. Across all types of neighborhoods (low, average, high NTR) and all other categories of response to tree planting, residents wanted to know how fast and/or tall the tree would grow. In the case of those who were happy to accept a tree (Category 6), they wanted to know how to care for the tree, regardless of neighborhood type (low, average, or high NTR). This is a very important result because it demonstrates that in cases where individuals are happy with the tree planting approach and outcome, they are interested in helping to care for the tree.

5. Once a dead tree is removed from the area, I would accept a new tree

One woman at a low NTR community meeting said that the city needs to cut down the dead trees "so you can green up Detroit. If you skip that block that has a bunch of dead trees, it's not green." One woman who submitted an NTR in an average NTR neighborhood said that

she likes trees, but that two hazardous tree across the street from her house would need to be removed before she would accept a tree. This resident indicated that the city staff had looked at the tree but did not take action to remove it. In this case, direct experience with a large tree that appeared hazardous to the resident led to a lack of acceptance of a new tree. According to a woman who accepted a tree in another average NTR neighborhood, some of her neighbors also wanted a tree but could not receive one since the city had not yet removed dead trees that are "in the way."

6. Happy to accept any tree planted

Six of 14 respondents in this category valued the benefits of the tree greater than the potential costs they associated with it. A woman in an average NTR neighborhood was happy to accept a tree even though she acknowledged the maintenance that may be involved. It is important to note, however, that at a follow up focus group, this same resident wanted to know why an oak tree was planted in front of her house, as she was concerned about the size to which it would grow. Although a resident may be happy to accept a tree planted, they also want to have more information about the species decision and its implications. A young woman who accepted a tree in a high NTR neighborhood said that even though they had plumbing issues in the past, it would be a long time before that is in an issue and her mother was happy to receive a tree due to memories of tree-lined streets in the past.

One resident moved into his house in an average NTR neighborhood after the tree was planted but said he was fine with the tree there because "trees take care of themselves" and thus, he perceived he would not need to do anything to engage with it. Another resident who

was happy to receive a tree said she had not had any issues with trees in the neighborhood and that it was a good thing to plants trees, especially “if it’s not costing anybody anything.”

A retired man who accepted a tree in a low NTR neighborhood said his neighborhood was full of trees and “one more tree wouldn’t hurt,” while a younger man in a different low NTR neighborhood accepted a tree partly because “...we need more trees over here and there’s really no trees over there.” Thus, although these two individuals had very different current tree canopy experiences in their neighborhoods, their responses to tree planting were favorable.

Modified member checks

All residents who completed surveys in follow up focus groups with average and high NTR neighborhood groups identified with at least one of the categories of response to tree planting (Table 12). Additionally, no respondents added new categories in the “additional comments” section of the survey, or follow up discussion. Based on this, it appears that the categories of response are comprehensive and accurate. The most common categories across all respondents were root damage concern and preference for a flowering tree.

Several respondents identified with more than one category. For example, one respondent wanted a choice of tree and wanted a dead tree removed, and was also willing to care for a new tree. Another common pairing was a desire for an ornamental or flowering tree as well as information about how fast and tall the tree would grow. For one resident these were the highest priorities, followed by willingness to care for the tree and desire for assistance with watering the tree. Thus, even if someone is willing to care for the tree, they may want help with that process.

Table 12. Proportion of respondents from high and average NTR neighborhood focus groups who identified with each type of response to tree planting on **individual questionnaires**.

Category	Total **proportion** of respondents **(%)**	Average NTR group **(%)**	High NTR group **(%)**	Notable results
1. Would not accept a tree • Root damage concern • Not enough space	17.5 30 12.5	17 27.5 14	18 36 9	Root damage was a more common concern than lack of space for a new tree
2. Would accept any tree with maintenance • Pruning • Leaf raking • Watering	20 12.5 7.5 7.5	14 10 7 0	36 18 9 9	Even though leaf raking was mentioned several times in interviews, it was not a common issue mentioned in focus groups
3. Would accept a tree if I could choose the type • Prefer flowering or ornamental tree • Prefer lush green leaves	25 32.5 5	24 27.5 0	27 45.5 18	Preference for a flowering tree was more common among the High NTR group than the Average NTR group
4. I want more information about a tree planted • How fast and tall it will grow • How to care for the tree	17.5 15 7.5	10 7 7	36 36 9	Desire for detailed information on tree growth was more evident in the High NTR group than the Average NTR group
5. Once a dead tree is removed, I'll accept a new tree • Safety concern • Not enough space for a new tree	17.5 15 5	7 7 7	45.5 36 0	Almost half of the High NTR respondents wanted a dead tree removed, compared to just 7% of the Average NTR group
6. Happy to accept any tree planted • Trees take care of themselves • Willing to care for a tree	17.5 10 12.5	14 14 3	27 0 27	A greater proportion of High NTR respondents were willing to care for a tree than Average NTR respondents

Who wins?

The conceptual model posited that those who supported the current tree-planting program would feel that everyone wins, while those who did not favor the current approach would feel that they did not win. To measure ways that residents perceived they would "win" through the tree-planting program, the researcher asked what they felt the potential positive impacts of planting trees in the neighborhood were. TGD staff, board members, and volunteers were asked to identify the main goals of the tree-planting program to ascertain which outcomes were associated with a perspective that they "won" with the tree-planting program (e.g. planting a certain number of trees).

There were 10 potential positive impacts mentioned by residents (Table 13). All of these benefits were identified by both residents who received trees and submitted NTR, with the exception of property value increase and having new trees to replace dying trees, which were benefits mentioned only by residents who received trees. The ability of roots to cleanse the soil was mentioned by one resident who wanted a tree, but was mistakenly marked as an NTR and didn't receive a tree. Additionally, the three most frequently mentioned benefits (shade, beauty and oxygen) were noted by residents in all neighborhoods visited, regardless of the proportion of NTR submitted (low, average, or high).

Table 13. The potential positive impacts of tree planting identified by residents (n=27)[5], in order of most to least frequently mentioned (number of unique people who mentioned the item in parentheses), categorized by type of respondent (R = Received tree, NTR, or wanted tree).

Potential positive impacts of tree planting	Resident type
1. Shade* (17)	R, NTR
2. Beautification* (16)	R, NTR
3. Oxygen provided* (10)	R, NTR, wanted tree
4. Helps the environment in general (3)	R, NTR, wanted tree
5. Helps the community in general (3)	R, NTR
6. Property value increase (3)	R
7. Home for the birds and/or squirrels (2)	R, NTR
8. New trees to replace the old ones (2)	R
9. Carbon dioxide capture (2)	NTR, wanted tree
10. Roots cleanse the soil (1)	Wanted tree

When these benefits were analyzed according to the categories of response to tree planting, the three most frequently mentioned benefits (shade, beauty, and oxygen) were identified by all categories of residents (Table 14). Carbon dioxide capture and "generally helping the environment" were mentioned by a few people, but included one resident who did not want a tree at all and at least one resident who was happy about the tree planting. Provision of habitat for birds and/or squirrels and property value increase were noted by residents who wanted a tree with maintenance and/or choice and who were happy about the tree planting, while generally "helping the community" was noted by those who wanted trees with maintenance and choice of type of tree. The two benefits that were only mentioned by residents who received (or wanted) trees were also residents who were happy about the tree planting, including: replacing dying trees and roots to cleanse to the soil (Tables 9 and 10).

[5] NTR respondents = 9, Respondents who received trees = 17, Wanted but didn't receive a tree (incorrectly marked as NTR) = 1. An * denotes mention of this item by residents in all types of neighborhoods (e.g. low NTR).

Therefore, for some who were happy about tree planting, they identified more ways they would "win" through the street tree planting efforts.

These same categories of benefits from planting trees aligned with the goals of tree planting identified by relevant Greening of Detroit staff, board members, and volunteers (Tables 14 and 15), with one notable exception that was only mentioned by Greening of Detroit staff—stormwater mitigation. In fact, this was one of the most frequently mentioned goals by TGD respondents, perhaps reflecting the priorities of funders.

Table 14. Perceived aesthetic and environmental benefits of trees noted by residents (n=27), and goals of the tree-planting program noted by relevant TGD staff, board, and volunteers (n=13).

Aesthetic and environmental *benefits* or *goals* of tree planting	**Categories of residents**	**Number of TGD staff, board members, or volunteers**
1. Shade	All (17)	6
2. Beauty	All (16)	6
3. Oxygen	All (10)	8
4. CO2 capture	No tree wanted (1) and happy about tree (1)	
5. "Help the environment"	No tree wanted (1) and happy about tree (2)	"Improve the resource for humans and animals" (2)
6. Home for the birds and/or squirrels	With maintenance (1) and happy about tree (1)	
7. Roots cleanse soil	Happy about tree (1)	
8. Increase the canopy	Happy about tree (2)	7
9. Improve water quality through stormwater runoff mitigation	n/a	8

Table 15. Perceived social benefits of trees noted by residents, and social goals of the tree-planting program noted by relevant TGD staff, board, and volunteers.

Social benefits or goals of tree planting	Categories of residents	TGD staff, board members, and volunteers
1. "Help the community"	With maintenance (2) and with choice (1)	Decreased crime as trees mature, promotes walking streets, "calm in the neighborhood" (6), increase people's value of trees (2), improve quality of life for residents (1)
2. Property value increase	Happy about tree (2) and with choice (1)	

Residents' views on the positive impacts of tree planting

Shade, beauty and tree size

Shade and aesthetic value of trees were the most frequently noted benefits across all participants, and were commonly mentioned together. A woman who accepted a tree in an average NTR neighborhood said, "Some people like them for shade, some people like them because they're beautiful and help the earth." A retired woman in this neighborhood who submitted an NTR due to root damage concern also noted these two positive impacts of trees in the same breath:

> It's so beautiful driving down the street seeing that trees is on both sides, the shade that it provides and just driving down the street seeing the street full of trees versus a street with no trees. You get a sad feeling with no trees. You get a happy feeling when you're driving down the street and it's full of trees.

A retired male resident who received a tree in this same neighborhood said, "…since I'm older I can just see the beauty in trees. I even enjoy just sitting on the porch and looking at the

trees. And around here most people keep their lawns nice." This is consistent with a study in southwest England where visual attractiveness was rated as the highest benefit of street trees (Flannigan, 2005).

In many cases, the beauty residents associated with street trees was also linked to the size of trees. Some residents expressed an affinity for large trees, which is in line with other research in which residents reported streets were especially attractive when larger trees canopied the streets (Schroeder and Ruffolo, 1996). However in southwest England, residents indicated a preference for smaller trees (Flannigan, 2005). This also aligns with several residents' views in Detroit.

Shade was also a benefit identified by those who preferred smaller growing trees as well as those who did not voice a preference regarding tree size. When one young man identified shade as a benefit and then said it was positive that Greening was planting trees that "didn't really grow that large," he was asked whether this was contradictory, to which he replied:

> Kinda yes, but it depends how large it grows, you know what I'm saying? As long as it ain't no 60 foot tree or you know what I'm saying? That's cool. It could be a good 20, 20-30 feet. That's cool but once you start getting up there then that's when you start having problems.

Very few participants (residents or TGD) specifically mentioned improving the resource for other non-human animals, despite the fact that increasing the number of trees in the city would inevitably increase the amount of habitat for at least some animals that tolerate or even favor urban conditions.

Absorb more stormwater

No residents mentioned this as a potential positive impact of trees. This may be due to a perception that trees actually increase flooding in homes due to root interference with underground pipes, since four residents in average and high NTR neighborhoods identified this as a reason they submitted an NTR. This also may be due to a difference in priorities for tree planting. Researchers investigating Detroit resident perceptions of rain gardens to absorb stormwater found that residents were more concerned with the visual appearance of the rain gardens when choosing between designs, and not on the differences in ability to capture rainwater (Nassauser and Sampson, unpublished research).

This is in line with results from this study which found that beauty was the second most commonly mentioned benefit of trees by residents. Additionally, Pataki, McCarthy, Gillespie, Jenerette, and Pincetl (2013) found that residents' preferred traits for municipally planted trees were size and ease of maintenance—traits not necessarily aligned with high ecosystem service provision. This points to a potential conflict in views on appropriate tree-planting programmatic decision-making since residents may want to maximize the perceived beauty that trees contribute to their neighborhood and property (which is associated with different sizes of trees at maturity for different residents) while minimizing the maintenance associated with trees.

Social benefits of trees

Residents did not mention stress reduction or increasing "calm in the neighborhood" as a potential positive impact of planting trees (which was a goal of TGD staff, board members and volunteers), though one resident in a supplementary neighborhood said trees could "reduce noise" and another resident who submitted an NTR did mention having a "sad feeling with no

trees" in a neighborhood. A few residents mentioned social benefits of planting trees that were different than the health benefits noted by TGD. For instance, a man who submitted an NTR due to concerns about the long term watering costs and competition with his lawn said he liked seeing young people out in the neighborhood.

Perspectives from The Greening of Detroit

Absorb more stormwater

One of the most commonly noted goals of the tree-planting program by TGD staff, board members, and volunteers was to improve water quality through stormwater run-off mitigation. Detroit is not unique in its goals to increase tree canopy cover to achieve stormwater run-off reduction. Other cities, including Seattle and Pittsburgh have policies and management plans to utilize green infrastructure for stormwater management, in large part by planting large trees where possible to maximize benefits (Dilley and Wolf, 2013).

High ecosystem service provision, such as stormwater mitigation, is a priority for TGD, as noted by one staff member who emphasized the importance of planting shade trees and not just "ornamental" trees:

> The disadvantage to ornamentals is since they are smaller they offer much less environmental benefits. Um, they usually cost a little bit more…they're more prone to get suckers up from the base of the tree, especially if you're in the crab apple family. And as a rule they're shorter lived than shade trees.

Specifically in regards to stormwater mitigation as a goal of the tree planting program, another Greening staff member said:

> …we live on this huge resource of the Great Lakes, you should protect that. And this is our part as an urban non-profit, to help improve this resource for people and animals…even thinking of the combined sewer overflow events and the flooding that goes on, there's a lot of water quality issues with the city and so trees help that piece.

This particular goal represents an area of divergence between residents and TGD respondents. Based on the perspectives shared by TGD staff members, it is apparent that this priority is driven by a view of tree-planting on a city-wide or regional scale, in which the focus is minimizing the cost to plant thousands of trees and ensure their survivability through watering and maintenance in the first three crucial years for tree health after planting, as well as maximizing the ability to achieve large-scale stormwater runoff reduction through planting trees en masse.

Increase the tree canopy for many reasons

This city-wide or regional view of tree planting is expressed in a goal noted by almost all of TGD staff, board members, and volunteers: increasing the city's tree canopy. As a TGD Board member concisely described, a major goal of the tree-planting program is to increase the city's canopy through two means: "plant where they want trees, and also to educate people to want trees." Beyond stormwater run-off mitigation (and water quality improvement), the most common reason to increase the canopy was to improve air quality through provision of oxygen and capture of carbon dioxide and other air borne particulates. Interestingly, while ten residents mentioned the benefit of oxygen from trees, only two noted carbon dioxide capture. A couple of residents generally expressed the role of trees in filtering or cleaning the air.

Meanwhile, TGD staff, board members, and volunteers often mentioned these multiple benefits to air quality together.

As with residents, TGD respondents noted goals of increased shade and beauty. Some talked about unique health benefits like calm and stress relief that they didn't think people "really attribute to trees," and how trees help mitigate other "ambient stressors that people may or may not be aware of."

TGD staff, board members, and volunteers were also asked what the benefits of the current approach to tree planting were (i.e. the "wins" associated with their current policies) (Table 16). Responses emphasized the ability to plant a large amount of trees (ecological outputs), as well as increasing residents' engagement with trees and with the organization. These benefits speak to the ecological goals of the program verbalized by all TGD participants interviewed, as well as the social goals mentioned by some within TGD, such as increasing people's awareness of the range of benefits of trees. Additionally, a staff member acknowledged the role of residents' engagement with the process to aid in long term maintenance, and thus, sustainability of the trees. This theme of the importance of a supportive community is noted by several scholars as a key element of a sustainable urban forest (Austin, 2002; Clark et al, 1997).

Table 16. TGD staff, board member, and volunteers' views on the benefits of their current approach to tree planting in residential neighborhoods.

Benefits of current approach to tree planting	**# of TGD interviewees**
Ecological outputs	
1. Plant lots of trees	4
Improved engagement between residents and trees	
2. Some residents really appreciate having a tree planted for them	2
3. Engages more people to care about the trees once planting is complete	1
4. Community tree applications ensure people want the trees	1
5. Doing the hard work now of trying to change people's perception of trees will only make this work easier over time	1
6. People are now requesting shade trees, not just ornamental species	1
Improved engagement between residents and Greening	
7. The Greening of Detroit is becoming more well known	2
8. Providing more information to resident prior to planting than previously	1

Conclusion

The examination of participants' perspectives on the benefits of tree planting revealed overlapping themes and divergent perceptions among residents and TGD staff, board members, and volunteers. For example, beauty, shade, and air quality improvements emerged in responses from both types of respondents. Additionally, only residents who were open to tree planting (in its current form, or under certain conditions) noted other ways that trees could improve the environment for humans or other animals. These benefits overlapped with goals that a few TGD respondents referenced. It appears that those who did not want a tree at all perceived a smaller range of benefits or ways they would "win" through tree planting than other respondents.

Areas of divergent views included stormwater mitigation and social benefits like decreased crime and decreased stress in a neighborhood, mentioned by TGD but not residents. In the conceptual model it was hypothesized that TGD and its supporters would frame the problem as a lack of resident awareness of the benefits of trees and it does not appear that either residents who receive trees or submit NTR are unaware of the benefits of trees. However, there were some benefits of trees noted by several representatives of TGD that were not noted by many residents, and particularly not those who declined trees.

Understanding the range of residents' perceptions of the benefits of trees in general provides some insights into how TGD can engage in dialogue that promotes lesser known benefits of trees, like stormwater mitigation. Yet it may be insufficient to answer the question "who wins" based solely on general benefits of tree planting identified by respondents. Instead, it is important to understand the ways that respondents conceptualize these "wins." For instance, while several residents associated beauty with canopies of large trees along streets, others associated beauty with smaller growing tree species. One such resident who received a tree identified the top three frequently mentioned benefits of trees in this study (shade, beauty, and oxygen), but she did not feel she "won" because the tree planted was a maple tree and she wanted a smaller growing tree. In this case, TGD won in some regards because they achieved an important goal and measure of success for their program, which is to limit the number of "no-tree requests" and plant trees that provide high ecosystem services, such as stormwater mitigation (associated with larger growing species, like maple trees). Yet, by some of their standards, they also did not "win" in this case because the outcome was not a resident who valued trees more than before the planting.

It is vital to recognize that the benefits identified by residents may not be associated with the same tree species or classes of trees that TGD chooses to plant. This is due in large part to the perceived "losses" that residents associate with various tree species (described in the next section) and try to minimize while still receiving valued benefits, such as beauty and shade. Combined, the ability to receive benefits and minimize losses represents a more accurate depiction of whether a resident feels they "win" with residential street tree planting, and more accurately associates with one's response to tree planting (e.g. submitting an NTR, being dissatisfied or satisfied with the tree planting).

Who loses?

Residents were asked about the potential negative impacts of tree planting in their neighborhood, while TGD respondents were asked about the challenges to achieving the goals of the tree-planting program. This provided insights into how participants felt they may "lose" with planting trees in general, and within the context of the current tree-planting program.

Residents' perspectives on the potential negative impacts of tree planting

Residents who received trees or submitted NTR shared many of the same perspectives on potential negative impacts of trees planting, most commonly the concern with general maintenance and upkeep, which presented financial, safety and/or aesthetic issues (Table 17). Another often mentioned issue amongst both groups was potential for sewage infrastructure conflict due to root growth. Only some residents who received trees said there were no negative impacts. Most residents who received trees identified some negative impacts. A few residents who submitted NTR identified concerns with sprinkler damage, decreased visibility that may encourage illegal activity, and crowding with existing trees.

Table 17. The potential negative impacts of tree planting identified by residents (n=39)[6], in order of most frequently mentioned, categorized by type of respondent (R = Received tree, NTR = "No-tree request," or wanted tree).

Potential negative impacts of tree planting	Resident type
1. General maintenance and upkeep (23)*	R, NTR
2. Sewage infrastructure conflict[1] (12)	R, NTR
3. No problems (5)	R
4. Sidewalk damage (4)	R, NTR
5. Lawn interference (4)	R, NTR
6. Sprinkler damage (2)	NTR
7. Decreased visibility (1)	NTR
8. Crowding with nearby trees (1)	NTR

[1] Noted by residents in all neighborhood types, except the Low NTR proportion sites

When perspectives of residents in different categories of response to tree planting were compared, maintenance still emerged as a primary concern, but the degree of maintenance concerns varied (Table 18). For instance, across all categories there was an issue with leaves and branches falling noted. These commonalities are highlighted in Table 18.[7] However, only those who did not want a tree at all or wanted a tree under certain conditions noted issues with existing large, dead trees or costs to keep up existing trees. Three residents who did not want a tree at all (Category 1) noted more possible issues with trees, like sprinkler damage, decreased visibility, or crowding with existing trees. Those who said there were "no problems" with trees

[6] NTR respondents = 20, Respondents who received trees = 18, Wanted but didn't receive a tree (incorrectly marked as NTR) = 1. An * denotes mention of this item by residents in all types of neighborhoods (e.g. low NTR). Number of unique people who mentioned the item in parentheses).

[7] In December 2013, an ice storm caused hundreds of thousands of Michigan residents to lose power for several days (CBS Detroit, 2013). Michigan regulators recommended an increase in spending on tree trimming by utility companies, as trees outside of the utility company's right-of-way "continue to be a significant cause of outages during storm events" (Michigan Public Service Commission, 2014, p. 12). This event could have contributed to consistent views among residents that falling tree branches are a potential negative impact of planting trees.

were happy to accept a tree (Category 6), with some who also who accept a tree if they had some choice of the type of tree (Category 3). Those who aligned with both Categories 3 and 6 were given a choice or assurance that the tree would not grow "large." Three residents did not have differing opinions about trees planted based on the species or size, while six had preferences for smaller trees based on maintenance concerns and/or aesthetic value, and a few residents expressed an interest in having trees that look more uniform.

Table 18. Perceived potential negative impacts of tree planting noted by residents in different categories of response to tree planting. Number of respondents who noted each maintenance issue is provided in parentheses.

Potential negative impacts of tree planting	**Category 1: No tree at all**	**Categories 2-3, 5: with maintenance, choice, and/or dead tree removal**	**Category 6: Happy about trees**
Maintenance	• Lots of big, dead trees (2) • Costly to keep up current tree (1) • Branches and leaves (4) • Bird excrement on car (1)	• Dead tree needs removal first (1) • Small trees preferred (2) • Paid to maintain neighbor's tree (2) • Slow process to receive city/NGO help with tree issues like pruning, watering (5) • Leaves and branches falling (4) • Spraying for caterpillars or worms (1)	• Tree branches fell during a storm (1) • Neighbor doesn't care for tree, looks bad (1) • Leaves (3)
Sewage conflict	Yes	Yes	Yes
Interferes with lawn	Yes	Yes	
Sidewalk damage	Yes	Yes	
Sprinkler damage	Yes		
Decreased visibility	Yes		
Lack of space	Yes		
No problems		Yes	Yes

Perspectives of TGD on challenges to achieving tree planting goals

Several TGD staff, board members, and volunteers mentioned specifically the challenge of maintenance—both regarding trees they plant and commit to maintaining for the first three years after planting, and for the existing city street trees (Table 19). As one staff member commented:

> In the city of Detroit, the Greening of Detroit is the only agency that does maintenance on trees with the exception of removal, and we don't have the funding to provide the structural pruning maintenance. That would yield more positive results quicker.

Another staff member stated it is difficult to keep up with maintenance of trees in the first three years as more are planted every year. From these perspectives, TGD and residents "lose" in the current system to some degree from lack of funding for maintenance since it inhibits the organization's ability to more effectively contribute to a healthy forest canopy in the city.

However, a different staff member focused on the benefits of trees and stated that there were no potential negative impacts: "…every tree in the ground has an X amount of carbon dioxide reduced, an X amount of stormwater absorbed, and also filtered, cleaning particulates out of the air, there's really no downside to planting trees." From this perspective, no one loses from planting trees. This staff member noted the main challenges as some residents' desire to not have trees based on negative past experiences and rocky soil. This perspectives reflects an emphasis in scholarly literature on ecosystem services as well, as Lyytimäki, Petersen, Normander, and Bezák, (2008, p. 164) assert, "Most studies and assessments describing provisioning, regulating, cultural, supporting or other ecosystem

services explicitly or implicitly focus on "goods" produced by green and blue areas, while "bads" are usually noted only briefly or left without attention."

Still another staff person, when asked if there are any potential negative impacts of planting street trees in the city of Detroit, said the potential negative impact of the program is on people's perceptions of trees:

> When I read that question originally I honestly couldn't think of anything. I think there is one…and this wouldn't necessarily be an enduring long-term negative impact, but when community engagement is not done thoroughly or effectively, people may feel like the tree that was planted in front of their house was something else that was done to them, instead of done for them.

Table 19. Perspectives of TGD staff, volunteers, and board members on challenges to achieving the goals of the tree-planting program (n=11).

Challenges to achieving goals	# of TGD respondents
1. Adequate funding for tree maintenance	7
2. Adequate funding for planting trees, including to hire more staff members	4
3. Lack of city maintenance of street trees (existing and Greening trees after first 3 years)	4
4. It's not a high priority for some	2
5. Residents not wanting trees	5
6. Rocky soil	1

Conclusion

Residents in all categories of response to tree planting, from those who did not want a tree to those who were happy to accept a tree, identified issues with roots that caused sewer issues and branches from trees that fell during storms and needed to be pruned. Additionally, residents who were happy to receive a tree or would accept a tree under certain conditions

identified fewer potential "losses" from planting trees, signifying a potential connection between openness to tree planting and experience with certain safety or financial issues with trees. Staff members within TGD noted a goal is to increase people's value of the ecosystem services of trees so that more trees can be planted. What may be important here is that residents are thinking on an individual, household level about whether to accept a tree or not, while Greening is thinking on the city scale about the benefits of trees.

Among TGD respondents, there was diversity of views on potential negative impacts of planting trees in general. Some acknowledged the "loss" of lack of funding for maintenance experienced by both residents and the organization, while one staff member said there were no downsides to planting trees. Another felt the organization may lose if residents are not engaged in a way that increases their understanding of the diverse benefits of trees, a key goal of the organization. These results partially support and partially conflict with the relationships posited in the conceptual model for the study. For example, some within TGD identified no losses from tree planting (in accordance with the posited views that would be held by TGD and its supporters), while others identified ways that the organization and/or residents currently may "lose."

Who decides?

Residents' experiences

There were diverse perceived methods of notification and involvement by residents, from no notification to ability to choose type of tree planted *if you were home* when Greening was in your neighborhood (Table 20, Figure 6). There was also a range of reactions reported by residents who said they did not receive notification, from those who would have liked

notification and/or more involvement, to those who were not concerned about a lack of notification. For instance, one woman who received a tree said, “I think when they planted the tree they should have asked me, gave me a choice, do you want this one, this kind or this kind? If there’s two different kinds or however many.” This woman indicated that this would be appropriate since the resident will be left to maintain the tree, even though it is city-owned property.

Five of 7 residents who were happy to receive a tree despite a lack of choice were either new to the neighborhood or reported no city service issues. Another interesting observation is that more residents who received trees than those who submitted NTR reported that they had interactions with TGD in person, although they did not always report a satisfactory outcome from the interaction. Of the four people who were given a choice, three were happy to receive a tree. One woman in a high NTR neighborhood who was not offered a tree said that if you were there when Greening planted, you could talk to them and choose between a “flowering tree or a junky tree. Otherwise you got stuck with what they planted.”

Table 20. Method of notification and involvement in the tree-planting program reported by residents interviewed, from least to most involvement (n=27)[8].

Least involvement

Method:	NTR	Received
Unsure if notified	Average (1)	
No notification and would have liked that	High (1) Average (1)	Average (1)
No notification, not home, neutral attitude	Average (1)	High (2) Low (2)
Notified, no method indicated	Average (2)	
Notified, but unsure how (can't remember)		High (2) Average (1; we "were warned" of it)
Received a door hanger	Average (1) Low (1)	Average (2) Low (2)
Heard through block club president or meeting	Average (1)	Low (1)
Notified by a neighbor	Average (1)	
Resident asked for, but was not given tree choice on planting day		Low (1)
Resident asked for, and was given tree choice (prior to or on planting day)		Low (2)
Asked if you wanted a tree on the planting day (no previous notification)		Average (2)
Knocked on door to ask if you wanted a tree	High (2)	Low: (1; reported being shown pictures of trees and told they would be small)

Most involvement

[8] Number of respondents from each neighborhood type (e.g. high NTR) provided in parentheses.

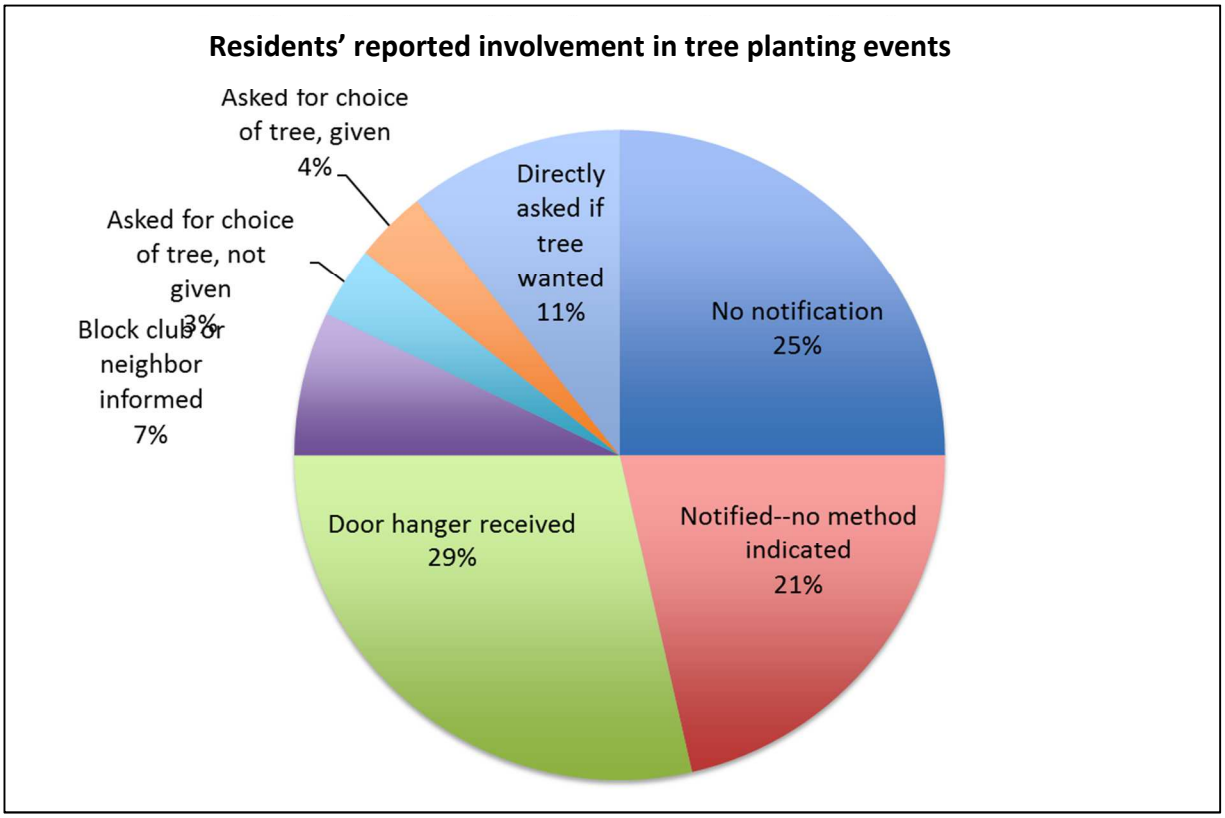


Figure 6. Decision-making involvement in TGD's tree-planting events reported by residents in study sites. (n=28).

Experiences of The Greening of Detroit

Site selection

TGD selects neighborhoods to plant trees in through two means: resident-submitted tree planting applications and grants through other entities like the Detroit Water and Sewerage Department. When residents submit applications to TGD, the next step according to one staff member is "we just tell them like what our standards are, how we do our tree planting, like what's going to go down and maybe see what kind of community group they have going, how active it is in the community." This protocol appears to leave little room for

residents to influence the tree planting event process, a finding bolstered by residents' responses in the previous section regarding their involvement in tree planting with TGD.

According to TGD staff and board members, community leaders sometimes try to encourage other residents to attend the informational meetings (e.g. through flyers, door to door, sometimes email) and provide a list of addresses for those in the community who want trees for sure. A TGD respondent indicated that on planting day, these community leaders sometimes help to facilitate tree swaps, in which a neighbor who would like a tree receives one instead of a resident who does not want the tree. For the latter method of site selection based on grant funding requirements, selection of residential areas to plant trees in depends upon the width of the easement between the sidewalk and the street, the degree to which the area currently lacks trees, and existence of relatively few vacant houses.

Species selection

Several TGD staff, board members and volunteers indicated in individual interviews and during training events for citizen foresters (long-term volunteers who guide other volunteers on planting days) that TGD's green infrastructure staff members decide which species to plant in which locations in the neighborhoods and residents do not have a choice in this matter. Another staff member noted that although the forester has a say in the species, it is a choice limited by availability of particular species in different seasons and years.

Additionally, a staff member noted that species selected are "street appropriate" and not problematic like silver maples or cottonwoods planted in the past which had shallow root systems, "So like ones that people are actually going to enjoy and they're gonna become established and they're not gonna destroy the property basically." This same staff member also

stated that when they plant in response to a community tree application, there are far fewer NTR (even though residents are not formally involved in species selection) because, "Generally you have a very active block club or community group that's already discussed the benefits of trees or at some point has attended an event where we were speaking about that…so everybody's on board with it."

However, occasionally there was some involvement of residents in selecting a species of tree to plant, though it was not systematic or formalized. As one staff member said, "if they don't want shade trees we try to talk them into the ornamental trees." This would happen at several points in the process. For example, during observation of flyering in a neighborhood, a resident was able to ensure they did not receive a crabapple tree because they were home at the time. This was also observed on planting days, for instance, when a resident was able to receive a flowering tree by requesting it through TGD staff and volunteers.

Measures of success

Who decides on what "success" is regarding a street tree-planting program? The answer importantly reflects the basis for allocating resources to particular actions. For instance, TGD staff members indicated in interviews and by sharing grant agreement forms that funders want to know how many trees are planted and number of volunteers engaged (Table 21). However, the number of volunteers engaged from a particular neighborhood is not measured or a condition for receiving funding. In some ways this is helpful for Greening, since they can focus attention on planting trees in a neighborhood rather than limiting the amount they plant based on how many volunteers they can get from a particular neighborhood (which can be influenced by several factors over which they have little control). As one staff member noted, in the three

years he has been with the organization (6 planting seasons with around 15 events each season), he has only actively planted trees with residents six times, stating it is more common for residents to come out after the tree is planted and say that they don't want it than to help plant the tree.

Additionally, none of the measures of success provided by staff emphasize the degree to which residents receive information they desire about the tree, particularly after the initial tree planting, including long term maintenance. When asked about how residents can engage with TGD after tree planting, some staff said that they may interact with residents when the tree is maintained and watered in the first three years, or that residents can call the organization, leave a comment on the TGD's Facebook page, or contact them through their e-newsletter. Another staff member said there was no other way for residents to provide feedback on the street tree-planting program other than through submitting a no-tree request, through a phone call or on the day of planting.

Without measures of success that account for the degree to which community residents are involved in the process, engagement is not prioritized in decisions regarding how to conduct tree planting activities, and that is an important omission. As Austin (2002, p. 178) wrote of her study on tree planting and maintenance projects on vacant lots in Detroit, "Tending to local residents, as well as the trees, in neighborhoods can have positive impacts on tree survivorship, community development, and improved relationships between foresters and the public." As tree survivorship is a key measure of success for the tree-planting program, measurement of the involvement of residents in neighborhoods during and after tree planting could be an important addition to boost tree survivorship.

Table 21. Measures of success TGD staff, volunteers, and board members report using for the tree-planting program, and benefits of the current approach.

Ecological indicators of success	**Number of TGD respondents**
1. Number of trees planted	9
2. Survivability	5
3. Reduced flooding (stormwater management) for Detroit Water and Sewerage Department grants	3
4. Pounds of CO_2 sequestered	1
Social indicators of success	
5. Number of volunteers engaged	3
6. Least number of NTR	2
7. Number of community residents engaged on tree planting days	1
8. Community satisfaction with the tree planting	1
9. Other communities requesting tree plantings	1

One constraint to measures of success is the degree to which something is "measurable" and what those measures tell you. While a large number of NTR submitted in a neighborhood can certainly indicate a conflict, it is not indicative of whether people value trees in general. As noted earlier in the section on "Categories of responses to tree planting," some residents were told they could not choose the type of tree planted. Therefore, residents may value trees in general but prefer to have a different type of tree planted than is made available to them. The utility of the measure of "least number of NTR" for the organization was to assess the efficiency of their efforts. As one staff member noted, fewer NTR "means that there's going to be no additional plantings later, you know, we're not planting into December because we have extra trees." However, this is not an indicator of how many residents are happy to receive the trees planted. Again, in the "Categories of response to tree planting" approximately half of the residents interviewed received trees, but only one-third were happy to receive the tree planted.

Conclusion

As French geographer, Henri Lefebvre argued, "by taking part in the daily making of the urban fabric by living in the city and by meeting particular responsibilities," residents are entitled to participate in decision-making that shapes the city (Anguelovski, 2014, p. 44). However, residents are not involved in selecting species of tree to plant unless it is to switch a resident from an NTR to accepting a tree. This is not considered problematic from the perspective of TGD respondents because the tree species selected by the staff foresters have root systems that will not interfere with underground infrastructure and sidewalks as past tree species planted did in some cases (e.g. silver maple, cottonwood). Additionally, although some staff acknowledged that residents have to engage in some tree maintenance, TGD staff members indicated it would be a bigger "loss" to all involved if residents chose the species to plant because this would result in a monoculture of trees that would be more susceptible to mass die off if a disease or invasive species moved through the area, and these species may be smaller and not provide as many ecosystem services as the tree species TGD selects. Thus, the problem with the tree-planting program from the perspective of some within TGD is that residents do not accept trees based on issues they have had in the past, which will not be a problem with the species TGD selects.

For other TGD staff and board members, the problem is that residents don't value the trees enough to deal with the potential costs and issues:

> Just constantly educating people about why what we're doing is important and about sort of what they give up…by refusing a tree that we're offering…if they don't know what they're missing, they've never had those benefits, all they see is the negatives.

> One tree that gives you a lot of benefits is the London Plaintree, but the downside to 'em, even though they have those really big leaves that are great for interception [of particulates], those really big leaves are also good at caking over drainage ditches so people gotta clean them. So you have to do that, but they're giving you a lot, so…

Also, funders of TGD seem to decide what measures of success are utilized. Therefore, the focus of TGD's activities on getting many trees planted that survive and less emphasis on the initial or long term satisfaction or engagement of residents in the process.

Research Question 2: What are the *historical, cultural, political, ecological, and economic* factors that contribute to differing frames among stakeholders regarding tree-planting programs?

"In telling the story of a people, a people comes to be. It is within the formal structure of a narrative history that it is possible to conceive of a set of individuals as if they were but one."
--Maurice Charland (1987)

Communities can be diverse in some respects, yet relatively homogenous at the same time. In Detroit, the large majority of residents identify as African American. Detroit also has the highest percentage of lower income residents in the country (with incomes less than $25,000 per year) , so financial hardship is a common experience for residents in the city. However, there is great diversity in age of residents, length of residence in their neighborhood, and involvement in their neighborhood and city's formal and informal activities. All of these factors impact the experiences that people have with one another, and the physical environment in which they live. The same is true for the community within The Greening of Detroit (TGD). Individuals within the organization have been there for different lengths of time, are different ages, and are each involved in different activities in particular roles.

These diverse experiences create a range of heritage narratives for residents and TGD staff and volunteers, which are, "broad renditions of a community's history…the character of its people (both past and present), and its trials and triumphs over time" (Bridger, 1996, p. 355). Alkon (2004, p. 147) goes on to say, "Individuals and groups tell stories to perform for each other and themselves their histories and identities." These stories are often infused with elements that speak to a group's culture, the political power and relationships between actors, as well as ecological attributes that individuals and groups associate with particular histories

and identities. This is because heritage is not a politically neutral concept, but rather a process of using collective or individual memories to create identity to navigate response to social tensions in the present, (Smith, 2006) which can encompass several of these dimensions of one's life.

Differences emerged between residents who were happy to receive a tree and those who were not, as well as those from low, average, or high NTR neighborhoods, with a few additional "wins" and fewer types of "losses" noted by some who were happy to receive trees (Category 6) compared with those who were not. Heritage narratives may also explain these diverse responses.

Commonalities also emerged between these groups of residents regarding the potential positive and negative impacts of tree planting and their involvement in the decision-making process. It seems that part of the response to tree planting is driven by how people conceptualize or value these same perceived positive or negative impacts (e.g. "beauty" or required maintenance of trees) *based on their heritage narratives.*

As noted previously, different residents consider different trees to be "beautiful" based on size and appearance. And evidence emerged that those who received a tree that fit their idea of "beauty" were happier with the outcome than those who received a tree that did not. However, why do these residents have different conceptualizations of what makes a tree "beautiful"? Heritage narratives may provide insight into this.

Alkon (2004, p. 148) states, "Heritage narratives are stories about the character of a place and its people and often influence peoples' thinking concerning future political decisions." Diversities and commonalities in community members' historical accounts of the

area are equally important to examine and understand, so that all participants in land use decisions (such as residential tree planting) have "a common basis for talking about particular places and inhabitants" (Bridger, 1996, p. 355).

Commonalities emerged between residents and some TGD staff, board members, and volunteers on potential "wins" and "losses" as well, while key differences also surfaced in these themes among individuals in these two groups (e.g. the priority of stormwater mitigation for TGD but not residents) as well as perspectives on the current decision-making approaches used for tree planting in residential neighborhoods. Among TGD representatives, diversities of perspectives on the goals of the tree-planting program existed, reflecting differences in organizational identity.

The results for this research question are organized first through the presentation of commonalities and diversities in what residents considered to be the special aspects of their neighborhoods as well as the main challenges they face. These characteristics often involve descriptions of present circumstances as well as past events that led to these identities. This is followed by a description of how these narratives have created particular neighborhood and city identities that continue to be reinforced through community-based organizations. These identities are then connected to residents' narratives specifically of trees—both past experiences and current responses to tree planting initiatives.

Next is a description of TGD's heritage narratives, first in regard to the history of forestry in the city and the impacts of those narratives on their current reforestation efforts. Then, key elements of the organization's identity emerge in response to this narrative of forestry in the city, as well as various individuals' heritage narratives of experiences with trees and with city

residents. This section concludes with connections between the main narratives expressed by residents and TGD and the responses of each of these main groups of participants to the perceived problem with the tree-planting program (Research Question 1).

Special aspects of neighborhoods for residents

Across different types of neighborhoods

The primary characteristic that people across low, average, and high NTR neighborhoods liked about their area involved the behavior of their neighbors (Table 22). A woman in a high NTR neighborhood who submitted an NTR said a lot of neighbors keep up with their properties and there are "a lot of seniors" who "don't have time to sell drugs or shoot guns or anything." A woman who wanted a tree in a high-average NTR neighborhood echoed this, "It's quiet. The neighbors are older." A woman who did not want a tree in an average-high NTR neighborhood said, "it's nice to meet people who want to keep their property in order" yet went on to say this was a challenge in the neighborhood. People who received a tree in an average NTR neighborhood said, "We look out for each other" and in a low NTR neighborhood, a young man who accepted a tree said "I like my neighbors." Anguelovski (2014) notes that residents in urban distressed communities often develop an attachment to their neighborhood specifically because of the relationships they form with one another that enable them to build resilience in the face of stressful situations.

Only those in average and low NTR neighborhoods who were happy to receive a tree identified positive aspects of physical characteristics in the neighborhood, such as parks and trees. Only residents in low NTR neighborhoods who were happy to receive a tree mentioned adequate city services, like "Police response, perfect" when describing special qualities of their

neighborhood. Thus, although a common attribute of positive relationships between residents existed across all neighborhoods, less frequent attributes mentioned included the physical aspects like trees and city services like police response and street lights, which were not noted by residents in average-high or high NTR neighborhoods.

Based on response to tree planting

Those who were happy to receive a tree (Category 6) mentioned almost all of the special aspects on the list in describing their neighborhood. In the case of one low NTR neighborhood in which there already were 'lots of trees,' one resident had not had any sewer or related issues with trees while another had a good previous experience with city services related to trees: "the tree was in bad shape (on the curb) and so the city came and they cut it down, and so I was grateful because now I was blessed to get a brand new tree that's going to probably last for many many years." This resident also noted that there are very few vacant properties in the neighborhood and all the neighbors are trying to keep their properties in good condition. In these cases, such positive experiences with trees and city services *in addition to* positive relationships with neighbors helps explain why residents were happy to accept a tree, compared with those whose primary or only special attributes of the neighborhood involved cohesion and/or amicability between neighbors.

As noted by Burns et al. (2009), one's social location, which can be associated with characteristics like income and age or residence in a particular neighborhood, determines ability to mobilize resources to participate in environmental justice movement activities (such as planting and maintaining healthy trees). In this case, it is apparent that for those who were happy to receive trees, particularly in neighborhoods where a smaller proportion of residents

submitted NTR, there was greater access to resources to maintain or improve the community in general (e.g. police presence, street lights) and, in some cases, specifically trees in the neighborhood.

Table 22. Special or well-liked aspects about one's neighborhood (n=12)[9] for Categories 1-3 (no tree wanted at all, would accept tree with maintenance, would accept tree with a choice) and Category 6 (happy to accept a tree).

What is special about your neighborhood?	***Tree status***	***Categories***
Theme 1: Behavior of neighbors		
1. People take care of their properties*	Received, NTR	No tree wanted, tree with maintenance, happy to receive a tree
2. Good neighbors*	Received, NTR	Tree with maintenance and/or choice, happy to receive a tree
3. Community is organized and people talk to each other to figure out how to address issues	NTR	No tree wanted
Theme 2: Physical characteristics		
1. The trees and parks to take granddaughter to	Received	Happy to receive a tree
2. The neighborhood looks nice with lots of trees	Received	Happy to receive a tree
3. My home is paid for	Received	Tree with choice, Happy to receive a tree
Theme 3: City services		
1. Police presence and response	Received	Happy to receive a tree
2. Street lights	Received	Happy to receive a tree
3. City took care of a hazardous tree	Received	Happy to receive a tree

Challenges residents face in neighborhoods

Nearly every participant's narrative of the challenges they face in their neighborhoods mentions responses to the effects of major population decline over the years in Detroit (Table

[9] 3 NTR, 9 received trees. Responses from residents in each type of neighborhood: low, average, and high NTR proportions. An * indicates this theme was mentioned in all three types of neighborhood: low, average, and high NTR proportions.

23). The primary consequences of population decline voiced by residents across all types of neighborhoods (low, average, high NTR) and responses to tree planting included: an increase in vacant houses which resulted in a decrease in care of properties and an increase in vandalism, as well as a decrease in city services and diminished social cohesion. Notably, only residents in one particular low NTR neighborhood who were happy to accept a tree said they experienced no challenges.

"The city doesn't do much for their properties" was a theme that extended to residents who responded in diverse ways to tree planting in average and high NTR neighborhoods. Yet residents in average and high NTR neighborhoods who did not want a tree identified a greater variety of issues with upkeep of properties than those who were happy to receive a tree, including challenges with other residents keeping up their properties (and local businesses, like gas stations) and outsiders causing damage to the neighborhood (in the case of DTE, a power company which dug up city-owned lawns in residential neighborhoods and did not repair the damage adequately, according to some residents).

This suggests that there is a compounding effect that occurs when one experiences a lack of support in maintaining the appearance of a neighborhood from neighbors as well as outsiders, like those who frequent local businesses, companies who come to do work in the neighborhood, or the city government. In cases where there are greater challenges to face, one not only lacks resources to participate (as seen in the previous section on "special attributes"), but must allocate their existing resources to those other issues that also impact neighborhood vitality.

Table 23. Major challenges residents face in neighborhoods, all associated with urban blight and population decline (n= 16)[10].

Major challenges faced in the neighborhood	***Tree status***	***Categories***
Theme 1: Upkeep of properties 1. Vacant houses make the neighborhood look bad visually*	R, NTR	Tree with maintenance and/or choice
2. City doesn't do much for their properties, including trees	Average and High R, NTR	No tree wanted, tree with maintenance and/or choice, happy to receive a tree
3. DTE dug up lawns and residents wanted sod instead of seeds to restore appearance	High R, NTR	No tree wanted
4. Some residents don't keep up their properties	Average NTR	No tree wanted
5. Trash at the nearby gas station gets into the neighborhood	Average NTR	No tree wanted
6. No challenges—everyone is trying to keep their property up	Low R	Happy to receive a tree
Theme 2: Crime[2] 1. Vacant properties attract crime*	R, NTR	No tree wanted, tree with maintenance and/or choice, happy to receive a tree
2. Break-ins	Average and High R, NTR	No tree wanted, tree with maintenance, happy to receive a tree
3. Drug dealers	Average and High NTR	No tree wanted
4. Crime and blight in general are a challenge	Low and Average R	Tree with choice, happy to receive a tree
Theme 3: Access to resources 1. Access to shopping	Average Wanted tree	Happy to receive a tree
2. People out of work	Average R	Happy to receive a tree
Theme 4: Community involvement 1. A lot of people do not get involved in their block club	High R	Tree with maintenance
2. I don't know many neighbors	High R	Tree with choice
3. Engaging younger residents in neighborhood activities	Average R	Happy to receive a tree

[10] 5 NTR, 11 received trees. Responses from residents in each type of neighborhood: low, average, and high NTR proportions. An *denotes a theme mentioned by participants in all three neighborhood types (low, average, high NTR proportions).

Neighborhood and city identity for residents

A key identifying characteristic of neighborhoods in Detroit that were involved in this study, regardless of the proportion of NTR submitted by residents and response to tree planting, was association between property upkeep and whether a particular area is a "good neighborhood." Indeed, community organizations in all types of neighborhoods (low, average, and high NTR) focus their efforts on improving or 'keeping up' properties and encouraging others in the neighborhood to do the same. This is in response to the multitude of vacant properties throughout the city, with some neighborhoods experiencing these issues more so than others, as noted in the previous two sections on special aspects of neighborhoods and challenges faced by residents. One low NTR neighborhood had very few vacant homes and a woman who accepted a tree described the character of neighborhoods "on the other side of the expressway" that experienced far more issues with vacant properties:

> Unfortunately ya know when that happens you should be ready to move…because you are at that point you're probably fighting a losing battle. And a lot of people, they're stuck and they can't do that and it's horrible for them. Because you go down one of those streets and you'll all of the sudden you'll look at a house and they've got flowers and it's clean, you're like "Oh my god, they really care about their property…they don't even belong in this neighborhood."

Some community organizations focus on improving the appearance of the neighborhood partly to attract new home buyers. As the leader of a neighborhood organization in an average NTR neighborhood said, "Our desire is to make the community welcoming to other people." The President of a block club in a high NTR neighborhood who accepted a tree

(and later cut it down due to an infestation of “worms”) said she wants to help “maintain what we have” and improve it, even though it “won’t ever be what it was before.” She has lived in her house for 45 years and said she is doing all she can to help her children and grandchildren. She doesn’t want to lose the area and said, “I want to stay and do what I can to help the community.”

Table 24 summarizes variations in the current condition of these neighborhoods in regards to the character of residents and relationship to city services, and the degree to which they were able to achieve the goal of a well-maintained neighborhood. This provides further evidence of the impact of both the degree of support that is present and lacking to create a neighborhood with strong social cohesion and an appearance of care. For instance, although some residents mentioned the challenges presented by people moving out of the city and their neighborhoods, one interviewee who did not want a tree pointed out the weeds growing in a yard which “was unheard of when I moved here.” The interviewee who wanted a tree with maintenance noted that most neighbors kept up their properties, but the city did not do much for the properties (vacant houses) they own.

Table 24. Themes in neighborhood narratives based on categories of response to tree planting.

Group 1: no tree at all

Things aren't as great as they used to be…

- "Actually Detroit is a great place to live if you can find the right milieu. This is a great neighborhood. Used to be greater than it is now. But there's been some economic problems here in Detroit that have caused a lot of people to move out of a neighborhood like this." 2B

- "Well I've been in my neighborhood 25 years so when I first came the area was very different, it was gorgeous and I thought it would be a peaceful place to stay and that's what I liked about it." 1D

Groups 2-3: with maintenance and/or choice

Good neighbors who look out for one another. Trees can help if done properly.

- "…most of the people take care of their properties and that's one thing I like to see. We don't want to be living in no slum, but there's a lot of people that are moving out and that's what's messing up our city." 4A

- The mission of "our community organization is to revitalize and stabilize the community and I believe that in planting trees it also helps to give it a little better atmosphere or whatever." 1B

Group 6: Happy to receive a tree

Good neighbors and some good city services

- "I appreciate the fact that everybody's trying to do the same thing which is, you know, live well, you know, live nice, live clean." 2I

- "My neighborhood's decent. Police response, perfect. They come when they supposed to." 1J

It became apparent that community and city identities were actively being created and reinforced through the actions of city residents and city employees at community meetings and often emphasized property upkeep. For example, at a police precinct's community outreach meeting (attended by the low NTR community group leaders, among others), a Sergeant said residents should contact her to meet their new neighbors if they are uncomfortable and think they have "bad habits" they're bringing to the neighborhood and she will "inform them of the

standards of conduct for living there," including that they are not to have barbeques on the front porch simply because the weeds in the backyard are not pruned.

Trees, city services, and neighborhood identity for residents

It is clear that upkeep of one's neighborhood is a key identifying characteristic for many community groups in this study, and that the state of city services can be viewed as a help or a hindrance in this endeavor, depending on one's experience in their particular neighborhood. Additionally, residents spoke of their investment of resources not just in their own well-being but in that of the entire neighborhood and city.

Trees on city-owned property in residential neighborhoods are an important element that impacts the appearance of a neighborhood, and mediate relationships between residents and city government (as well as TGD, which plants trees on these city-owned properties). This includes trees on vacant lots legally owned by the city, easements between the sidewalk and street, and neighborhood parks. However, residents often expressed their lack of influence over decision-making regarding trees, with disappointing results. For example, a woman in the average NTR neighborhood who had a city tree concern said that the city had used tar to smooth over a piece of sidewalk that had been raised from tree roots and said "no one called us or tried to talk with us about what they were doing" and it was like "putting a band aid on a bullet wound." Another woman in a different average NTR neighborhood who was not offered a tree said when she was a kid the city would cut limbs and spray, and now she has to "get on them to do that work."

This theme became even more evident when examining trends in people's narratives regarding trees in the city and their neighborhoods based on their response to tree planting,

which were often infused with narratives about interactions with the city government (Table 25). For instance, at two different high NTR neighborhood group meetings, the leaders of both groups said that they (the residents in the group) are doing what they can to maintain the area but "the city needs to do their part." This was particularly evident in the responses from those who did not want a tree wanted at all, would accept a tree with maintenance and/or choice of type of tree (Categories 1-3) and noted the challenge of maintenance in the context of other challenges.

First, residents in these categories assumed they would be responsible for maintenance, reflecting historical experiences with trees and with the city. An elderly couple who received a tree in a high NTR neighborhood pointed out large trees on adjacent vacant properties that are not in good condition and noted the difficulty in identifying who owns the property and holding them accountable for addressing the tree issues. This theme of being responsible for maintenance at times extended to experiences with TGD. At a follow up focus group, a man who received a tree in an average NTR neighborhood indicated he called TGD several times about tree care without an adequate response:

> I've left several messages. My tree was planted last August. My wife loved it. It was a Japanese pink or mocha color blossoming tree. I was told that they would come back out and either water it or fertilize it. Haven't seen anyone. So I've been doing the best that I can, but somebody now. So where do I go from here?

In this case, it seems that if TGD is maintaining the tree, the resident is unaware of it, and if they are not maintaining the tree, the resident in unsure why that has not happened. This

points to a perceived lack of adequate communication regarding maintenance expectations and responsibilities once the tree is planted.

It was also apparent for several residents that there was a lack of resources to address maintenance issues. A retired female NTR resident in an average NTR neighborhood mentioned the financial difficulty to maintain a tree in the context of other home upkeep costs like grass mowing and window washing "which is hard on a fixed income as a retiree." This was not a unique circumstance in this community. At a block club meeting in a high NTR neighborhood, attended by 15 older African American residents in the area, several women noted that there are many widows and older single women that need help with raking leaves and general tree maintenance.

A resident who wanted more information about a tree planted (Category 4) expressed a key reason for this interest in additional information—a desire for involvement in the process that impacts their community. This resident stated that it is better to involve residents in the tree planting process by providing information about benefits of trees, rather than just planting trees because the city has authority to do so.

Table 25. Themes in narratives about trees and city services across categories of response to tree planting.

Response to tree planting	**Themes in narratives about trees and city services**	**Key quotes**
Category 1: No tree at all	Shared financial responsibility with the city to repair damage from roots to sidewalk and sewers, but long process and outcome dissatisfactory	• City made one man in an average NTR neighborhood pay for half of the cost to remove a tree that caused sidewalk damage and it took a long time to "deal with the stump" • A man in a high NTR neighborhood tried to get trees down for 20 years that were "messing up the sewage" system and when he called the city he got the "run around"
Category 2: Accept a tree with maintenance	Perception that the resident will be left with the maintenance responsibility	• A man in a high NTR neighborhood said trees are pretty and he likes them, but "the city doesn't do nothing for the tree" and "someone could get hit in the head" with the tree issues they have now. He said if the city kept up with it, he would want any kind of tree.
Category 3: Accept a tree with choice of type	It's on city property, but we have to take care of it	• A woman in a high NTR neighborhood remarked, "Even though it's the city property, um, we still would ya know, since we're gonna end up having to care for it and raking leaves and God knows whatever else we might have to do." • A woman in an average NTR neighborhood said "you have to fix the sidewalks yourself. The city won't do that."
Category 4: Would like additional information about a tree planted	Better to involve people than just to do it because the city can do what it wants there	• Another man in an average NTR neighborhood stated, "…nobody said 'can we come to your community meeting and explain what the benefits of these trees are?' Didn't happen. Ok. I think it would be better if they did. Ya know I think it's better if folks know what the benefits of having that tree there are. Then if they just let you plant it there because the city can do it whether you say yes or no."
Category 5: Once a dead tree is removed, I would accept a tree	A city of dead trees is not possible to fully green	• A block club leader in a high NTR neighborhood who received a tree said, "once they take care of the old trees, we'll take new trees."
Category 6: Happy to accept a tree	The tree canopy was beautiful in the past, and I would like to have that back	• Regarding her elderly mother's excitement about getting a tree, a younger woman said: "…back in the day when the streets had more trees it just looked prettier so that's what I think she remembers."

Two women in a supplementary neighborhood group remarked about the condition of trees in their area and the need to attend to these issues as part of "greening" the city, specifically referencing what occurs in a nearby, higher income suburb (the city of Royal Oak). In this case, they would accept a tree once a dead tree is removed (Category 5):

> Woman 1: They were diseased at one time. The ones they put up.
>
> Woman 2: They may still be, there's nobody coming like Royal Oak and some of those places have checked trees that have diseases, they've removed them and replaced other ones. That's basically what we need. I'd like to have a tree that's not losing limbs. It's just falling off. If the wind blows, you're picking up all kinds of limbs, dead limbs.

For those who were happy to receive a tree (Category 6), they expressed one or more of the following themes:

1. Believed trees planted now would be different than problematic trees planted in the past. Within this theme, one of the following were found:
    a. Residents received information obtained directly from TGD regarding the size trees were anticipated to grow to, and currently lacked trees in the area.
    b. Strong individual heritage narratives told about one's interactions with nature in the past.
    c. Had past issues with city trees dealt with satisfactorily.
2. Did not believe their responsibility for the tree would be large. Within this theme, the following were found:
    a. One had just moved to the neighborhood
    b. Did not have maintenance issues with trees in their neighborhood

c. Did not have many trees in the area currently

d. It would take a long time for a tree to grow to a problematic size, voiced by a young person

For people who were happy to accept a tree, it appeared that these individuals: (1) were mostly new to an area, did not have trees, or did not have issues with trees (and thus, less negative heritage narratives with trees to draw from in making a decision about whether to accept a tree); (2) had past issues with trees dealt with by the city, or, when all these conditions were not present, (3) the person had a strong individual heritage narrative with nature to draw from that led them to believe the new trees would not be like past problematic trees, or to have a willingness to accept a tree despite perceived maintenance associated with it:

- As one woman stated, “My father was an avid gardener…And from him I got my love of the land and feeling the dirt and things around me. So I’ve always been around greening things, growing things, ya know. That’s one of my passions.”
- Another retired woman in this neighborhood said, “I ended up with a girlfriend that I met 15 years ago who I call Pocahantas. She is wonderful, she is a trailblazer, she knows about trees and everything her father taught her. We’re good friends. She got me hiking, she took me to parks and different trails…She would tell me about trees, beech trees, and oak trees…I said, I must like more of nature than I ever knew, ya know?”

When considering that, for better or worse, a neighborhood is defined by the condition of the properties, and different communities have different abilities to keep properties in “good condition,” anything that may threaten the achievement of that goal appears to be viewed with great concern. Some neighborhoods had stark contrasts to one another in terms of vacancies or

the condition of trees and an associated stark contrast in the narrative about trees. For example, trees are not a threat to their neighborhood because they have more resources to address them. However, some narratives were quite different even within the same geographic neighborhoods and pointed again to the potential importance of differences in a person's access to resources as well as the strength of one's individual heritage narrative with trees.

For instance, two women who were a part of the same neighborhood organization in an average NTR neighborhood noted the benefit of oxygen from trees, but described this benefit differently even though these two retired women had very similar experiences with trees in the neighborhood. Both had been in Detroit when there were a greater number of large trees, had large street trees that were cut down due to disease, and noted a decline in city services like sweeping the streets and tree pruning.

When asked about her thoughts and feelings when she heard the word "tree," the woman who submitted an NTR said: "I like trees, we got a lot of big trees on this street. A lot of people don't clean up behind themselves. It's too much for me to have to clean up behind another tree." Subsequently when asked about the potential positive impacts of planting trees she stated, "we need more oxygen and so forth." She later said that trees help keep the neighborhood cooler.

On the other hand, when asked her thoughts and feelings when she heard the word "tree," the woman who accepted a tree said, "Shelter, beauty, sustainability, haven, um oxygen." She also said that potential negative impacts included raking leaves, but when asked later about other positive impacts of trees, she said, "I think trees and man and nature all go hand in hand."

This example demonstrates that two residents can have similar experiences with trees in their neighborhood and identify a common "win" (i.e. oxygen) as well as similar "losses" (e.g. raking leaves), yet the response to tree planting is opposite to one another. The woman who accepted a tree likely has greater access to financial resources to help care for trees, since she indicated she had traveled extensively all over the world. She also had a strong individual heritage narrative tied to nature. Meanwhile, the woman who submitted an NTR said it was hard to keep up her home on a fixed income as a retiree and she used to have children to help rake the leaves, but not anymore. She said she grew up on a farm in Alabama and moved to Detroit after graduating high school where she pursued higher education in mental health and social work.

Simply knowing about this particular benefit of trees (i.e. oxygen) did not appear to impact one's decision to accept or decline a tree in these cases. Resources for tree care, and the strength of one's individual heritage narrative with nature did have some influence.

Memories of "The City of Trees"

For residents who identified beauty with larger growing trees, a heritage narrative of Detroit's former identity as "The City of Trees" contributed to this view. Residents noted the historically beautiful canopy of Detroit's past in which large trees grew together over the street. A woman who received a tree in a high NTR neighborhood said, "On our street we have pictures of when we first moved over there. All the trees was so beautiful. They were just like down there but bigger." A woman who received a tree in an average NTR neighborhood said, "The street I grew up on, well as a teenager, when I got off the bus at 7 mile and I looked down

that street, for three blocks the trees were like this [put hands together overhead]…and it was just beautiful to me."

These two women accepted trees, although the former wanted a choice of the type of tree planted and assistance with maintenance (Categories 2 and 3) while another was happy to accept a tree but wondered why an oak tree was planted in front of her house (Categories 4 and 6). During door-to-door interactions with residents, a retired female block club leader in a high NTR neighborhood spoke with a man who submitted an NTR about remembering when the canopy existed and trees would touch in the middle. Both of these individuals said they would not accept a tree now because of the upkeep and that there is not much help from the city (Category 1).

Additionally, attendees at the average NTR follow up focus group for modified member checks were asked if they remembered when Detroit was known as "The City of Trees" and many said yes. People specifically agreed they were upset about the trees that have been lost. A woman then asked, "And when the tree dies, who takes the tree down? Who do you call?" So it seems that the heritage narrative of Detroit as the former "City of Trees" has had several impacts. First, many residents miss the beauty of a healthy canopy of trees, regardless of their response to tree planting now. Second, many residents are concerned about the maintenance of trees, including tree removal when trees die. Third, some residents have developed a negative association with larger growing tree species.

<u>The role of trees in historical racial conflicts</u>

Another heritage narrative tied to the city of Detroit was used by different residents to argue different actions in the present. Much has been written about the 1967 Detroit race

rebellion. Historical accounts of this event focus on sharp differences in white and black residents' narratives regarding this violent time in Detroit's history, preceded by decades of institutional racism against black residents (Darden and Thomas, 2013). During this research, sharp differences in narratives surrounding dramatic tree canopy loss at this time in Detroit's history also emerged. A "counternarrative" which opposed the dominant narrative placing blame on the spread of Dutch elm disease addressed the reason for the loss of Detroit's famous, stately elms. This counternarrative had strong ties to the city's racial conflicts that escalated around the same time as major loss in the tree canopy and was told by residents with different views toward current tree planting efforts.

While the dominant narrative expressed in published documents associates the loss with the spread of Dutch elm disease, two residents described the loss as a decision motivated by the race rebellion of 1967, during which time those in positions of authority cut down elm trees that created a canopy that blocked helicopters from seeing activity on the streets. As one woman who received a tree said:

> I think after the riot they got rid of all those trees because during that time you couldn't see nothing because of those trees! Ya know, they'd be in the helicopters, but that could be a myth…I heard that. Because all of the sudden, our trees were gone. And you know they could say they were diseased, but that was a lot. Everybody had a tree in their yard.

This counternarrative represents trees as ecological assets that, for political and cultural reasons, were cut down in large numbers during a particular historical event centered on racial tensions. A female resident who accepted a tree in an average NTR neighborhood also voiced

skepticism about the reasons for cutting trees down in large numbers in the mid-1990s. She indicated that the city said they were diseased but that she didn't think so.

While it may not be possible to determine whether all of the trees were removed due to disease or in part due to social circumstances, these narratives represent divergent perspectives amongst two key groups—authority figures within the city of Detroit and the residents within the city's neighborhoods. The attitudes toward current urban forest management from those who told this narrative were also noteworthy. One resident who mentioned this narrative received a tree from TGD in a high NTR neighborhood, and indicated she wished residents could choose the type of tree planted since she preferred a tree with deep green leaves (similar to a tree planted in front of her neighbor's house). The other resident who accepted a tree wanted more information on how to help the tree prosper and who to contact with questions or concerns.

A male resident who was not in a neighborhood where TGD planted trees but also shared this counternarrative about tree loss recently wrote a tree ordinance for his neighborhood association which would require inventory of all trees in the neighborhood and actions to preserve and maintain existing mature trees through education, as well as possible incentives and penalties for non-compliance with measures to protect trees during construction projects, for instance. In all of these cases, the residents expressed an affinity for trees and desire to have greater decision-making power and/or involvement in the management of trees in their neighborhood.

On the other hand, a retired female resident who accepted a tree in an average NTR neighborhood mentioned the historic loss of elm trees but attributed it to Dutch elm disease, saying "they got the disease and had to be cut down." This resident also said:

> The Greening of Detroit was really a blessing because now it is the opportunity to have some greenery again but not so many of these scrub trees that have been around here forever and they are just—I like trees, but these are messy. Ya know, there's a cottonwood back there…He has a silver maple and every other year it gets those propeller like things.

Her narrative reflects the published story of tree loss due to disease in the past, and the narrative of TGD regarding their selection of trees differing from less favorable species planted in the past. In these cases, residents who attributed past tree loss to skewed power dynamics also desired more decision-making involvement in tree planting and management now, while a resident who attributed tree loss to disease (though not blaming anyone in particular for it) expressed a perspective of current tree planting efforts in line with that of TGD.

Narratives of The Greening of Detroit regarding forestry in Detroit

Based on the responses of TGD respondents to the questions of: who wins? Who loses? And who decides? (regarding tree planting in general and for the current approach to tree planting), there were a few ways that those within the organization framed the problem with the tree-planting program. First, many within TGD felt that everyone would benefit from trees, particularly trees that provide greater ecosystem services (i.e. larger growing species that are 'appropriate' for urban areas), and that some of these benefits may be particularly less visible or known to residents, like reduced stress.

Second, there were diverse responses regarding any negative impacts of either planting trees or the current approach to tree planting. Some felt there were no negative impacts of planting trees, which partly stemmed from the belief that tree species selected now would not cause the types of problems that residents were concerned about based on experiences with trees in the past (e.g. silver maples that had aggressive roots which grew into underground pipes). Others felt there were some potential issues, like maintenance with leaves or longer term pruning, but the benefits outweigh the costs.

Lastly, all TGD respondents noted that their forestry professionals select the species to plant in particular locations because if residents were able to choose, they would select species that would be problematic ecologically (e.g. species that do not provide very many 'ecosystem services' and are shorter lived) and there also need to be considerations like the presence of utilities or other, nearby trees. Thus, the problem with the tree-planting program was that residents do not value trees enough to accept the costs of maintenance associated with those trees, and some believed that residents had misperceptions about the costs associated with trees based on past experience.

What is the basis for these beliefs? The heritage narratives shared by TGD staff, board members and volunteers about their own knowledge of and experiences with trees, the city of Detroit, their organization, and residents of the city all contribute to these responses in important ways, detailed below, with implications for appropriate and feasible 'solutions' to the problems they (and separately, residents) identify with the tree-planting program (Research Question 3).

City identity

Prioritizing forestry amidst other changes

Part of the "problem" with the tree-planting program expressed by TGD staff, board members and volunteers is competing issues in which they operate. First, a primary goal is to increase the tree canopy and according to the statistics shared by the staff, 6000 trees must be planted annually due to the rate at which trees are lost in the city each year. Rapid change and investment happening in the city, particularly with property ownership of vacant lots, is a contributing factor to tree loss in addition to disease and other factors. This particularly can create a problem for TGD if the measure of success is tree survivability:

> So there's survivability of lack of maintenance versus a car running them over versus maybe bad stock. Um, and there's at least one instance I can remember where we planted in December and that next spring we went to look at it and it had been razed and put in to redevelopment…and it was just devastating. It was like all of our work, all that money, it was just like bulldozed over because we didn't own the land. The city had sold it without us knowing.

This rapid change and development creates a challenge to expanding people's understanding of the benefits of trees (and not just residents), another main goal of TGD's street tree-planting program. This also creates a second challenge to increasing people's desire for trees in their neighborhood: Two interviewees indicated that this reality of the need to plant 6000 trees a year to keep up with tree loss has previously led to a feeling sometimes that they were "shoving trees down people's throats" in order to plant a large number of trees in particular areas as part of grant funding to achieve certain goals like stormwater mitigation.

Maintenance challenges

Many challenges faced by TGD with the street tree-planting program reflect a common theme of the sheer large scale of issues regarding forestry in Detroit based on decades of disinvestment, primarily prior to their existence beginning in 1989. The following statement by a board member captures the consequences of the lack of maintenance of existing city trees echoed by other staff members, and which emerged in conversations with residents:

> …the city's inability to do adequate maintenance for the last 40 years probably at this point, those huge dead and dying trees out there are a huge barrier for several reasons. They take up space so we can't plant a tree where there's a big dead tree, but they also cause a huge public relations problem for us, because people feel, and you know you can't really argue with them, if we can't take care of what we have, why are we putting more in?

Two TGD staff members also reflected on this history, stating:

> I mean back in the 70's and 80's, they had over 400 people in the forestry department, so I remember them coming out and whatever they were doing I forget. But they were doing some kind of work to reduce some of the disease, but now they have 12 people, so they don't have enough people to do anything. So it's a huge issue. Let alone cut down trees. Forget searching for diseases.

> So, and a lot of it I can't argue with. Some people are like, 'well even if you plant this tree, you maintain it for three years, what's the city gonna do after three years? What's

gonna happen in 15 years?' How can I answer for em? Cuz the city stopped pruning trees, 25 years ago, 30 years ago, I don't even know when they stopped pruning trees.

Thus, while the conceptual model posited that TGD identified only benefits to tree planting and no negative impacts (only a problem with citizen understanding of benefits) there was quite a bit more nuance to the views expressed. Several Greening staff members mentioned how residents' views are understandable and in some ways there was no good answer for them about concerns with long-term maintenance.

Given these heritage narratives regarding tree maintenance in the city of Detroit, it is not surprising that when asked what happens with tree maintenance after the first three years a street tree is planted in residential neighborhoods, a Greening staff person said, "it's up to the resident, because they are off the books." In other words, the tree is no longer TGD's responsibility. However, it is on city-owned property. So legally it is the responsibility of the city government, but this staff member's response acknowledges the historical circumstances around tree maintenance which many residents discussed as well—that it will be left to them.

Organizational identity: Interactions with residents

When TGD started, there was acknowledgement of this history of neglect in the city and the founding members of the organization sought to earn the trust of residents and involve them throughout the tree planting process, initially by setting up a demonstration planting on a particular section of city streets to show people what TGD wanted to do in the city with the residents as partners. The founder discussed the rationale for this approach based on the city's heritage narrative of previous, not-so-successful, 'philanthropic' efforts, and her own heritage narrative serving communities at a local level:

> There had been a lot of, how do you say it nicely, well-intentioned but not well thought through initiatives, so we were determined from the beginning to guarantee every tree that we planted and that we would work to do the highest quality work with the best outcome for everyone, with the community buy-in because I had previously worked in Appalachia and other places and from what I had learned early on is that you have to find out what the local people need and want and then you help them get it. You don't impose it on them, they really have to participate, and people have brilliant ideas to share and energy and can do so much more if you work with the community. Sometimes it takes a little longer to get things under way, but once they're involved, the success is ensured if people are really committed to it….And I did a lot of listening…What is really critical is that you have to go down to the most local level and first talk with people about an idea and have them respond to it and then listen to what their ideas and input could be and then go back to them.

This narrative speaks to an organizational identity tied to valuing the input of residents and intentional engagement in a two-way dialogue that guides decision-making about the purpose and governance responsibilities of forestry endeavors. This view is in accordance with the community-based forestry model that has developed in the U.S. over time (Lyman et al., 2013).

Based on data regarding "who decides" on how to conduct the tree-planting program, this approach appears to have shifted to less of a shared decision-making power structure, and become more of an effort to convince residents to accept the trees TGD staff feel are the best

ecologically to plant in the various places in the neighborhood. Part of this is driven by staff, volunteer and board members' perceptions of and experiences with residents, including narratives about residents' experiences with and knowledge of trees (or lack thereof):

> So the higher value trees, as far as the environmental services that they provide, don't always have the features that they [residents] are looking for. So the common things that we hear from residents is the size of the leaf, the fall color of the leaf, and the overall height of the tree are some of the things that they are considering and ya know that's great because if you're not familiar with trees then I can understand why those would be things that you would be interested in. But if we were to only plant trees that had those characteristics, then we would be planting monocultures.

> You're dealing with a generation that has not been used to having trees, the people who remember the elms are getting older and older. Now we've got generations of people that have grown up without trees on their street, they don't even know what they're missing.

> Then I had to understand that I'm running into generations that never saw that [Detroit's former tree canopy]. I'm running into young people that say, 'the only thing I've ever seen of Detroit is devastation.' So then I bring that challenge, 'well let's change that around. What do you think we can do?' And that's what kind of draws them now to community meetings.

This narrative reflects some scholars' apprehensions about collaboration with residents on urban and community forestry. For example, Conway and Bang (2014) surmise that because citizens have reservations about urban trees, they are therefore not going to be reliable partners, because the assumption is that they are not concerned about or aware of the environmental benefits that trees provide. Such assumptions may prevent researchers and professional foresters from engaging with communities in a mutual learning process, and may cause citizens to mistrust elite stakeholders who do not take their concerns regarding trees seriously.

One staff member even drew on his own personal heritage narrative with trees and the organization to indicate how learning of the benefits of trees increased their value in his eyes:

> when I started working for the Greening of Detroit, the only thing I knew about trees was that the green side went up. And so now that I understand their benefit, I have a much higher regard and appreciation for trees….my whole life long aspiration was to help revitalize the city of Detroit…if the question is what are my feelings about trees, it's that it's a kind of a symbol of health and stability. At this point, that is what I'm striving for.

Yet some staff members also acknowledged that, due to residents' experiences with city government neglect, part of the challenge with interacting with residents extends beyond the trees and one's experience with trees:

> Sometimes you get people that are, ya know, they're upset about so many other things that this tree in their front yard is just merely a sounding board for it, and we are the

> first people that they believe are from the city, so like governmental or city organization, that's ever been in the neighborhood in like 10, 15 years and they're gonna use every chance they can to air their grievances about the burnt up houses on the street…how long it takes police to get to the neighborhood…and there's all these greater issues and why are we wasting money planting trees?
>
> So a lot of the issues I find with the trees were not the trees, it was life in general and here I was bringing something extra into your life. So it's about control. It's about being able to control your environment.

A staff member shared a story of how some residents will watch him engage in the entire process of planting the tree from their house and then as soon as he is leaving they will come out to say they don't want the tree, which he perceived as a power issue. He indicated that this experience is not uncommon.

Although these TGD staff members acknowledged that residents want control of their environment due to negative past experiences with the city—which the founder of the organization also recognized—the current tree planting decision-making process does not include residents in selecting the species of trees to plant in their neighborhood, unless they seek out TGD staff to submit an NTR and are given options of other types of trees so that they will accept one. This is also in spite of the fact that some staff members want to facilitate more active involvement on the part of residents in the program and its long term outcomes:

> In my mind, the Greening should be building and creating a culture that values urban forestry and trees, and tree planting. And if that truly is the objective/mission, then we should identify ourselves as a community engagement organization that promotes trees. Instead of a tree planting organization that conducts community engagement, if that makes any sense. What I'm getting at is: We want to teach people how to fish, instead of giving them fish.
>
> We don't want to be your go-to people to go and clean a lot, but we can help facilitate that. But it has to be a match. You get five community members to come out, we'll bring five additional volunteers. Tell them these are perennials, this is how you plant them, you guys need to take care of them.

While there is some evidence of the organization seeking to empower residents, the organization's dominant heritage narrative expressed by TGD staff, board members and volunteers interviewed now centers around the need to educate residents to help them move past misperceptions of trees based on negative past experiences, and this narrative guides the direction of action the organization takes when engaging with residents:

> I told him [a colleague], we need to embrace the community because they just don't know, ya know, what a good tree is and what a bad tree is…We need to let them know the type of trees we're planting, the benefits of that tree, and we also should give them the history of the tree that was planted there…Ya know, that that tree shouldn't even be in this state.

> I think that we have a really good system that combines, you know, very knowledgeable professionals, a small core group of very knowledgeable professionals, with a large group of really enthusiastic community people who just need a little knowledge in order to do the right thing. And that allows us to amplify the effects of the money that we're able to raise, the efforts that were put in, hugely, just because we were able to tap into a lot of cash in for a little bit of money.

This last quote speaks also to a point made by several political ecologists. With a capitalist economy at the helm, "greening" is a socially structured process which transforms nature into a commodity whose use is determined by elites who make decisions about greening to maximize profit and capital accumulation (Brownlow, 2006; Byrne, 2012; Conway et al., 2011; Landry and Chakraborty, 2009). In this case, 'profit' is in the form of quantifiable ecosystem services and capital is in the form of trees that contribute to the growth of a particular type of urban tree canopy. "Participation" of community residents serves to achieve greater productivity at a lower cost rather than influence decision-making to improve community well being holistically (Campbell, 2015; Rahnema, 1992). For example, McDonough and Vachta (2005) note that local residents who engage directly in community forestry can build cohesion with one another through these activities by working to identify collective interests and capacities within the community.

Conclusion

This story of disinvestment in forestry by the city government and the resulting shift of responsibility for trees on city-owned property to a non-government organization and

ultimately individual citizens represents a frequently expressed heritage narrative shared by a diversity of residents and those within TGD. It also represents a way that many respondents feel they "lose" with the current approach to tree planting and urban and community forestry broadly. This heritage narrative specifically regarding forestry in the city of Detroit reflects trends already identified in literature on urban and community forestry as well as community research. Perkins (2015, p. 29) states, "U.S. cities…have less money to spend on public works than they did three decades ago." Goodson and Phillimore (2012, p. 10) note the consequences, as there has been a recent "shift of responsibilities for services from the state to the private and community and voluntary sectors and ultimately the individual."

Another heritage narrative identified in this study and reflected in the literature is an emphasis within a non-profit organization on their role in educating 'the public' to value trees. As Campbell (2015, p. 255) notes, "For the most part, the public is viewed as recipients or *consumers*: of messages, of educational activities, of stewardship programs, of trees, and of ecosystem services." Although some staff members within TGD discuss their interest in empowering residents to be involved in the 'greening' of their neighborhood, very little of this has extended to community engagement approaches regarding the street tree-planting program, in which the organization's green infrastructure staff retains primary authority to select which trees to plant in particular locations. This is also a trend in urban and community forestry broadly, in which devolution of decision-making authority to residents is not seen, despite calls for engagement of the public as stakeholders in urban and community forestry (Perkins, 2015).

Yet this shared decision-making power was desired by many residents as a condition of receiving trees. Ironically, it may be that TGD and other entities' focus on educating residents about the benefits of trees has proliferated this desire for involvement. Balram and Dragićević (2005) claim that, "As citizens become more aware of the role of green spaces in well-being and health, it is expected that more collaborative participation and planning will be demanded." Thus, an emphasis on educating residents about the benefits of trees may do little to quell residents' calls for more decision-making involvement about urban and community forestry.

Additionally, While and Short (2011, p. 6) state that "Indeed, part of the task of dominant heritage narratives might be to deny space for a potentially disruptive heritage movement, especially if alternative meanings conflict with the development aspirations of urban leaders and other growth interests." The dominant heritage narratives of TGD are: (1) they select species of trees to plant that are not going to be problematic like those planted in the past (which was done due to lack of knowledge); (2) even though there is no clear plan for maintenance responsibility after the first three years and residents have valid concerns about maintenance, the value of trees is greater than the potential costs; and (3) if Greening allows residents to choose species to plant, it would lead to negative ecological consequences (like monocultures of smaller trees).

All of these aspects of the dominant narratives speak to a need for residents to change their perspectives and trust TGD, because they have corrected past mistakes made by others. While some within TGD recognize that residents want control, and they would like to empower residents to be more involved, the approach currently utilized does not provide space for integrating this counternarrative that emphasizes the consequences of skewed power dynamics

that stripped residents of decision-making power in the past, and the need to remediate that situation (as in the case of elms cut down during the time of the 1967 race rebellion). By emphasizing a dominant narrative that simply refers to mistakes of the past that those who are now in positions of authority have recognized and corrected, there is little, if any, room for a narrative that specifically declares that due to these past mistakes, residents should have more say in urban and community forestry decision-making to avoid long term negative consequences.

Based on these heritage narratives, Research Question 3 will explore potential solutions to the problems with the tree-planting program identified by research participants. These solutions include those suggested directly by research participants as well as those developed based on research participants' narratives and the existing literature.

Research Question 3: What are stakeholders' perspectives on appropriate solutions to these problems?

In this study, the ways residents and TGD talked about the past and present illustrated perceptions of the social structures and relations that have produced uneven environments and helped to explain what trees and tree-planting programs meant to participants in terms of political and cultural power and identity. The key 'problems' with the street tree-planting program from the perspective of several within TGD included the perceived lack of value that residents associate with planting trees in their neighborhood (particularly ecosystem services), and the staff resources to engage with residents and maintain trees.

For residents, the "problem" with the tree-planting program varied. Based on the categories of response to tree planting, some felt the problem was a lack of tree maintenance by other entities like the city and TGD, while others felt there was a lack of resources (including information) to deal with tree maintenance themselves and not enough opportunities for decision-making involvement. Heritage narratives helped to demonstrate that these views are often rooted in decades of experiences with trees and city government entities (and in some cases, TGD) which have not been adequately addressed for many through the information provided by TGD thus far.

TGD utilizes several means to educate residents about the general benefits of trees, including staff member attendance at community meetings to discuss these benefits and provide print-outs with this information (along with the details of an upcoming planting event and how frequently TGD will water the tree). Further, TGD staff members put door hangers with this information on the doors of all residents who are scheduled to receive a tree in a particular neighborhood a few weeks prior to the event (Figure 7).

According to community group leaders involved in this study, the majority of residents in a neighborhood their group covers do not attend their block club or community association's meetings. Therefore, a door hanger is often the primary means through which these residents are informed of the tree planting. As indicated in Figure 6 (p. 105), only 29 percent of residents interviewed (n =28) stated that they received this door hanger, while 25 percent said they received no notification. As these planting events had occurred three years prior to the study, it is possible they do not recall that they were notified. One TGD staff member also said that some people may not receive the door hanger if it is put on the front door because the resident uses a side door as their main entrance to the house, but TGD staff must use the front door to remain safe and not appear threatening to residents by walking onto their property via the driveway to deliver a door hanger at the side of the house.

Figure 7. Front and back image of door hangers placed on residents' front doors 2-3 weeks prior to a scheduled TGD tree planting event.

The *mechanisms* used to inform residents of the tree-planting program (i.e. door hangers), and involve them in this endeavor (i.e. TGD staff member explanation of tree benefits at community meetings), fail to reach a majority of residents in a meaningful way. The *messenger* may also not be trusted by residents, since TGD can be associated with city government, an entity with which many residents have had negative experiences. The content of the *message* itself requires additional considerations. As noted in the heritage narratives shared by residents, the messages that TGD provides regarding the benefits of trees do not appear to resonate with the key focus of many Detroiters—the role of trees in the appearance of a neighborhood and the required actions for "upkeep" of the neighborhood by residents and other entities.

Given these perspectives on the problem with the tree-planting program according to TGD as well as residents, solutions are presented below which emerged through interviews and group discussions (in the case of residents). These deal with two very different, but related issues: 1) the information provided to residents (messages), and 2) the means for engagement of residents in decision-making about tree planting, including how information is provided to make decisions (mechanisms and messengers). Several questions about these characteristics of engagement reveal the problems with the current approach for engaging all participants in a meaningful way (e.g. whether residents are receiving information from a trusted source), and the solutions identified by participants to address each of these problems (Figure 8).

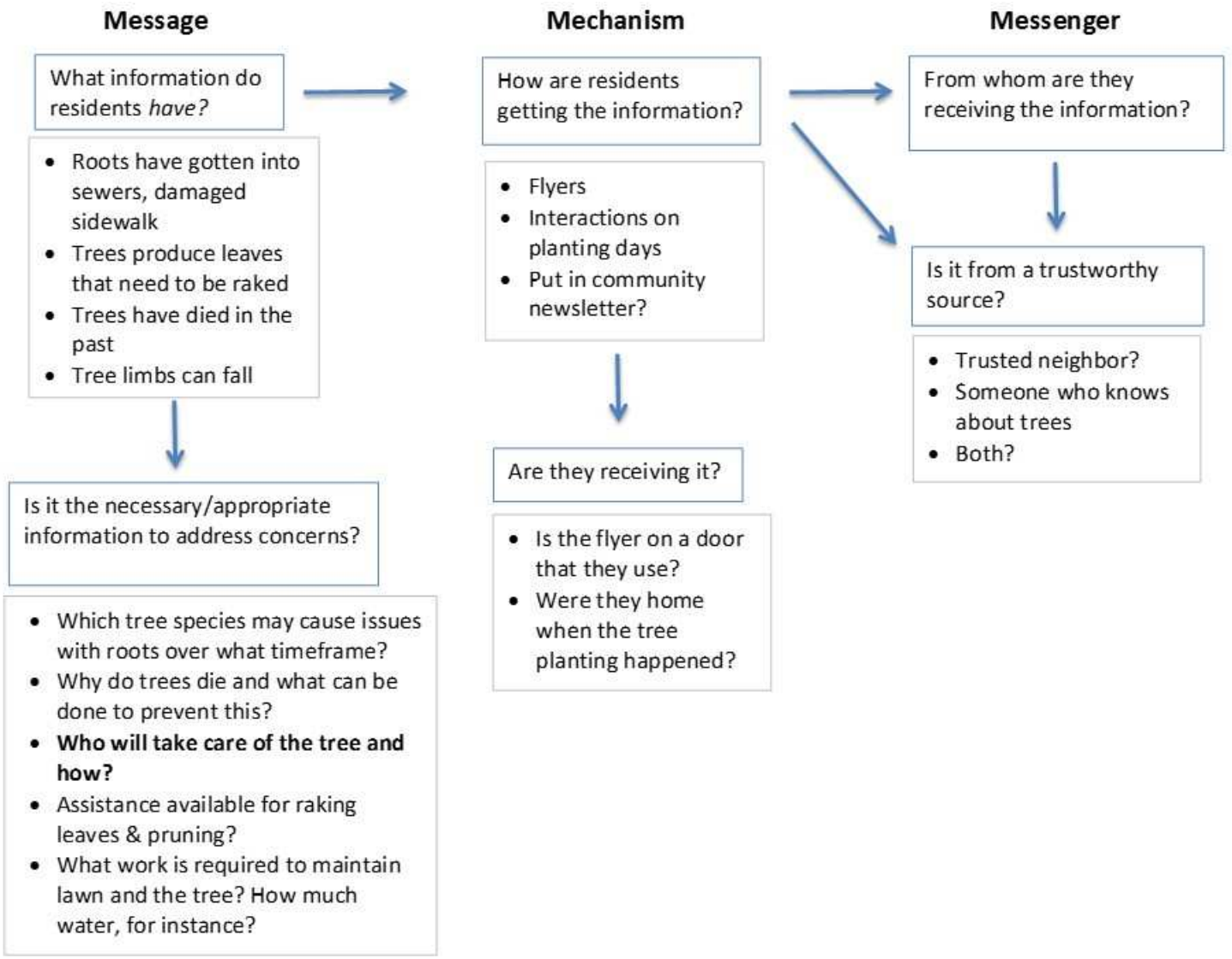


Figure 8. Conceptual model of factors that impact the efficacy of information provided to residents regarding tree planting.

The message: Information provided to residents

Residents' perspectives

Baron (2010, p. 106) points out that scientists have a tendency to communicate with public audiences according to their own values, and those scientists who have more contact with their lay audiences recognize the need for more nuanced versions of their messages: "To be successful your message must be easily understood, memorable, and, most important, relevant to your audience." Several residents noted throughout initial data collection the type of information they wanted to receive about trees and the tree-planting program (Category 4). These themes were confirmed during modified member checks with residents in average and high NTR neighborhood groups (Table 26).

Table 26. Information residents said they would like to have about the tree-planting program, in order of most to least desired information.

Information residents would like	Proportion of respondents
1. What to expect with the tree's root growth over time	• 55% (High NTR) • 52% (Average NTR)
2. How to care for the tree	• 55% (High NTR) • 40% (Average NTR)
3. Who to contact if something is wrong with the tree	• 55% (High NTR) • 44% (Average NTR)
4. Who will care for the tree and how?	• 36% (High and Average NTR groups)
5. What will the tree look like over time? a. How fast and/or tall it will grow	• 36% (High NTR) • 24% (Average NTR)
6. None of the above	• 0% (High NTR) • 8% (Average NTR)

Over half of the respondents wanted more information about what to expect with the tree's root growth over time. At a community meeting following a door-to-door interview with a resident who submitted an NTR due to the upkeep concerns, the resident indicated that she

wanted to see a visual image of how the roots would grow. However, this may be a challenge because root distribution is a function of species and soil condition—roots of all trees will preferentially grow wherever resources (water and nutrients) are most available (Day, Wiseman, Dickinson, and Harris, 2010).

A large proportion of residents also wanted information on maintenance responsibilities, including how to care for the tree, who to contact with concerns that may arise, and who else will help with tree care over time (including whether the city trims trees). While Greening does provide some of this information during community meetings and via door hangers prior to tree planting events, residents wanted more specific information and details (which may need to be provided through additional means than are currently used, as discussed in the next section). For example, several residents at a high NTR community meeting liked the idea of having access to a list of affordable, certified arborists and the city developing a cost assistance program for residents to maintain trees.

During member checks, about one-quarter to one-third of residents wanted more information about how tall and fast trees will grow, and during discussions a few residents expanded on this, asking why oak trees are planted (given how large they will grow) and how it was determined who received which tree. While TGD provides booklets with information about how tall the tree may be at its maximum maturity, this does not address the timespan in which such growth will occur and the maintenance needed over that timeframe. It is particularly problematic to indicate to residents that a tree may grow to 80 feet, since many are hesitant about large trees already.

Relegating trees to categories of “ornamental” or “shade” may result in more NTR and less discussion of diversities in tree species. For instance, one retired male resident who submitted an NTR said trees are good when they grow to 18ft, a younger male resident who accepted a tree said the ideal height was 30 ft while anything over 60 feet was potentially problematic, and another retired male resident who submitted an NTR said trees should not grow over 50 ft. As with root growth, it is impossible to say with certainty how tall or fast a tree will grow since one TGD staff member indicated that life span of a tree is determined by a number of factors, including maintenance history and environment.

Considering these uncertainties and factors that impact the urban and community forestry, a sustainable approach to development of a healthy canopy must expand beyond planting of trees and toward considerations of ways to enhance and coordinate greater maintenance of trees, which currently only peripherally involves residents. To improve this collaborative potential with residents, information on the benefits of various trees is important but insufficient and must expand to include discussion of maintenance needs as well as uncertainties and options to navigate those so that residents can become more engaged partners in endeavors to develop a healthy tree canopy (Figure 9).

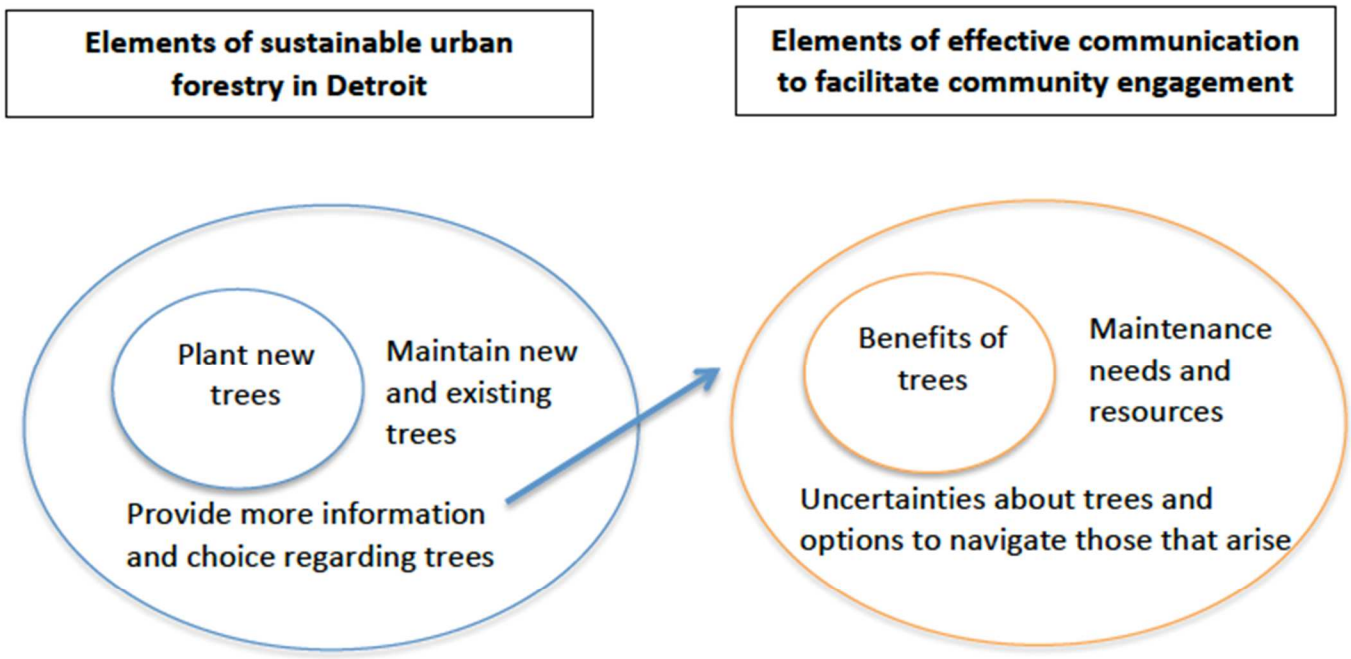


Figure 9. The factors that lead to a sustainable approach to urban forestry, and a successful approach to communication to enhance community engagement in urban tree planting.

Means of communication with residents: The mechanism and messenger

Arguably as important as the information provided to residents are the mechanisms and messengers for communication, as these factors determine whether and how residents experience the information in the first place, judge its credibility, and are afforded opportunities to respond to the information. Based on the current approach to tree planting, an emphasis is placed on efficiently communicating information to many residents, given the lack of staff resources to engage more meaningfully with many residents. As one staff member stated regarding the placement of door hangers in neighborhoods prior to planting:

> We tend to do this during a time of day that we know the people will not be home because of the amount of time that it will take to actively engage in those conversations. Some I've seen last up to 45 minutes with one resident. So we're pretty pressed for time, got a lot of work to do, limited staff…And then if they do see the flyer, then they can call in and make their complaints known.

This precludes development of context-dependent approaches to tree stewardship, which several scholars say is important to allow for (Lyman et al, 2013; Dilley and Wolf, 2013). A challenge in the context of urban and community forestry is that there is no revenue stream coming from the management of trees, since there are not forest products derived (rather, ecosystem services result). This presents a challenge to stewardship, since both residents and TGD have limited resources to sustainably engage in this effort.

However, it is vital to bring attention to the fact that 55 percent of residents who attended a high NTR neighborhood group meeting and 40 percent of those in an average NTR

neighborhood group wanted more information about how to care for the tree planted. Several residents asked about this during interviews as well. This suggests that an emphasis on discussion with residents about maintenance could lead to a collaborative arrangement that would ease some of the burden on Greening, which several representatives indicated was a huge challenge for them now.

Scholars note that when the focus is on bringing people together, rather than accomplishing outcome-based tasks associated with economic development, there is an opportunity for community to emerge, which improves social, economic, and ecological well-being in a locality (Flint et al, 2008; Theodori, 2005). The importance of more meaningful community engagement and investment in working with communities involved in tree planting was a need agreed upon by several TGD staff, board members, and volunteers as well as residents. The key challenges voiced were the lack of resources as well as a lack of prioritization of this type of work within the organization.

Perspectives of TGD on solutions to current problems with tree planting

Expansion of communication with residents regarding maintenance would address several of the solutions to improve the tree-planting program identified by TGD (Table 27). The value associated with community engagement seems present among the staff who recognize that this effort requires investment, particularly now that the size of tree planting events has increased:

> it's kind of one of those things that gets brushed off, like 'oh, we've done this for 25 years, it's super easy to do.' But I think that it gets lost on people the amount of work that actually goes into the entire process. And having started from a small community

tree planting organization to some of these very large scale plantings, the reaction is very different.

Table 27. TGD respondents' perspectives on how to improve tree-planting efforts.

Solution	Number of interviewees
1. Continue to find ways beyond flyering to engage residents in this work a. More community engagement staff (3) b. Engage with residents much earlier than currently (2) c. Educate residents more about the differences in tree species planted now than in the past (1)	7
2. Increase maintenance crew to care for trees planted	4
3. Have a comprehensive tree program that removes dead trees and plants new trees	2

Several TGD staff members addressed the issue with the 'messenger' and a need to expand their relationships with residents: "Greening has historically had a reputation of being mostly white people and just thinking about, how does the Greening become a community-based organization?" For many, the key was to build relationships with those who are from the community: "…if community leaders would introduce the idea of trees to the neighborhood rather than me, it would just be so much more powerful." In fact, when asked why one of the three community engagement staff members was so effective at convincing residents to accept trees, a colleague said, "I think she just does a really great job at connecting with people. She's from the city. I don't know, she's good at letting them vent or question or whatever." Another TGD staff member voiced the importance of TGD continuing to make an effort to become more known as a positive force in the city: "The Greening's been around for 26 years and we still work in neighborhoods where people have never even heard of us before. Which is to me, it almost sounds ludicrous. But there are very isolated pockets within the city, ya know, so getting more exposure out there."

Residents' perspectives

Residents involved in community organizations in Detroit recognize the importance of relationship building as well, as social interaction is the key to building a strong community (Brennan and Israel, 2008; Flint et al, 2008). During member checking focus groups, residents were asked about the degree to which they agreed or disagreed with the following statement: "I would like to socialize with The Greening of Detroit staff and volunteers when they come into the neighborhood to plant trees (e.g. gathering in a local park after planting trees for refreshments and food)." Five of 6 residents in a high NTR neighborhood group who responded to this, agreed with the statement, and 13 of 22 residents in the average NTR group agreed. Some wondered aloud what the purpose of this gathering would be, which may need to be clarified to motivate residents to attend such an event. However, based on the initial response, a majority of residents are interested in this possibility.

This type of event has the potential to build relationships and spark conversation about approaches to tree planting, as in the case of the Urban Resources Initiative in New Haven, Connecticut (Murphy-Dunning, 2009, p. 156):

> To expand out participants' understanding of what is possible on their sites, we set up tours of other Greenspace sites….We also have taken Greenspace participants to visit local parks, and have used print media—like gardening magazines—just to offer inspiration and starting points for dialogue.

Anguelovski (2014, p. 49) notes, "…neighborhood green space plays multiple roles for low-income populations and residents of color. Residents use public spaces with plants and trees to develop social contacts with each other and feel less vulnerable in their

neighborhood." This type of community engagement offers the opportunity to build relationships between residents and 'elites' (such as public and private forestry professionals) through mutual learning (Austin, 2002). Residents can receive information about trees from those within the organization, and simultaneously, the organization can learn of barriers as well as resources and capacities within the community to address those barriers to improving the tree canopy.

This mechanism is in line with how most residents indicated they would like to receive information about tree maintenance from TGD and the city—through information provided to community organizations, as opposed to a smartphone app or emailed newsletter (Table 28). Although, the second most popular response was information on a website—a resource that could be provided to those who Greening interacts with, since the information currently provided on the website is limited to the general benefits of trees and access to a community tree planting application.

Table 28. How residents indicated they would like to receive information from TGD and/or the city of Detroit on efforts to maintain trees in the neighborhoods.

Means of receiving information	Proportion of respondents
1. Their websites	• 45% (High NTR) • 20% (Average NTR)
2. Information provided to community organizations	• 73% (High NTR) • 36% (Average NTR)
3. The "Improve Detroit" app for smart phones	• 0% (High NTR) • 24% (Average NTR)
4. Emailed newsletter	• 0% (High NTR) • 11% (Average NTR)
5. Other: a. Door to door flyers with information (3) b. Newsletter from the neighborhood block club (1) c. Information call line (1)	n/a

One key challenge to this approach is that block clubs tend to mostly engage older residents. When asked why younger residents do not seem to attend such events, one resident at a Land Forum said that "young people just don't believe in it yet." One young man who received a tree said about getting more young people involved,

> Just come out, talk to em. Like I said, just have like a community gathering. Just come out to the community and talk to young people. You can see some young kids around. Just kinda talk to em, tell em what you're about and what ya'll do. Some of em might engage into it, ya know what I'm saying. You never know till you try it.

Conclusion

While several approaches are important to engage with residents to address the problems identified with the tree-planting program, an emphasis on relationship building through social interaction arose from interactions with TGD as well as residents during this study. This entails an expansion from a one-way provision of information to a two-way interaction in which TGD responds to the information needs of residents and provides them with the power to make decisions about tree planting in their neighborhood, once they have the information needed to make wise choices in the current context. This harkens back to the organization's origins in which TGD would provide information about the dangers of monocultures of trees and present options for trees that were determined by availability as well as appropriateness for the urban area. Residents would then be actively involved in selection of tree species to plant (within these constraints) and stewardship roles and responsibilities.

The results for this study demonstrate that submission of a "no-tree request" (NTR) is not an adequate indicator of residents' satisfaction and long term engagement with a street tree planted in front of their house. Responses from residents and TGD regarding the problem with tree-planting programs reflect differences in values toward trees. For example, residents often consider the long term appearance and maintenance costs of trees in the context of "keeping up" their neighborhood, particularly if they identify a lack of resources held individually or provided by outside entities like city government to help with stewardship.

TGD focuses primarily on discussions of ecosystem service values of trees with residents and selects trees to plant that will emphasize these values, although some within the organization acknowledge uncertainties regarding long term maintenance and desire for more resident involvement in stewardship. Many of these behaviors stem from a perception of residents that have misconceptions about the potential negative impacts of trees based on past experiences with species that were inappropriate to plant in urban areas (e.g. silver maples) due to root conflicts with infrastructure. Therefore, TGD seeks to educate residents on the differences between tree species planted in the past and those selected by the organization to plant now.

Although many residents expressed a desire for involvement in decision-making regarding tree species planted, and some TGD staff acknowledged that residents would like more control over their environment, the current approach to tree planting does not incorporate resident involvement in decision-making. Solutions to the problems identified with the tree-planting program by residents emphasize more information relevant to their values, including long term appearance of trees and upkeep costs. Many residents discussed a desire

for social interaction with TGD about the tree-planting program, in addition to relevant information on the TGD website.

Several TGD staff, board members, and volunteers also emphasized a need for more community engagement staff members and engagement with residents earlier in the tree planting process. However, some staff also noted that lack of resources, including staff members, limits their engagement with residents. This lack of resources is attributed by some as a lack of awareness of the value and work involved in community engagement.

CHAPTER 5: CONCLUSION

As efforts to increase and/or improve the urban tree canopy expand throughout the U.S., it becomes more vital than ever to understand the perspectives of all participants involved on preferred ways to achieve this goal. Urban political ecologists point out that currently, urban greening may only consider the values of elite stakeholders with access to resources and decision-making power (e.g. city government, non-profit organizations) and that capitalism drives these values to emphasize ecological outcomes that will attract greater investments of capital in a city (Bryson, 2013; Cohen, 1999). In this context, participation of residents is a means to attempt to achieve greater productivity (i.e. volunteer labor for tree planting and maintenance), and does not prioritize meaningful engagement to develop shared meanings and decision-making power, which are key elements of urban and community forestry models in the U.S.

By examining the heritage narratives of stakeholders, or broad renditions of the character of place according to its inhabitants, it is possible to identify ways that different participants create their identity and the meanings they associate with urban greening initiatives in the context of their heritage. This process of exploring heritage narratives can help guide dialogue and development of shared meanings about urban and community forestry between elite stakeholders, such as non-profit organizations, and the residents they seek to serve.

The purpose of this study was to understand the meanings that city residents and a non-profit organization called The Greening of Detroit (TGD) associated with a street tree-planting program in Detroit, Michigan. In particular, this study sought to understand why some residents

submitted “no-tree requests” (NTR) to the organization by examining how power manifested in key elements that influence mobilization in an environmental justice movement like urban and community forestry. These elements included how participants framed the problem with the tree-planting program (i.e. Who wins? Who loses? Who decides?), the resources available to become involved in the program, and political opportunities to change the system for involving diverse participants. This chapter provides a brief summary of findings, study limitations, policy implications, suggestions for future research, and a conclusion.

Summary of findings

Framing the problem with street tree-planting efforts

Previous scholarly work on environmental justice as a social movement and urban political ecology pointed to a need to examine how residents framed the problem with the street tree-planting program to ascertain the reasons for submission of NTR. Specifically, the researcher sought residents’ perspectives on the following questions related to the implementation of the street tree-planting program: Who wins? Who loses? Who decides?

Residents’ perspectives on these questions were compared with The Greening of Detroit’s (TGD) framing of the problem to see what differences (and similarities) existed, and how this impacted behaviors in the street tree-planting program. Within the conceptual model, it was posited that framing would differ between those who submitted NTR and TGD (and its supporters), and that those with power—TGD in this case—were whose frames would guide action. Through analysis of perspectives on these three questions (Who wins? Who loses? Who decides?), it became apparent that there were several shared frames as well as some notable conflicting frames between residents and TGD, and that TGD’s frames indeed guided action by

the organization. These findings helped to explain residents' resistance to or dissatisfaction with the street tree-planting program.

First, "who wins?" proved more complex to answer than merely understanding one's views on the general benefits of trees. For example, regardless of residents' responses to tree-planting (e.g. accepted a tree or submitted an NTR), the three most commonly noted benefits of planting trees were shade, beauty, and oxygen. These benefits, as well as several others, were also noted by TGD. Thus, there was general agreement between residents and TGD on the benefits of planting trees in neighborhoods broadly. This can help to explain why educating residents on the benefits of trees, through door hangers or verbal or written information conveyed by TGD during community meetings, did not consistently reduce or eliminate NTR.

Rather, residents considered the potential long-term impacts of tree-planting in deciding if they "won" with tree-planting. This is exemplified by the finding that two-thirds of residents interviewed would have accepted a tree if they had received more information about the tree's growth over time, more assistance with tree maintenance, and/or more decision-making power in selecting which species to plant in particular locations in the neighborhood. Without these conditions met, these residents did not feel they "won" with the tree-planting program.

There were also similarities and differences in perspectives on "who loses?" among residents and TGD. For example, all residents identified costs of tree maintenance (e.g. root damage to underground infrastructure) as a "loss" of tree-planting. Lack of adequate funding for tree maintenance was the most commonly cited challenge to achieving the goals of the tree-planting program for TGD staff and board members. Thus, residents and TGD shared this

frame of “losses” associated with tree planting. However, whether these “losses” were acceptable differed depending on one’s vantage point. Whereas all residents identified perceived individual-level costs, several staff and board members within TGD considered city-scale costs and indicated that the benefits from ecosystem service values of trees (e.g. stormwater run-off mitigation) for the city as a whole outweighed the costs of tree maintenance.

The vast majority of residents involved in this study, as well as staff and board members within TGD, noted that TGD staff members made decisions regarding which trees to plant in particular locations in neighborhoods. This was not problematic from the perspective of staff and board members of TGD since they selected species to ensure diversity and avoid monocultures, and species that could maximize quantifiable “ecosystem services” like capturing airborne pollution. For 22 percent of residents, having a choice of tree species planted impacted whether they accepted a tree or not. This follows Perkins (2015, p. 31) assertion that, “…planting shade trees everywhere without communicating and working with residents will not be the solution to environmental injustice.”

Differences in how tree-planting is framed affected mobilization

It is clear that some residents framed the problem with the tree-planting program as a lack of decision-making involvement about which types of trees were planted in which locations in the neighborhood. Many within TGD framed the problem as a lack of resident acceptance of trees that TGD proposed to plant in the neighborhood to maximize ecosystem service values of trees, which they believed would result in “wins” for everyone. These findings support the conceptual model for this study which posited that residents who submitted NTR would frame

the problem as a lack of decision-making involvement, whereas those within TGD would frame the problem as a lack of residents' understanding of the benefits of trees planted.

The dominant frame held by TGD guided their behaviors in tree-planting. This involved 'solutions' focused on efforts to minimize NTR (e.g. trying to convince someone to accept a tree by discussing the benefits of trees when a resident approached TGD staff to submit an NTR), but not to expand decision-making power of residents in species selection. Thus, there was a difference in framing of the problem with (and solutions to) tree-planting which appeared to preclude mobilization of some residents to participate in the tree-planting program. This is in line with the theoretical framework of environmental justice as a social movement, which states that framing of the problem and appropriate solutions impacts mobilization.

Dominant frames of tree planting limited political opportunities for residents to be more involved in decision-making

These behaviors by TGD in tree planting also explicitly limited the political opportunities available to residents to transform the tree-planting system to be more involved in decision-making. The theoretical framework of environmental justice as a social movement states that another important factor that influences mobilization in environmental justice activities is the presence of "political opportunities" to transform the system. Political opportunities include the relative openness of the system, its stability, presence of elite allies, and institutions' capacity and tendency for repression of transformation to the system.

The system that governs tree planting in Detroit is relatively closed, as decisions about tree planting in the city are largely made by TGD and its green infrastructure board members which does not include residents in neighborhoods where planting happens. These institutions with power thus demonstrate a tendency to repress transformations. Although there are elite

allies within TGD who indicated a desire to empower residents to become more involved in tree planting, there have not been changes to the system to support this transformation.

The desire of some elite allies to transform the system may have been hindered by the relative instability of the system. TGD indicated a reliance on funding from sources that prioritize tree planting over tree maintenance and have relatively short term mindsets about the goals for tree planting, which does not encourage long term, more in-depth engagement with residents in decision-making about tree planting.

Dominant frames of tree planting limited resources needed to mobilize residents

Another important finding of this study was that regardless of their response to tree planting, many residents wanted more information about trees to guide decision-making and ensure adequate mechanisms were in place to care for trees over time. The ability to mobilize resources to act on an environmental justice issue is the third key factor theorized to impact involvement in a social movement like tree planting. Resources include time, money, and knowledge of collective action strategies. In this case, residents expressed limited ability to mobilize relevant knowledge of trees and tree care to participate in tree planting and stewardship.

Many staff and board members interviewed from TGD framed the problem of lack of acceptance of trees as a result of lack of resident knowledge of the benefits of trees and not valuing trees enough to outweigh perceived costs of trees. Based on this frame, TGD emphasized educating residents of the wide range of benefits that trees could provide to increase acceptance of trees. This did not appear to diminish the general desire among residents to have greater involvement in tree planting decision-making processes. This is due to

several factors, including (1) residents' existing awareness of benefits of trees in general, (2) the recognition among many residents of the 'losses' that can occur when trees are not properly maintained in the long run, (3) the importance of property upkeep in defining neighborhood identities, and (4) heritage narratives of many residents which expressed an ongoing lack of input into decision-making regarding one's environment that has led to disappointing results. This demonstrates how differing frames on the causes of, and solutions to, an environmental justice issue can preclude mobilization by limiting resources of residents to participate in tree-planting and stewardship.

Heritage narratives reveal barriers to finding consensus on approaches to tree planting

Examination of heritage narratives also revealed findings that supported, and helped to build upon, the conceptual model for this study. The conceptual model posited three major groups—those within TGD, city residents who received trees, and city residents who declined trees—would have different local knowledge and experiences which would be reflected in different heritage narratives and meanings associated with trees. These narratives would then lead to different perspectives on the problem(s) with and solution(s) to the tree-planting program. This research revealed the particular heritage narratives told by residents who were pleased or displeased with the tree-planting program, as well as staff and board members of TGD, that had a important influence on one's framing of tree-planting.

First, neighborhood upkeep was a key characteristic that residents noted in determining whether an area was "good" or when describing the challenges faced in an area. This was often linked to a heritage narrative of population decline which resulted in decreased care of properties and diminished social cohesion to varying degrees across the city. Residents noted

that lack of tree care was an important example of decreased care of properties, both on the part of residents who moved out of the city and left the property unmanaged, as well as the city government which disinvested from maintenance of street trees during the city's economic decline.

Maintenance of trees (or lack thereof), was thus tied to control over one's environment and the degree of trust in others who have control over one's environment (i.e. city government, NGOs). However, rather than identifying differing narratives among residents who received trees or submitted NTR as posited in the conceptual model, the narratives of control over the environment and trust in those who shape one's neighborhood related to categories of response to tree planting. For instance, those who were happy to accept a tree described more positive experiences with city services and/or neighbors who helped to maintain the neighborhood's appearance compared with those who were least inclined to accept a tree or be satisfied with the tree they received.

The narrative of decreased care of properties, which was linked to hesitancy about tree planting among some residents, was not a narrative shared by TGD staff and board members. This finding supports the conceptual model that predicted differing narratives among residents and TGD. However, many within TGD acknowledged the challenges associated with long term maintenance of city trees and expressed a desire to more meaningfully engage with residents. This reflects the principles of community forestry (Bixler, 2013; Pagdee, Kim, and Daugherty, 2006). Yet the process for tree planting did not allow for a great degree of resident involvement.

Second, heritage narratives shared by TGD staff and board members revealed barriers to shared decision-making power with residents. In particular, TGD staff and board members noted that 6,000 trees must be planted annually to make up for the rate at which trees are being lost. In this context, and with limited staff and little help from city government, there was a tension between engaging with residents more meaningfully in tree-planting decision-making and prioritizing resources to plant a greater number of trees.

Additionally, several TGD staff and board members shared a narrative of residents based on previous interactions during the tree-planting program that residents would select tree species that would not maximize ecosystem services (i.e. smaller ornamental trees) and that TGD staff would make "better" choices ecologically than residents, so shared decision-making would potentially lead to monocultures of small species of trees that would not be in the best interests of the residents. This narrative of lack of trust in local residents' approach to decision-making is not unique to Detroit. Chambers (1997) notes that there is a prejudice among those who are not poor that those who are poor are unable to take a long-term view of decisions as professionals and elites do because they are concerned more with immediate issues related to survival. Bullock and Hanna (2012) apply this idea to forestry, stating that there is a pervasive belief that community-based management will favor local over national interests when making decisions about land use.

These narratives limit mutual learning and dialogue that could enhance the outcomes for all involved in urban and community forestry. McDonough, Vachta, Funkhouser, and Gieche (1995, p. 7) note this is a long-standing issue in urban and community forestry, "Few urban forestry programs make use of the full range of potential benefits that can be derived from the

urban forest when managed in cooperation with local communities." Dominant narratives held by TGD did not provide space for alternative meanings associated with greening activities held by some residents to influence the process. These dominant narratives also appeared to paint residents' values and priorities as mutually exclusive to those of the organization, which limited identification of options for urban tree-planting that would satisfy a range of interests.

These power dynamics among participants can result in the use of participation to achieve the goals of those who make decisions regarding urban and community forestry. Often, these goals emphasize capitalist values of efficiency, profit maximization, and capital accumulation (i.e. focus on planting many shade trees) and relegate residents to the role of consumer of services rather than partner in governance (Brownlow, 2006; Byrne, 2012; Campbell, 2015; Conway et al., 2011; Landry and Chakraborty, 2009; Perkins et al, 2004).

Limitations

The use of purposive sampling techniques to identify study neighborhoods facilitated comparisons among neighborhoods that varied by the proportion of NTR submitted. Selection of sites that exhibit maximum variation in regards to a variable of interest (proportion of NTR submitted, in this case) helps to capture as many perspectives as possible to understand the range of reasons residents submit NTR or accepted trees. While a qualitative research approach allowed for data collection from a range of residents that had been involved in previous TGD tree planting events, there were several limitations to the approach utilized.

Although the street addresses of those who received trees and submitted NTR in each of the sampled neighborhoods were available, the researcher chose to first gain entrée with leaders of community groups in these neighborhoods and then to solicit interviews with those

who attended community meetings and had either received a tree or submitted an NTR. This choice enabled the researcher to develop trust and rapport with residents and increase the likelihood they would participate in more in-depth interviews and group discussions for data collection. However, this also limited data collection to those who attended community meetings during the time of the study, which tended to be older homeowners. While a few young adults and renters provided feedback, the results provided may reflect issues more prevalent with retired individuals and/or homeowners.

The methodology included door-to-door interviews and phone conversations with those who did not attend community group meetings to ensure consideration of their views. A limitation to this approach was the limited depth (particularly in regards to heritage narratives) that was captured in the relatively shorter interactions. Another limitation of this approach was the inability to capture narratives from as many working-age adults as retirees since door-to-door interactions occurred during the day when many working adults were not home, and those who had provided phone numbers to TGD were older adults.

Additionally, in keeping with feminist approaches to research, the methods of data collection varied depending on participant preferences. These methods ranged from group discussions recorded in field notes or audio-recording device, responses to written questionnaires, or individual audio-recorded interviews. This, coupled with differing sizes of community group membership, led to differences in sample sizes across study sites. For example, data were collected from 56 participants in the average NTR neighborhoods, 46 participants in the high NTR neighborhood, and just 23 participants in the low NTR neighborhoods. Thus, it is possible that a greater understanding of the complexity of reasons

for particular responses to tree-planting were captured in the average and high NTR neighborhoods compared with the low NTR neighborhood.

A qualitative research design also does not allow for identification of variance or measurement of relationships between particular variables, such as age or home ownership and response to tree-planting. That is better suited to quantitative techniques which allow for breadth of inquiry into a social problem, while qualitative data provides depth of understanding. Both of these types of data are often needed to understand complex social issues (Creswell and Clark, 2011; Hodgkin, 2008).

Implications

As scholars have noted, it is necessary to understand the social context in which urban and community forestry occurs, as this impacts social and ecological outcomes, such as relationships among stakeholders and survivorship of trees (Austin, 2002; Clark et al, 1997; Dilley and Wolf, 2013). Professionals in urban and community forestry can use the results of this study to guide interactions with residents. These interactions should start with dialogue aimed at understanding the heritage of a place according to the stories told by its inhabitants. Heritage narratives may include the special attributes of a place and the challenges faced and why. This can help those engaged in forestry understand how proposed forestry projects may fit within a particular heritage (Appendix D). For example, in Detroit, neighborhood upkeep is an important task to maintaining social cohesion among residents. Residents facing greater challenges to neighborhood upkeep desired more dialogue regarding tree maintenance and assistance available after tree-planting, in addition to decision-making power regarding species planted.

These findings demonstrate the importance of providing information *relevant* to participants who may serve as vital partners in long term stewardship of trees, rather than information to change the values that participants associate with forests, as values are tied to culture and resistant to change (McDonough, Vachta, Funkhouser, and Gieche, 1995). Relevant information provided to residents, and relationship building through two-way dialogue about options for tree planting and maintenance (before and after tree-planting) can help to mitigate several of the problems with the tree-planting program identified by residents and TGD. Additionally, instituting protocols to follow-up with residents at specified intervals after tree-planting would help to develop trust between residents and organizations or agencies involved in tree-planting programs.

As Emery and Flora (2006) discuss, the first step in "spiraling up" capital assets in a community is to bridge social capital by bringing *outside expertise* together with *internal wisdom*. Professionals in urban and community forestry can therefore design tree-planting projects to allow for more dialogue about these issues early in the planning process, particularly in neighborhoods facing greater challenges with neighborhood upkeep (e.g. greater proportions of vacant houses). This approach would likely increase mobilization of residents in tree-planting initiatives by allowing shared meanings of tree-planting projects to emerge. Additionally, shared decision-making power would enhance political opportunities to transform the system to incorporate diverse values, and on-going dialogue would increase the resources needed to mobilize residents in the urban and community forestry movement.

To aid with the limited financial resources organizations possess to do this type of outreach, partnerships with others may need bolstering, including with universities in the

region. This approach has been used with some success in New Haven, Connecticut with the Urban Resources Initiative, and in New Orleans following Hurricane Katrina in which Tulane University made community service and engagement a requirement for graduation as a matter of self-preservation, since the city was integral to the University's success (Cox, 2015). The University raised money to help non-profit organizations in their efforts, which was a part of student learning. Yet in the city of Detroit as a whole, some feel that the collaborative potential with universities is underutilized in networks of "civic entrepreneurs" (National League of Cities, no date).

These solutions entail a shift in the dominant narrative about residents that TGD adheres to in guiding their actions. Rather than approaching residents as consumers of messages and trees who simply need knowledge to accept the tree-planting program, it is important to utilize heritage narratives told by residents to broaden the means for engagement in a way that resembles the organization's origins (Appendix D). According the founder of TGD, collaborations with universities in the region were a vital component to their development and success, so a return to these partnerships would be in line with another of the earliest heritage narratives of the organization that seems to have diminished over time.

Suggestions for future research

Scholars note that it is unclear what role communities will play in policy evaluation in the future (Goodson and Phillimore, 2012). Future research should therefore engage with communities in which these policy implications and recommendations for urban and community forestry are applied to examine their efficacy. This includes perspectives on how increased involvement in decision-making about street tree planting and stewardship impact

residents' satisfaction with tree planting and residents' social capital, or networks and relationships that empower residents to address issues of importance in their neighborhoods.

Such research should also consider the use of mixed methods. Mixed methods can highlight the situated nature of forest knowledge among elite stakeholders (which often emphasizes quantifiable measures of forest health) and marginalized community members. This approach could bridge gaps in different stakeholder groups' perspectives, values, and priorities. For instance, Shrestha and McManus (2008) conducted comparative case studies of community forestry projects in Nepal, which included quantitative inventories of forest conditions and resources through rapid forest assessment, in addition to interviews with community members on past and present conditions of the forest. Comparison of findings from each method helped paint a more complete picture of community forestry in the region. This approach could aid in the cultivation of shared purpose and goals for urban and community forestry programs in the U.S. before programs are implemented, as well as evaluation of the success of urban and community forestry programs after implementation, based a more complete and nuanced assessment of forest conditions. As Windsor (2013) notes, experiential and expert knowledge come from two distinct ways of knowing which can complement one another to improve health-related outcomes.

To address the limitations of the qualitative approach used in this research to identify variance or measurement of relationships between particular variables, future research should compare responses to tree planting (e.g. NTR submitted, tree accepted) based on variables like age and home ownership. This requires that in future tree-planting events, staff and volunteers collect information from residents about their age and status as a home owner or renter.

Additionally, future research should examine how heritage narratives can help to explain and guide behavior in urban and community forestry in other contexts, particularly cities that have also experienced resistance to current approaches to tree planting, such as Portland (Oregon), New York City, and Toronto, Ontario (Canada). Heynen (2006) notes that the majority of trees in cities exist on private property, and Conway (2016) further emphasizes the central role of private property owners in residential neighborhoods in the management of urban forests, with aesthetics driving many decisions. Future research should therefore examine the degree to which heritage narratives influence perspectives on private property in similar and/or different ways than street trees. Such insights could be vital to the sustainable and effective management of the entire urban forest, and not just parcels on publicly owned property.

Conclusion

Too often, tree-planting is presented as a panacea for a range of ills in modern society without adequate attention paid to the *ways* that tree-planting is implemented at the local level. Many scholars have noted the importance of urban forestry governance that is adapted to each local context where it occurs. In particular, it is necessary to understand power relationships that shape urban forest governance to develop approaches that do not simply reinforce or magnify existing inequalities between participants that occupy different roles in the system (Bullock and Hanna, 2012; Konijnendijk van den Bosch, 2015).

Professional forestry organizations are becoming more nuanced in their recommendations for urban and community forestry goals to account for context. For example, in 1997, American Forests recommended a goal of 40 percent urban tree canopy cover

regardless of locale (which The Greening of Detroit referenced in their goals for Detroit's tree canopy during this study). American Forests now recommends context-specific canopy goals developed based on a range of factors such as climate and inequitable distribution of the canopy among lower income neighborhoods. The organization also recommends goals that go beyond simply achievement of a specific percentage tree canopy to consider factors like age and species diversity, as well as condition of trees (Leahy, 2017). There is a need to continue to develop a nuanced approach to urban and community forestry by understanding and transforming (where needed) the power relationships that guide implementation of tree-planting and stewardship efforts.

The research presented here provides important insights into the power dynamics perceived by a range of participants in an urban tree-planting program in Detroit, Michigan. These power dynamics help to explain behaviors in urban and community forestry—including reasons for existing decision-making processes that limit involvement of city residents, and the resistance that some residents demonstrate to tree-planting programs. This knowledge fills an important gap in understanding drivers of urban and community forestry governance approaches, and particularly aspects that require more careful consideration and modification to achieve mutually valued goals of diverse participants. Ultimately, the sustainability and success of urban and community forestry efforts will rely upon a more nuanced view of the types of goals such efforts should aim to reach, and the roles of various participants in reaching these goals.

APPENDICES

APPENDIX A: DATA COLLECTION METHODS

Informal conversations with key informants to gain entrée

1. What are some upcoming events or meetings in the neighborhood that I could attend to get to know residents in the neighborhood better?
2. Should I schedule an event myself and invite people in the neighborhood? What type of event?
3. What is the best way to invite NTR and residents who accepted trees to talk with me?
4. How were you involved in Greening's tree planting efforts in this neighborhood?

Interview questions for residents

Research question 2:

1. What is special about your neighborhood?
    a. What do you like about living here?
2. What are some of the biggest challenges you are facing in this neighborhood?
3. How long have you lived here?
4. Please describe your thoughts and feelings when you heard the word "tree."
    a. Are these thoughts and feelings about trees based on any experiences you have had in this neighborhood?

Research questions 1 and 3:

5. Were you notified of The Greening of Detroit's tree-planting program? If so, how?
6. How were you involved in the decision to plant this tree on the property between the sidewalk and the street in front of your house?
7. Who did you talk with when the tree was dropped off and/or planted here?
8. What kinds of positive impacts do you think planting trees in this neighborhood may have?
9. What kinds of negative impacts do you think may come with planting trees in this neighborhood?
10. Do you rent or own your home?
11. Do you have any additional comments, questions, or thoughts on trees or the tree-planting program that we have discussed today?

Interview questions for TGD staff, board members and volunteers:

Research question 2:

1. How long have you worked or volunteered for The Greening of Detroit?
2. Do you live in the city of Detroit?
3. Please describe your thoughts and feelings when you hear the word "tree."
    a. Are those thoughts and feelings about trees based on experiences you have had in the city of Detroit or elsewhere?

Research question 1:

1. What are the goals of The Greening of Detroit's street tree-planting program?
2. How does The Greening of Detroit measure the success of its street tree-planting program?
3. What do you feel are the challenges to achieving those goals?
4. How are neighborhoods selected for inclusion in The Greening of Detroit's street tree-planting program?
5. Who selects the species of trees to plant in Detroit neighborhoods?
6. Do you interact with, or receive feedback from, residents in neighborhoods selected for street tree planting projects? If so, how?
    a. How do these interactions or feedback inform decisions you make about the street tree-planting program?
    b. Are there other ways for residents to provide feedback on the street tree-planting program other than through submitting a "no-tree request"? If so, how?
7. How are residents involved in *implementing* the street tree-planting program?
8. What do sources of funding for the tree-planting program require of The Greening of Detroit as a condition of receiving funding?
9. From your perspective, what are the benefits to the current approach for implementing the street tree-planting program?

Research question 3:

1. From your perspective, how could the street tree-planting program be improved to meet The Greening of Detroit's goals?
2. How is The Greening of Detroit currently trying to address the issue of receiving "no-tree requests" from a portion of city residents?
3. Do you have any additional comments, questions, or thoughts on trees or the tree-planting program that we have discussed today?

APPENDIX B: PARTICIPANT OBSERVATION PROTOCOL

Overarching questions to guide observation and field notes[11]

1. *Who* is present? What role are they playing? Who organized or directed the group discussion?

2. *What* is happening? What are people doing and saying, and how are they behaving? What feelings are felt and expressed?

3. *Where* is this meeting happening? What part do the physical surroundings contribute to what is happening?

4. *Why* is this happening? What are people trying to accomplish at this meeting? Are different perspectives on what is occurring evident?

5. *How* is this activity organized? What rules or norms are evident?

Specific questions related to the study to guide observation

For community meetings/events:

11. What are the main aspects of the neighborhood's identity overall?
    a. What is special about this neighborhood?
    b. What are the main issues residents are facing?
12. How are relationships with non-profit organizations and city government a part of that identity?

For Greening meetings:

1. What are the primary goals of the tree-planting program?
    a. Is the focus on achieving ecological goals through the planting of trees?
    b. What about social goals and the goals for the process of tree planting?
2. How are residents involved in decision-making processes around tree planting?
3. What do sources of funding require of Greening in tree planting efforts?

[11] Adapted from: Bogdewic (2000, p. 55) and Bailey (2007, p. 84)

APPENDIX C: MEMBER CHECKING SURVEYS

Survey form #1: Categories of response to tree-planting

Please write the number "1" in the box that you most identify with. Within the box you select place a check next to the description(s) you most agree with. You may also place a "2" next to an additional category if you identify with more than one.

Would not accept a tree

- ☐ Root damage concern
- ☐ Not enough space

_____

Would accept any tree with maintenance

- ☐ Pruning
- ☐ Leaf Raking
- ☐ Watering

_____

Would accept a tree if I could choose the type of tree

- ☐ Prefer flowering or ornamental trees
- ☐ Prefer trees with lush green leaves

_____

I want more information about a tree planted

- ☐ How fast and tall it will grow
- ☐ How to care for the tree

_____

Once a dead tree is removed from the area I would accept a new tree.

- ☐ Safety Concern
- ☐ Not enough space for new tree

_____

Happy to accept any tree planted

- ☐ Trees take care of themselves
- ☐ Willing to care for the tree

_____

Additional comments:

Survey form #2: Solutions to the Street Tree-planting Program

Below are some potential ways to improve community engagement in The Greening of Detroit's tree-planting program. Please answer any you would like to.

General:

I wouldn't change anything about the way The Greening of Detroit involves community residents in their street tree-planting program. Circle your answer:

Strongly Agree Somewhat Agree Neutral Somewhat Disagree Disagree

---

Communication:

The Greening of Detroit should provide more information about the trees they plant in neighborhoods **on their website**. Circle your answer:

Strongly Agree Somewhat Agree Neutral Somewhat Disagree Disagree

---

I would like to socialize with The Greening of Detroit staff and volunteers when they come into the neighborhood to plant trees (e.g. gathering in a local park after planting trees for refreshments and food):

Strongly Agree Somewhat Agree Neutral Somewhat Disagree Disagree

---

I would like a **flyer** with information after the tree is planted in front of my house, including (check any that apply):

- ❑ Who will take care of the tree and how
- ❑ What I should do to help the tree prosper
- ❑ Who to contact if I have concerns about the tree
- ❑ What to expect the tree to **look like** over time
- ❑ What to expect with the tree's **root growth** underground over time
- ❑ None of the above
- ❑ Other information: _____

The Greening of Detroit and/or the city of Detroit should update citizens about their efforts to maintain existing trees in neighborhoods through (check any that apply):

- ❑ Their website(s)
- ❑ Information provided to community organizations
- ❑ The "Improve Detroit" app for smartphones
- ❑ Emailed newsletter
- ❑ Other:_____

Trees:

There needs to be more City of Detroit and/or Greening of Detroit staff to tackle maintenance of trees.

Strongly Agree Somewhat Agree Neutral Somewhat Disagree Disagree

---

The Greening of Detroit should provide trees for private property planting.

Strongly Agree Somewhat Agree Neutral Somewhat Disagree Disagree

---

Additional comments:

APPENDIX D: POLICY IMPLICATIONS FOR COMMUNITY ENGAGEMENT IN TREE PLANTING

Integration of heritage narratives into community-engaged tree planting

Based on key results from this study, the following decision tree should help guide dialogue with residents based on their initial response to tree planting initiatives, which is influenced by their heritage narratives.

Heritage narratives are "broad renditions of a community's history…the character of its people (both past and present), and its trials and triumphs over time" (Bridger, 1996, p. 355). These stories often influence peoples' thinking about future political decisions (Alkon, 2004), and thus are important guiding themes in interactions with different groups of people.

Dominant narrative: A "good" neighborhood is a well-maintained neighborhood

In all of the study sites, residents commonly associated the degree of property upkeep with whether a particular area is a "good neighborhood" (see p. 2 for a summary).

- Community organizations in all types of neighborhoods (low, average, and high NTR) focus their efforts on improving or 'keeping up' properties and encouraging others in the neighborhood to do the same.

Key finding: Differences in resources from within or outside of the community

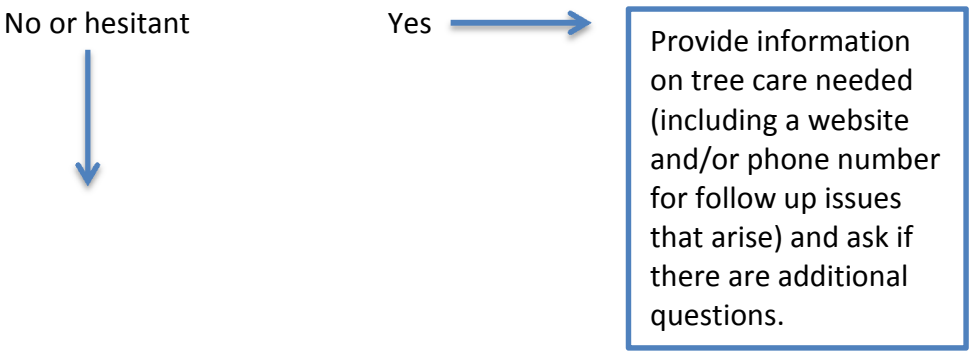
Residents who were happy to receive a tree reported *positive* experiences with trees and city services *in addition to* positive relationships with neighbors, **all of which contributed to community stability and appearance.**

For those who were not happy to receive a tree, the primary or only special attributes of the neighborhood involved amicability between neighbors, and challenges centered on property upkeep, which is difficult with few city services. Several of these residents indicated that they did not receive adequate information about tree maintenance.

Key take-away: Ask residents: (1) What is special about your community? And (2) What are the main challenges you face?

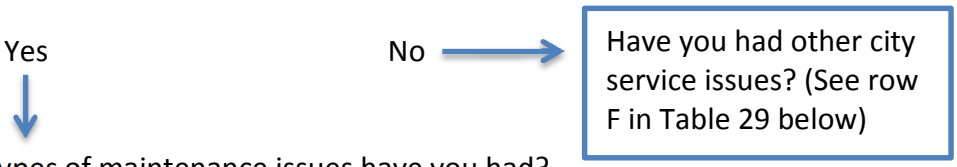
- If residents respond that city services and resources for property upkeep are lacking, they will likely want more involvement in selecting tree species to plant
    - This dialogue should include details about upkeep for species and growth over time, in addition to the benefits of particular trees to that community and the availability of species that are ecologically suited to the region and urban atmosphere.
        - Additional guidance on appropriate information to provide based on specific response to tree planting is provided on the following two pages (Figure 10, Table 29).

Response to tree planting



Questions to ask:

1) Have you had maintenance issues with public and/or private trees?[12]



2) What types of maintenance issues have you had?

   a. Use the table below to guide information provided to residents and **species selection**—and be sure to indicate what Greening will do and what the resident will need to do for particular types/families of trees!

Figure 10. Decision tree for community engagement in tree-planting.

[12] Alternatively, you can ask, "what are your main concerns related to tree planting", and if the resident replies "maintenance", then move to question #2.

Table 29. Information to provide to residents to guide selection of trees planted in residential neighborhoods.

Issue mentioned by resident	**Information to provide the resident to guide species selection**
A. Roots: • Have interfered with underground pipes and caused flooding, and/or • Caused sidewalk damage	1. Which species of trees are less likely to cause root problems? a. For available species, what is the timeframe of tree growth and root growth and where is it in relation to underground pipes? 2. What could be the cost to the resident to address root-related issues if they arise? 3. What role do certain trees play in reducing flooding? • No residents mentioned this as a benefit of trees during the research, and some felt trees increased flooding, so this needs to be clarified)
B. Trimming	1. When does trimming need to start happening? 2. What are the city and/or Greening doing to address this?
C. Tree died in the past	1. What is the lifespan of various tree species? 2. What factors affect tree lifespan? 3. How are tree diseases being avoided?
D. Lawn appearance	1. How will various tree species affect grass growth or other greenery? 2. What can I do to minimize these issues? 3. How much watering will I need to do?
E. Berries/other debris	1. What "debris" comes with different tree species, in what timeframe? (e.g. berries, acorns, leaves)
F. Overall maintenance in the context of other upkeep responsibilities in the neighborhood	1. What are "low maintenance" species of trees available, and what will need to be done, by whom to maintain the trees? 2. What benefits to the neighborhood could these different species provide?

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