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Public Reactions to New Street Tree Planting

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Abstract
MillionTreesNYC, which has the goal of planting one million trees in New York City by 2017, is intended to make New York City a greener, more sustainable city and is part of the Mayor's comprehensive long term strategic plan, PlaNYC. Through planting a tree at every suitable sidewalk location in the city, the City of New York is transforming blocks and communities, and providing a variety of environmental, social and aesthetic benefits. This article examines the large scale municipal planting of new street trees and the reaction by some of the public to this planting.

Trees offer benefits to the city overall, but the public may not understand these benefits or the street tree planting process. Between 2007 and 2009, the Department of Parks & Recreation planted 53,235 new street trees, and received 4,108 items of correspondence from the public. The majority of this correspondence consisted of public comments about the City's new street tree planting policies and processes including placement objections, maintenance concerns, reports of resultant damage from tree planting operations, requests for new street trees and reports of tree conditions.

This study describes the operational policies that guide New York City's municipal street tree planting, and results of content and spatial analysis of the correspondence. Qualitative analysis of the correspondence revealed public perceptions and concerns related to the MillionTreesNYC program. Spatial analysis explored the relationship between the planting locations of new street trees and the locations of the citizen correspondence.

Public reactions to this large scale municipal planting are related to the dual public and private nature of the sidewalk, issues of territoriality, responsibility, aesthetics and place attachment. Correspondence volume was associated with the scale of the new street tree block planting program, and the effectiveness of NYC's 311 Customer Service Center. The discussion suggests that increased public education on tree benefits and notification of planting processes could change perceptions of new street tree planting. This study also identifies the potential for targeted research studies to further investigate public reactions to new street tree planting.

Keywords
Urban forestry; street trees; greening; public policy; public space; sidewalks; territoriality; aesthetics; qualitative analysis; spatial analysis

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INTRODUCTION

The arrival of new trees on a city street can transform a space that is both public and private, turning gray sidewalks into green streetscapes. Particularly in densely populated New York City, street trees do not emerge from sidewalks on their own, but their planting requires coordinated efforts and public policies. Through planting a tree at every suitable sidewalk location in this urban environment—on blocks where people live or work—the City of New York is transforming communities, and providing a variety of environmental, social and aesthetic benefits (Figure 1).

Figure 1. These photographs show a New York City street before and after the planting of new street trees, and how the trees can green and soften the streetscape.

Although trees offer benefits to the city overall, the public may not know or understand those benefits. New street trees can elicit positive or negative feelings, and territorial and aesthetic issues can influence perceptions of the value of trees. Trees inserted into the urban environment soften the streetscape and provide aesthetic as well as environmental benefits.

The planting of a tree is significantly different from the arrival of other infrastructure items or static sidewalk furniture such as a light post or street sign. Trees are living things that inhabit the space they are in with a presence – they are iconic woody plants, with archetypal societal implications. People assume they will grow old, become large, reflect seasonal change, and require maintenance and responsibility. Some welcome their arrival with open arms and excitement, while others see their planting as an intrusion into their private space or territory.

This study investigates how some of the public reacted to the planting of these new street trees. Both qualitative and spatial methods were utilized to analyze the opinions communicated to the City of New York which was doing the planting. The examination of emergent correspondence data was rich and grounded in the perspectives of the people. It was not pre-shaped by survey questions but rose up though the open coding of an administrative data set. The public reaction portrayed in the correspondence was both to the new street trees themselves and the planting policies of the City of New York. In order to understand people's reactions, we will begin by describing the new street tree planting process and the public policies that guide the planting process.

New Street Tree Planting Program

New street trees arrive on large trucks, having been pre-dug from fields, and are planted into a sidewalk space that has been cut open by contractors and filled with soil (Figure 2). The new trees are eight to twelve feet high with a trunk girth of approximately three inches. Contractors who plant the trees are supervised by resident engineers during planting, and regulated by contract specifications that contain best practices for healthy street tree planting. The planting locations and tree species have been determined in advance by foresters from the Department of Parks and Recreation's Central Forestry & Horticulture (DPR CF&H) Division to accommodate healthy growth.

Figure 2. These photographs show the arrival and planting of new street trees.

Recent large scale municipal planting of street trees in New York City is fueled by the MillionTreesNYC program, proposed as part of Mayor Bloomberg's PlaNYC in 2007. PlaNYC's goal is to create a greener, greater NYC, with 127 initiatives intended to improve the physical city; impacting land, water, transportation, energy, air and climate change (City of New York 2007). The plan's focus is to provide for sustainable improvements to NYC, which requires new levels of collaborations and substantial resources. The DPR CF&H Division, in collaboration with non-profit and other partners, will plant one million trees by 2017. These plantings on public and private property have the potential to increase the overall tree canopy cover for New York City, which was estimated at 24% in 2001 (Grove et al. 2006).

The development of an urban forest requires significant public investment, and MillionTreesNYC combines both public and private funding sources. The Parks Department will plant sixty percent of those one million trees in public space (220,000 on streets with an additional 380,000 trees in woodland areas or open park space), while forty percent will be planted by the City's partners (New York Restoration Project and other organizations) on public and private land (www.milliontreesnyc.org; Stephens 2008).

The Mayor has pledged to fill all available sidewalk spaces with street trees by 2017 to raise the street tree stocking level from 74% to 100% (City of New York 2007). Since the area between the curb and the property line belongs to the city, the plan is to create a ribbon of green along this gray public space. New street trees will green the cityscape, and beautify the public realm to improve the experience of every pedestrian. Between 2007 and 2009, the DPR CF&H Division has already planted 53,235 new street trees.

Historically, the DPR CF&H Division planted trees on an individual request basis. This meant that citizens could request a free tree planting in front of their property, which was fulfilled on a first-come first-served basis, since the demand could often exceed the supply of trees. In addition to individual requests, foresters would also identify additional locations for street tree plantings in front of properties

where no tree request had been made, and building owners were given the option to refuse the tree planting. Under this method, one or two trees might be placed on a block at one time, and trees could also be planted based on an unequal distribution of requests.

With the beginning of PlaNYC and MillionTreesNYC, there was a major policy shift in how street tree planting was done. PlaNYC funded the capital budget to provide for the large-scale volume planting of new street trees. This led to the creation of the block planting program and the development of a methodology to assess and target those neighborhoods in the greatest need of new street trees. The sections of the city with low street tree stocking level and high population density receive prioritized planting under the program, ensuring that tree benefits are maximized and the scope of the initiative reaches all citizens by the scheduled conclusion of MillionTreesNYC in 2017.

Along with this new program, the City enforced its legal authority over the sidewalk and implemented a planting policy that no longer allowed building owners the ability to deny a suitable tree planting in the public right-of-way. Trees are still planted to fulfill requests from citizens, and approximately thirty to forty percent of trees planted are in response to individual requests citywide. However, the majority of new street trees planted by DPR CF&H follow the policy priority of mass block planting. Block planting brings trees and their benefits to neighborhoods that previously had few or no trees, while also making significant strides towards accomplishing planting goals.

Street Tree Benefits and Concerns

The accrued benefits of street trees have been quantified and translated into financial value (Peper et al. 2007; Nowak et al. 2007; McPherson et al. 2007). As of 2005, the City had 592,130 street trees that were estimated to provide approximately $121.9 million in annual gross benefits (Peper et al. 2007). Planting along streets and in parking lots provides additional benefits beyond those that come from planting in parks due to the shade of structures (Peper et al. 2007).

The detailed analysis of the New York City urban forest by the U.S. Forest Service was used by Parks Department's Commissioner Adrian Benepe to secure $400 million for tree planting from the city budget (McIntyre 2008). In this calculation, both the environmental and aesthetic benefits that the urban forest produces for the community are linked to the quality and extent of New York City's canopy cover. Fifty-seven percent of the benefits are environmental and include the capture of storm water runoff, energy savings, air quality improvement and the reduction of carbon dioxide (Peper et al. 2007; Nowak et al. 2007; McPherson et al. 2007). The other forty-three percent of the benefits relate to beautification, the associated aesthetic values and annual increases in property value (Peper et al. 2007; Nowak et al. 2007; McPherson et al. 2007).

Several studies have assessed the social benefits of urban and community forestry programs (Westphal 2003; Kuo 2003). Research found that outdoor spaces with trees were used more frequently than spaces without trees, and that this facilitated interactions among residents that fostered more sociable neighborhood environments and stronger neighborhood social ties (Kou et al. 1998). Views of trees provide restorative experiences that ease mental fatigue (Kaplan and Kaplan 1989). By making residential outdoor spaces more vital, trees can contribute to the functioning of a healthy community (Kou 2003; Kou et al. 1998).

Urban forestry programs often involve community-based greening activities (Wolf 2003). People who either planted their own tree or participated in a tree planting program reported greater satisfaction and were more likely to think the tree improved the yard and the neighborhood (Summit and Sommer 1998). If volunteers plant trees themselves their relationship, attitude and satisfaction with the tree planting is substantively different than those planted by a municipality using hired contractors (Sommer et al. 1994).

Trees have many meanings for people. The connection between human beings and trees is strong, for trees can shape both individual and collective identities (Sommer 2003). Human beings derive pleasure from trees (Lewis 1996) and trees can also represent personal, symbolic, and religious values (Dwyer et al. 1991). They can commemorate people who have passed (Svendsen and Campbell 2005; Tidball et al. 2010) or children just born, for they have spiritual value and longevity. Trees are more than just a decorative feature in the landscape – they have the ability to transform it over time at both a physical and psychological level.

The aesthetic aspects of trees have also been found to be important. Several studies have found that there are visual preferences for a certain size, shape or form of a tree (Williams 2002; Schroeder et al. 2006). The majority of reported positive features of street trees were found to be related to aesthetic considerations such as being pleasing to the eye, the giving of shade, enhancing the look of a garden or home, and making the neighborhood more live-able (Gorman 2004). These intangible benefits of aesthetics had the strongest correlation with the overall assessment of a street tree right outside the home (Schroeder et al. 2006). Issues of comfort (shade) and appearance play more of a role in the decision to plant trees than do concerns about environmental benefits or energy savings (Summit and McPherson 1998). Trees, by adding softer natural elements to a city, also enhance the public's impression of the visual quality of cities (Wolf 2008). Beautification is one of the most frequently cited reasons for why people plant trees (McPherson 2007)

However, trees do require maintenance and imply responsibility. They drop leaves and can damage sidewalks. Studies have found that urban trees can cause annoyances and involve liability issues. Trees can be considered to be messy or dirty by some (Sommer 2003). Gorman (2004) found that complaints about trees had to do with power line interference, sidewalk damage, and visibility blockage. There are issues with actual root damage to property, falling leaves or limbs, general debris, or the reduction of personal safety by limiting visibility views from the property (Schroeder et al. 2006). The planting and management of trees can conflict with other elements of the urban infrastructure such as sewers and sidewalks (McPherson et al. 2007).

The Sidewalk Grey Zone

In New York City all trees growing in the public right-of-way, along streets and in parks, are under the jurisdiction of the Parks Department, which manages about half of the City's 5.2 million trees (Nowak et al. 2007). The City of New York owns the space between the curb and the building owner's property line, but the owner is responsible for the maintenance of the sidewalk. New York City law requires property owners to repair the sidewalk adjacent to their properties at their own cost[1]. The Department of Transportation can issue violations for sidewalk defects for public safety reasons (New York City Department of Transportation, 2008). The legal responsibilities for liability related to sidewalks, tree roots and tree wells has changed over time and by residential property type, so that liability and ownership can be blurred (Kaye et al. 2009). The collective history of New York's tree and sidewalk laws reflect competing interests and conflicts between property owners and city agencies.

The greening of cities through the installation of trees into sidewalks is not inherently controversial, yet it can create conflict because of people's territorial instincts, and vagueness in legal issues defining the responsibilities of the city and citizens. Sidewalks are seen as public spaces that should encompass diversity and have multiple functions, yet these places can also be contested terrains (Loukaitou-Sideris and Ehrenfeucht 2009). Even though street trees are generally desirable, they elicit varied responses from urbanites who want different things from public space.

[1] There are some exceptions to this, especially in relation to one, two or three family residential properties.

The planting of trees on residents' streets and in front of homes raises issues of territoriality and place attachment. Human territoriality involves the drive to establish control over physical spaces and involves the demarcation and defense of space against territorial invasion (Brown 1987; Taylor 1988; Sommer 2004). Human territoriality is linked to concepts of personalization and privacy (Sommer 2004). Territorial emotions can involve a positive emotional bond to a place and belief that they should have control over the condition of the site and who should be there, or a negative emotional reaction to changes in conditions or users of an area (Wickham and Zinn 2001). Territorial behavior is strongest when considering individuals or small groups and when the spatial focus is on specific small scale locations. Territorial functioning refers to sentiments, cognitions, and behaviors that are highly space specific and represent transactions concerned with the management, maintenance, legibility, and expressiveness of person-place transactions (Taylor 1988).

Types of territories exist along dimensions of occupancy and psychological centrality (Brown, 1987). Primary territories are locations central to people's lives and typically are homes. Outdoor residential settings, including front yards, sidewalks, driveways, backyards, and the street itself can also have strong centrality (Taylor 1988). The planting of trees on the streets where people live and adjacent to homes can affect the 'lifespace' of an individual, since in going to and from home people must transverse these places. Residences are inextricably linked with the area right outside the door, not only physically but psychologically as well.

Primary territories allow for order, predictability and control, as well as the expression of a sense of identity (Brown, 1987). People often 'mark' or personalize the areas around their homes leaving behavioral traces such as decorations or signs of upkeep. Territorial behaviors also include boundary control efforts to manage the access and activities of others. Territorial cognitions include the perceptions of and affect toward a place including issues of responsibility, caring and the association or appropriation of a place (Taylor 1988).

Human territorial emotion is closely related to place attachment at the affective level (Wickham and Zinn 2001). Place attachment involves human bonding to a place, which has affective, cognitive and behavioral components (Low and Altman, 1992; Manzo 2005; Proshansky et al. 1983). A physical space becomes a place when it encompasses memory, attachment, and identity. Places have a geographic location and material form, but they are also invested with meaning and value by ordinary people (Gieryn 2000). Territoriality is intimately related to how people use land, how they organize space, and how they give meaning to a place (Sack 1986). A sidewalk where a new street tree is planted may not be just a physical space but can also be a place that has meaning to people. Since place attachments are holistic but can operate in the background of awareness, they become more fully recognized when they have been disrupted (Brown and Perkins 1992).

The sidewalk belongs to the City and is a public right of way, but not every resident wants a tree planted there regardless of the public benefit. Sidewalks are both public and private spaces. They must allow for public access, but can also evoke feelings of personal ownership and territoriality. Although trees physically transform the grey infrastructure of sidewalk into a green space, the sidewalk is a literal, figurative, and psychological grey zone.

RESEARCH METHODS

This study examines the results of the content and spatial analysis of the correspondence data and its relationship to the operational policies and procedures that guide New York City's municipal street tree planting program. Qualitative analysis of the administrative correspondence data set examined the public perceptions and concerns related to the MillionTreesNYC program. Spatial analysis explored the relationship between the block planting locations of new street trees and the locations of the citizen correspondence regarding both requests for new street trees and complaints.

In late 2006, DPR's CF&H Division created a database system to track and log correspondence from receipt to resolution. This database made this study possible with its capacity to record and conduct analyses of detailed qualitative and quantitative data. The original intention of the qualitative coding was to easily identify similar themes in the correspondence from the public as it became apparent that the same topics were being repeatedly addressed. Categorization of concerns increased the efficiency of the responses to the public, helped in the creation of standardized template responses, and improved reporting.

The qualitative analysis of the administrative correspondence data set involved the open coding of text from 311 call transcriptions, letters, and emails received by DPR CF&H Division between 2007 and 2009. The categories identified were not solicited or manipulated by any sort of directed questioning, but were instead determined from the open-ended coding and content analysis of this existing correspondence data set. There are limits to this data set since it was not research guided by a survey tailored to testing a certain hypothesis; demographic information was not collected, nor was this from a random sample of the population. Instead the correspondence analyzed reflected the concerns of individuals who were self-selected in that they chose to contact the City of New York concerning new street tree plantings.

The open coding of this correspondence allowed the perspectives of the people and grounded theory to emerge. As the core categories were identified and dimensionalized through open coding, more axial and selective coding began (Strauss and Corbin 1990). In order to code this correspondence by category, we created a multifaceted coding system that included a variety of primary categories and an array of more detailed subcategories. These subcategories gave dimensions to the primary categories and made them more robust. Through further comparisons and examination of relationships, the categories used were further refined and collapsed (eighteen primary categories were collapsed to sixteen, and several subcategories were also combined). Selective coding and frequency analysis, combined with operational and policy analyses, identified various paradigms and patterns that explained the phenomenon of public reactions to new street tree planting.

All items of correspondence received were coded using a multi-level system[2]. A type classification was assigned to each correspondence item received followed by the identification of primary categories and related subcategories to specify the precise subject matter of the inquiry. In the majority of correspondence items, 87%, only one issue of concern was noted, but 10% had two categories and 3% contained three or more issues. Sixteen primary categories and numerous associated subcategories were identified from the qualitative content analysis of correspondence received by CF&H from 2007 through 2009. Frequency analysis of these primary categories found that 81% were comprised of seven New Street Tree (NST) categories.[3] For the purposes of this study, further analysis was done only on these seven New Street Tree primary categories of which two were Service Requests while five were Complaints. The seven NST primary categories totaled 3,838 of which the NST Complaints subtotal was 2,561 and the NST Service Requests subtotal was 1,277 (Table 1).

[2] The qualitative coding majority of was performed by the correspondence liaison. A trained intern assisted with coding after the categories were well defined, and a comparison of their coding with the liaison found a 98% agreement of selected categories.

[3] Nine of the general primary categories consisted of only nineteen percent of the total items of correspondence received: these consisted of Appreciation, Donations/Solicitations, Greenstreets, Insects, Mature Tree Maintenance, Permits, Public Health, Research and Miscellaneous.

Table 1. New Street Tree (NST) Primary Categories by Correspondence Type.

Correspondence Type and NST Primary Categories	Total	Percent of Total	Percent of Type
NST Complaint			
Placement Objection	859	22%	33%
Policy Objection	606	16%	24%
Maintenance Objection	439	11%	17%
Resultant Damage	358	9%	14%
Process Objection	299	8%	12%
Subtotal	**2,561**	**66%**	**100%**
NST Service Request			
New Tree Request	636	17%	50%
New Tree Conditions	641	17%	50%
Subtotal	**1,277**	**34%**	**100%**
TOTAL	**3,838**	**100%**	

Spatial analysis of the data using geographic information systems (GIS) was also performed. The development of geospatial tools has contributed to urban forest management by enabling rapid analysis of current data (Ward and Johnson 2007). Analyzing the distribution of planting requests, citizen complaints, and block planting progress allowed for the comparison of content analysis categories, new street tree requests, and the locations of new street tree plantings by the Parks Department. In particular, block planting locations could be spatially compared to the public reactions to new street tree planting. The GIS method brought together both the operational prioritization policy and the actual tree planting sites with the content analysis research findings.

As part of DPR CF&H Division's ongoing GIS program, planting locations are tracked and updated every season at both a street block segment and individual tree location level. Individual trees are tracked in parts of a Forestry Management System database that includes a spatial component. Block planting street segment locations are provided by the foresters and input directly into the GIS as line segments. The existing data on block planting locations was analyzed against two additional data sets created from the correspondence data. The first was a density of tree requests raster layer. Between 2007 and 2009, 14,908 requests for new street trees were received by 311 and transmitted directly into a Forestry Management System database utilized by DPR CF&H. ArcGIS's Spatial Analyst extension was used to transform these addressed-based point requests into a raster density layer. The second analysis, using the same method, generated a density of 2,561 complaints raster layer for the same time-period using new street tree complaints from the DPR CF&H Division correspondence database.

FINDINGS AND DISCUSSION

Spatial Analysis of New Street Tree Planting

Figure 3 shows the result of the 311 New Tree Request data raster analysis. This map depicts where citizens have requested new street trees and where block planting has taken place. The block planting segments include plantings since the inception of MillionTreesNYC in 2007 through 2009. Block planting segments are tracked every planting season using data provided by foresters. After each planting season, foresters submit field maps with block planted segments highlighted. This information is incorporated into the GIS layer and is shown as purple lines on the map. The green areas show the spatial density of the 14,908 new tree requests from 311 during the same time period. Darker green areas indicate

more new street tree requests received directly by the New York City 311 Customer Service Center. The map shows that under the block planting program, the Parks Department's CF&H Division is block planting in areas where citizens have generally not requested trees from 2007 through 2009.

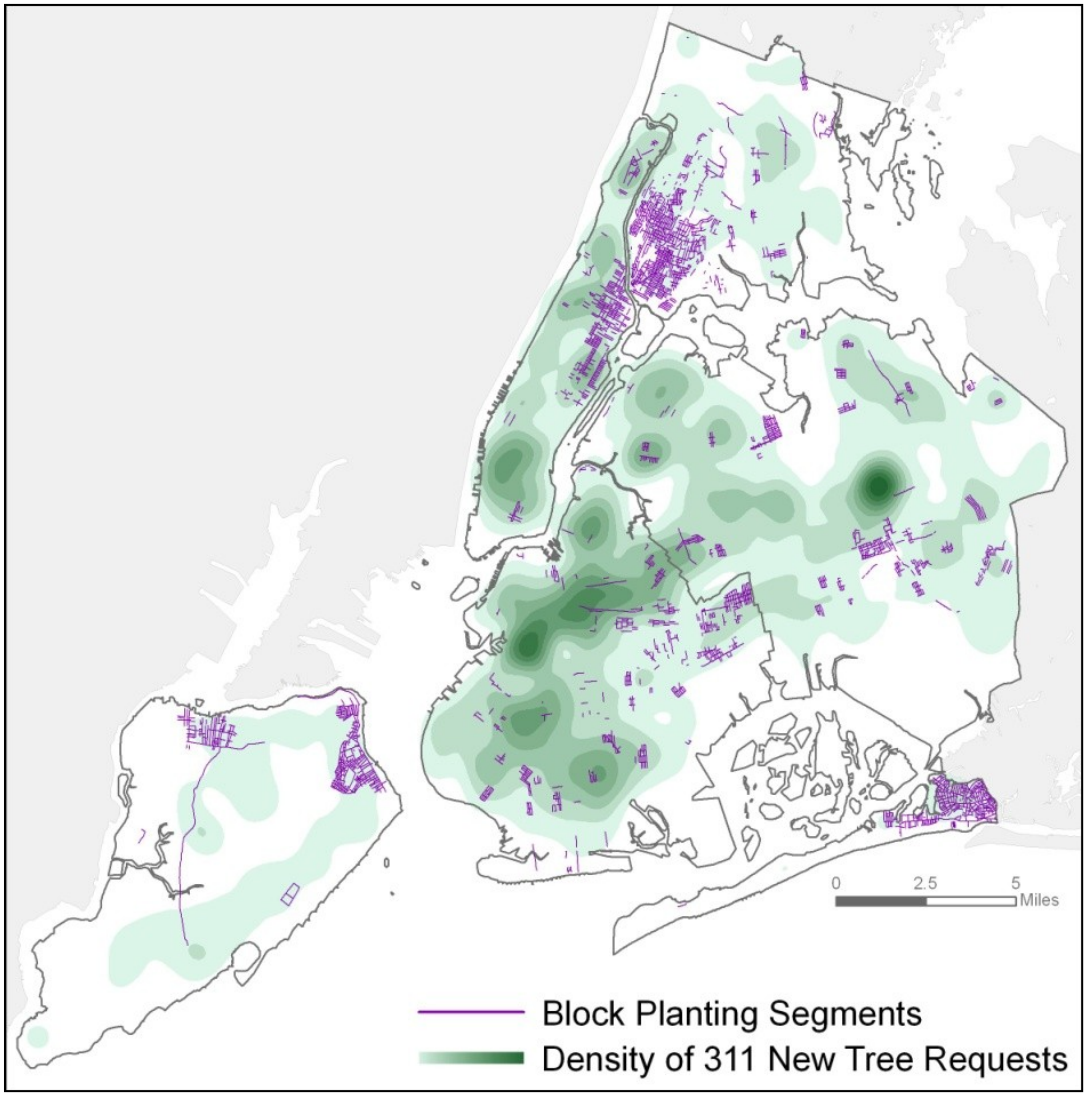

Figure 3. Map of 311 New Tree Requests Density and DPR CF&H Block Planting Locations for New York City from 2007 through 2009.

Figure 4 also shows a map that depicts where block planting has taken place between Fall 2007 through Fall 2009. This time, however, block planting is plotted against the density of 2,561 citizen complaints CF&H received from 2007 through 2009. The density of these complaints are shown in blue, with darker areas indicating more complaints. As can be seen, the highest density of complaints cluster around the block planting locations shown in purple and display the high volume of citizen complaints that are coming from areas of recent block plantings. Some light blue areas that are not in proximity to block planting areas are reactions to individual tree plantings. These show as higher density due to multiple complaints made by one person or multiple complaints made by several people who live relatively close together. The specific content of these complaints are discussed in the New Street Tree Complaints section.

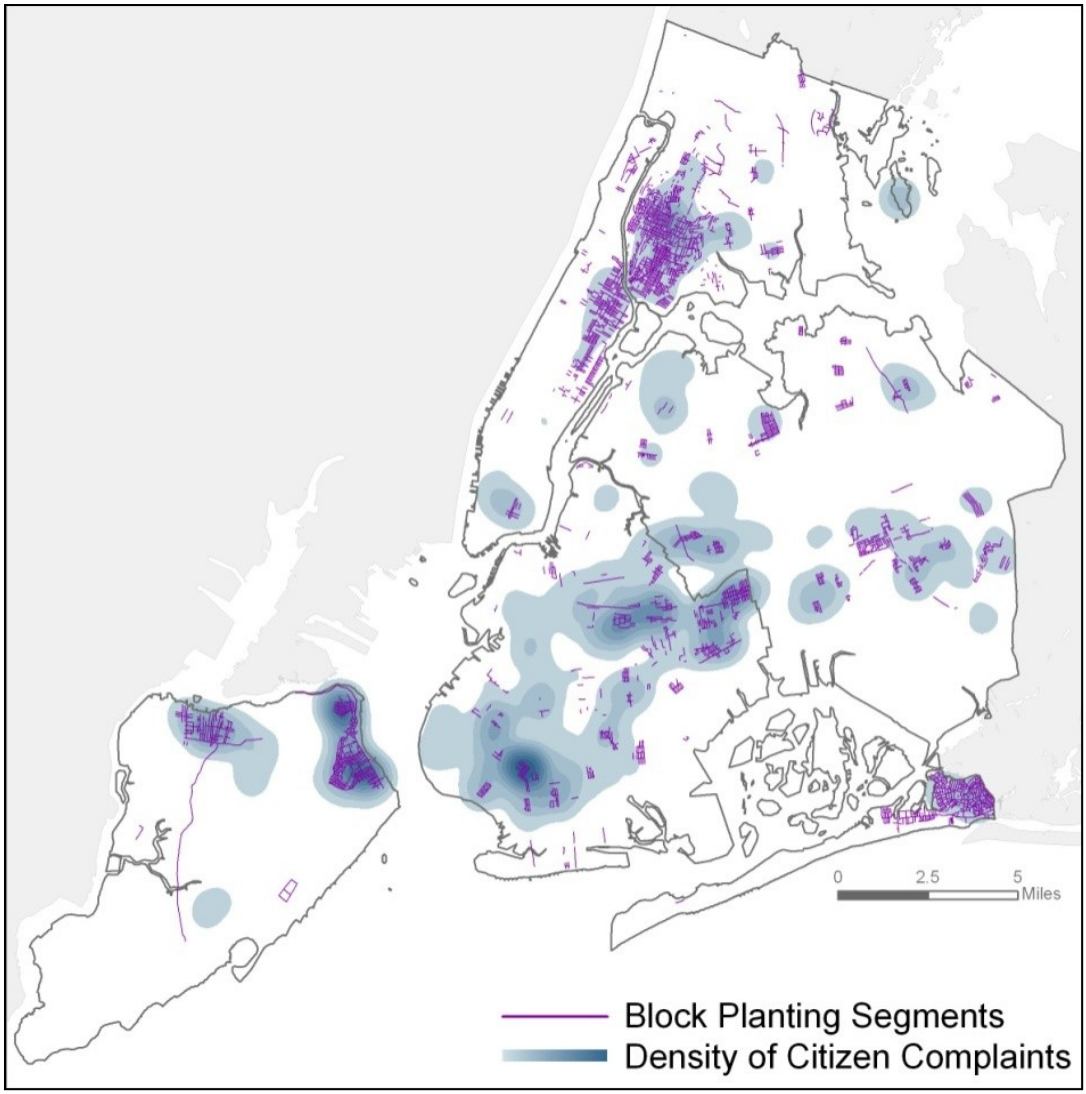

Figure 4. Map of DPR CF&H Citizen Complaints Density and Block Planting Locations for New York City from 2007 through 2009.

Citizen Correspondence Overview and Volume

This study investigated the content of letters, emails, and transcriptions of calls from 311 received by the Parks Department's Central Forestry and Horticulture Division between 2007 and 2009. At the broadest level, each item of correspondence is assigned to one of five basic type groups: Complaint, Service Request, Information Request, Recommendation, or Thank You. Table 2 below shows the frequency of the total items of correspondence by type from 2007 through 2009. Complaints are the most frequent type of correspondence received at 57%, followed by Service Requests at 29%.

Table 1 also shows the three-fold increase in the total items of correspondence received by the CF&H Division from 2007 to 2008 and 2009. In reaction to MillionTreesNYC's street tree planting initiative, CF&H has witnessed a vast increase in the amount of citizen correspondence since the MillionTreesNYC program's inception in 2007. The increase can be attributed to the expansion of the street tree planting program, improved public accessibility and awareness of New York City's 311 Customer Service Center services, and the efficiency of the 311Center's linkage to city agencies.

Table 2. Type of Correspondence by Year.

Correspondence Type	2007	2008	2009	Total
Thank You	24	15	28	**67**
Recommendation	51	19	32	**102**
Information Request	94	137	153	**384**
Service Request	190	241	764	**1,195**
Complaint	225	1,211	924	**2,360**
TOTAL	**584**	**1,623**	**1,901**	**4,108**

Figure 5 shows both the total items of correspondence received from 2004 until 2009 and the increase in the amount of street trees which were being planted in the same year. The amount of correspondence increased dramatically with the increase in street tree planting and the inception of the MillionTreesNYC program in 2007, and is most noticeable in 2008 and 2009.

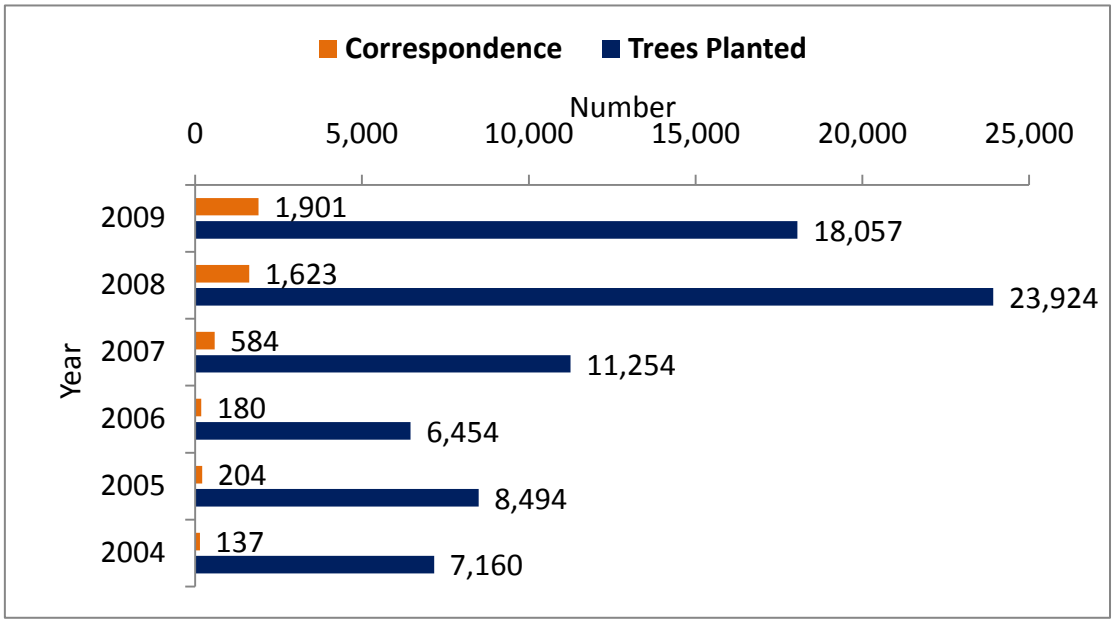

Figure 5. Total Items of Correspondence and Total Number of New Street Trees Planted from 2004 through 2009.

Content Analysis of New Street Tree Correspondence

Table 2 separates the seven New Street Tree (NST) primary categories by type of correspondence and gives the totals and relative percentages for each primary category as percent of the overall total and within each category type. Of those seven primary NST categories, five were Complaints (66%) and two were Service Requests (34%). Under the Complaint type these include the primary categories (in order of frequency) of Placement Objection, Policy Objection, Maintenance Objection, Resultant Damage and Process Objection. Service Request types include the primary categories of New Tree Requests and New Tree Conditions. Following will be a discussion of each of these primary categories and the subcategories they contain separated by type.

New Street Tree Complaints

New Street Tree Complaints are objections to elements of the tree planting process, from general dissatisfaction with the mandated new program to specific rationalized objections to a planting at a given location, or stages of that planting process. Concerns over the placement of a particular new tree planting based on surrounding site conditions, objection to the tree based on perceptions of future maintenance responsibilities, dissatisfaction with the agency's notification measures, or the quality of the work performed by the landscape contractors in planting, are all examples of common correspondence defined as Complaints. New Street Tree (NST) Complaints were coded into five primary categories: Placement Objection, Policy Objection, Maintenance Objection, Resultant Damage, and Process Objection. Table 2 depicts the total for each of these NST primary categories, and their percentage within the total of the New Street Tree Complaint type. The tables below (Tables 3, 4, 5, 6 and 7) show the subcategories that make up these primary complaint categories.

Placement Objection at 33% was the largest primary category of complaint (see Table 3). These subcategories of placement objections are considered to be logical appeals against the particular placement of a given planting location or situation. The subcategories of concern are often not in complete opposition to trees or their presence in the urban environment, but believe that a given location for a new tree is unpractical or unsuitable for tree planting because of existing infrastructure or site usage. Within Placement Objection, utility line concerns are most prevalent (33%). This variety of objection is typically brought by residents that fear a utility line, whether it is gas/electric/water/sewer, will suffer damage because of the tree planting process[4] or the tree's growth at a given location. The next most popular subcategory was complaints against the street tree planting because of the damage to the sidewalk or a narrowed sidewalk (14%). This may be related to a resident's sense of ownership over such a publicly used space, particularly in an urban setting where walking and public transit are the most common forms of transportation. A variety of complaints relate to the perception that the new street trees are too close to existing infrastructure items or private property. Objections against placement can also be based on disturbance to usage patterns, visibility or special circumstances. Proper placement may be the most difficult obstacle to planting in a highly dense urban setting – it relates to the ambiguous public/private nature of the sidewalk space, issues of territoriality and misunderstanding of the procedural processes and guidelines followed during planting.

Table 3. New Street Tree Complaint - Placement Objection Subcategories.

Placement Objection Subcategories	Total	Percent
Utility Line Disturbance	288	33%
Sidewalk	118	14%
Driveway	76	9%
Existing Tree	70	8%
Business Disturbance	51	6%
Private Property	48	6%
Visibility Interference	45	5%
Disability Concerns	44	5%
Infrastructure Conflict	41	5%
Miscellaneous	40	5%
Shade	38	4%
TOTAL	**859**	**100%**

[4] Planting guidelines require that before work begins the utility companies mark the locations of underground lines on the sidewalk to ensure that contractors are aware of their presence while excavating the planting sites.

Policy Objection consists of approximately 24% of the total NST Complaints received (Table 4). The majority of these are general refusals of new trees in front of a given property. At 57%, these general refusals originate from citizens rejecting a planned planting without supporting reasons or explanations for their complaint – they simply state they do not want a tree. This subcategory assumes a general dissatisfaction with the planting policies of the Parks Department and their public right of way authority to plant at given sites without the expressed permission of adjacent property owners. It also depicts how the planting of street trees can evoke issues of territoriality and control. A total of 28% of complaints are objections to planting based on lack of notification prior to planting; 18% complain of a general lack of notification, while 10% of these complaints are objections to the cut in their sidewalk or were reported by property owners who had recently paved their sidewalks. Complaints of poor notification indicate either actual property ownership or a sense of ownership over this shared sidewalk space.

Table 4. New Street Tree Complaint - Policy Objection Subcategories.

Policy Objection Subcategories	Total	Percent
General Refusal	343	57%
Notification-General	111	18%
Notification-New Sidewalk Cut	57	10%
Miscellaneous	52	8%
Pit Size	43	7%
TOTAL	**606**	**100%**

Maintenance Objections comprised 17% of total NST Complaints (see Table 5). While not the largest subcategory of complaint, Maintenance Objections are linked to sentiments of ownership and responsibility for the sidewalk. Whether because of the proximity to their front door, feelings of territoriality or their concerns regarding liability, this is typically one of residents' most adamant objections. Most Maintenance Objection complaints express an apprehension about future responsibilities for tree care. These include the raking of leaves and watering (36%), followed by the fear of future sidewalk or foundation damage caused by a growing tree and its roots (29%). The motivations behind an objection can be linked directly to the laws of the municipality and the public's interpretation of the statutes. Many citizens also express fear that the trees may become receptacles for dog waste and litter (24% in total), creating an unpleasant experience for the resident and perceived added responsibilities to keep the area clean because of the risk of a Department of Sanitation violation and fine.

Table 5. New Street Tree Complaint - Maintenance Objection Subcategories.

Maintenance Objection Subcategories	Total	Percent
Tree Care	157	36%
Future Sidewalk & Foundation Damage	128	29%
Dog Waste/Litter	106	24%
Prior Experience with Property Damage	48	11%
TOTAL	**439**	**100%**

Resultant Damage represents 14% of total NST complaints (see Table 6). These are issued by residents who are dissatisfied with the quality of the tree planting based on damage that occurred to the surrounding location. The majority of these are complaints of damage to the curb or sidewalk adjacent to the tree planting (55%). Also, 26% are complaints against the planting contractor for debris or material left on site, including packing materials or excess concrete from sidewalk excavation.

Table 6. New Street Tree Complaint - Resultant Damage Subcategories.

Resultant Damage Subcategories	Total	Percent
Sidewalk/Curb	197	55%
Debris Left at Site	93	26%
Utilities	38	11%
Private Property	30	8%
TOTAL	**358**	**100%**

Process Objections accounts for 12% of NST Complaints (see Table 7). These citizens take issue with the logistical stages of planting operations from sidewalk survey and markings, to excavation, to planting. The majority of these complaints may stem from the perception of liability or the recognition of an obvious hazard caused by the planting operation. The majority of the concerns (55%) were because of excavated sidewalk plots left unplanted. Pre-excavation is a common stage of the NYC street tree planting process as the planting contractors often pre-excavate planting sites to expedite the installation of trees. The practice of pre-excavation requires the contractors to secure the opened site with enough soil to bring the area to grade with the sidewalk. In some cases, soil settles below the sidewalk grade, or the citizen may be uninformed of the sequences of the planting process. In other cases, residents take issue with the type of tree species chosen by the forester, often asking for a different variety to be selected (19%). These residents are accepting of the possibility of tree planting at this site, but would like more control over the planting since they expect the tree to become a part of their daily lives. The confiscation of sidewalk decorations (5%) complaint relates to the personalization and marking of territory that can be disrupted by the process of planting a street tree.

Table 7. New Street Tree Complaint - Process Objection Subcategories.

Process Objection Sub-Categories	Total	Percent
Unplanted Excavated Tree Pit	163	55%
Species Assignment	57	19%
Contractor Misconduct	34	11%
General	30	10%
Confiscation of Sidewalk Decorations	15	5%
TOTAL	**299**	**100%**

All NST Primary Complaint categories included a subcategory that addressed public reaction to or concern over the sidewalk in relation to the trees being planted. Complaints about new street tree planting are often motivated by the public's perception that the sidewalk is owned by its citizens, particularly those citizens that live, work, or own adjacent property. These subcategories reflect the sidewalk as a place that is both a public and private space. Ownership conflicts and responsibility concerns are evidenced, as are misunderstandings of the planting process and issues of territoriality.

New Street Tree Service Requests

NST Service Requests are correspondence where the public requests specific actions regarding new street tree planting. This can include requests for new tree plantings, or maintenance on a recently planted tree. These requests for service are typically public reports of tree conditions or tree pits that require investigation, inspection and action. In the case of new street tree planting, these are largely positive categories that depict a desire and concern for trees, and can gauge civic support for the citywide greening program. NST Service Requests include people following-up on the status of their tree requests,

making new tree requests under special circumstances, or asking for additional work to be performed in the maintenance of a recently planted tree. The two major subdivisions of correspondence of the Service Request Type, at 50% each, were New Street Tree Requests (636) and New Tree Conditions (641) (see totals and subcategories in Tables 8 and 9).

Separate from the DPR CF&H correspondence database, there are 311 New Tree Requests which are transferred directly from 311 into the DPR CF&H Division's Forestry Management System database for assessment by foresters. Between 2007 and 2009, 14,908 311 New Tree Requests were received in this manner, and formed the basis for the spatial analysis for the 311 New Tree Request map discussed earlier (Figure 3). In 2007 there were 639 received via 311, but in 2008 and 2009 there was a dramatic increase, and over 7,000 requests were received each year. This increase was due to the visibility of the MillionTreesNYC campaign and the accessibility of the 311 Customer Service Center.

Some New Street Tree Requests (646) are transmitted to the Parks Department CF&H correspondence liaison by the 311 intake operator because of their unique nature, or were transmitted directly to DPR's CF&H by letter or email, and these are reflected below in Table 8. The majority, at 53%, relate to the individual planting requests or status inquiries, while another 18% have to do with initial or status block planting requests (since sometimes people request that their entire block be planted). These can also be new service requests with special features that need attention such as when a requested new street tree arrives with damage and requires replacement (17%) or the planting of a commemorative tree (6%).

Table 8. New Street Tree Service Request - New Tree Requests Subcategories.

New Street Tree Requests Subcategories	Total	Percent
Individual Planting-Initial/Status	342	53%
Block Planting-Initial/Status	114	18%
Damaged Tree Replacement	109	17%
Commemorative Tree Planting	38	6%
Tree Request Rejection/Cancellation	33	6%
TOTAL	**636**	**100%**

New Street Tree Conditions are comprised of two separate subcategories with multiple concerns listed within each (Table 9). The majority of requests for service related to concerns about the health of a newly planted tree (Tree Health at 62%), while 38% relate to issues surrounding the Tree Pit (which is the earthen area surrounding the street tree). The major Tree Health subcategories (36%) are reports of new trees which generally look unhealthy and need help. There are also reports of incidences of vandalism (9%) against trees, or about missing tree stakes (8%), which support the trees when they are growing. The NST Condition category also includes requests for work on the Tree Pits, including the installation of paving stones around the perimeter (16%), the installation of tree guards (12%), or the correction of other perceived tree pit hazards (9%). All of these Service Requests show public interest in a recently planted area and imply concern and responsibility for the newly planted street tree.

Table 9. New Street Tree Service Request – New Tree Conditions Primary Category, Tree Health and Tree Pit Subcategories.

New Street Tree Conditions	Total	Percent
Tree Health Subcategories		
General (Unhealthy)	229	36%
Vandalism	55	9%
Tree Stakes	50	8%
Watering Needed/ Gator Bags	36	5%
Miscellaneous	27	4%
Tree Health Subtotal	**400**	**62%**
Tree Pit Subcategories		
Paving Stones	103	16%
Tree Guards	80	13%
Hazardous Pit/Maintenance	58	9%
Tree Pit Subtotal	**241**	**38%**
TOTAL	**641**	**100%**

DISCUSSION AND FUTURE RESEARCH

The correspondence that came to DPR's Central Forestry and Horticulture Division from 2007 to 2009 reflects the public's concerns and response to new street trees being planted. Particularly in 2008 and 2009, the volume of correspondence about new street trees grew dramatically in response to the increase in street tree planting initiated in 2007 by PlaNYC and the MillionTreesNYC program. Two-thirds of the correspondence categories about these new street trees involved complaints or objections to new street trees, while one-third were service requests either related to requests for a new street tree or concern for trees that had just been planted.

The MillionTreesNYC campaign has an extensive public outreach component, advertising the tree planting program and its goals and benefits on subways, bus stops and in the media. Yet the public may still not know about, understand, or appreciate the benefits of new trees. Even though trees are substantive living things that have meaning for people and can foster feelings of attachment, they can also involve responsibility, care and maintenance. Maintenance objections were the third most prevalent category of complaint about new street trees.

The demand for new street trees and the popularity of the street tree planting program is portrayed in the spatial analysis of the almost 15,000 311 New Tree Requests. Even though new street trees are still being planted in response to individual requests, the MillionTreesNYC priority is to plant street trees by block in order to target the areas of the city with the most people and least trees. This spatial analysis showed that the street tree block planting areas were not necessarily being planted where people had made requests.

GIS analysis also showed that the highest density of citizen complaints were coming from areas of recent block plantings. Planting individual trees increases green infrastructure throughout the landscape, but block planting in particular transforms grey sidewalks of entire streets into ribbons of green. Yet block planting, and sometimes even individual tree planting, can sometimes happen without residents being aware the trees are coming. Some welcome this planting, while others are wary.

Objections to placement location was the biggest complaint about new street tree planting, followed by policy objections where people did not want a tree or had not been notified in advance before their sidewalk was cut or the tree was planted. Urban residents can be bothered by the placement of trees in sidewalks, a literal grey zone that is both a public and private space, especially if they did not ask for them. Despite the fact that the public benefits should outweigh these personal disturbances, people have a sense of territory about their homes and streets. Even though the sidewalk is legally a public right of way with government jurisdiction, residents can have a psychological sense of ownership over this place that can have personal meaning.

Involvement in the planting process could help to transfer a citizen's sense of ownership over the sidewalk through giving them more investment in new street trees. However, given the scale and complexity of the Parks Department's citywide planting of new street trees, a large scale citizen involvement with the planting of street trees would be difficult to manage. MillionTreesNYC does have biannual volunteer planting days, but these involve the planting of trees in parks citywide (City of New York 2010). They also have a website[5] that provides educational publications including instructions on tree care and an explanation of all the steps in the street tree planting process.

The DPR CF&H Division also conducts public outreach about its upcoming block street tree planting activities via the posting of block planting posters and flyers. Additional targeted education on tree benefits and expanded notification of planting processes and procedures, particularly in advance in targeted block planting areas, could increase public acceptance of the new street tree planting. If residents were more aware of what was about to happen to their street and sidewalks, they might be more receptive to the new street trees.

The block planting of street trees actually offers an excellent opportunity for a natural experiment. Control groups could be designated for communities targeted for block planting: certain blocks would receive more intensive education on tree benefits and the street tree planting process, while other adjacent blocks would receive no or less notification and education. This method would investigate the impact of education and outreach on reactions to new street tree plantings by the City.

There are many opportunities to conduct additional research that further investigates the public's reactions and perceptions of new street trees. A random sample could be stratified by demographic and socio-economic variables in order to investigate differences in the perception of new street trees by neighborhood. Photographic methods could be utilized to assess residents' perceptions of changes in the aesthetics of the streetscape before and after planting. Using spatial analysis to examine differences in public perception by boroughs, neighborhoods, housing types and home ownership would also be valuable.

Given the dual public and private issues surrounding the sidewalk, it is likely that property ownership would be a significant factor. Public policies concerning liability for the sidewalk have changed over time, but regardless of the actual law, the public understanding of this complicated city policy will continue to be murky. A future study could investigate how sidewalk maintenance liability laws impact the public perceptions and reactions to street tree plantings.

Focus groups held in affected neighborhoods could identify areas of concern not revealed in the analysis of this self-selected sample of people who corresponded with the City about their newly planted street trees, and could also identify the more positive reactions to new street tree planting. This information, along with the categories of concern uncovered through this study, could lead to the development of a robust survey instrument that could be administered to targeted areas to evaluate the full spectrum of responses to new street tree planting. This research would lead to a fuller and more

[5] http://www.milliontreesNYC.org

comprehensive understanding of both the positive and negative aspects of people's reactions to new street tree planting.

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