



Willing partners? Residential support for municipal urban forestry policies



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ABSTRACT

Cities across North America are adopting ambitious goals to grow their urban forests. As existing trees and new planting opportunities are often located on private property, residents' support and participation is needed in order to meet these goals. However, little research has examined support for municipal urban forestry efforts, including policies specifically targeting residential areas. The objectives of this research are to (1) assess resident' level of support for common urban forestry policies and (2) determine if there are specific household characteristics associated with different levels of policy support. The objectives are addressed through a statistical analysis of survey responses and a qualitative examination of follow-up interviews with residents in four neighborhoods located in Mississauga (Ontario, Canada). The survey participants and their properties vary in their socioeconomic characteristics, age of development, and urban forest conditions. Our results found that the majority of residents had neutral to very positive attitudes toward common municipal policies encouraging planting and restricting removal of trees, but support levels were lower for the policies than for general statements about desired presence and size of urban trees. Several characteristics are significantly related to level of policy support, including age of household members, education-level, property-level tree density, recent tree planting activity and age of house. Interviews also highlighted residents' apprehensions about living among tall trees and older resident's concerns with tree maintenance. The results suggest that most residents would be willing partners in urban forestry efforts, with many of these residents already actively planting and maintain trees. However, to increase support and participation rates, different types of trees – including those smaller in stature and ones that require relatively little maintenance – should be part of any planting program to meet the varying needs of households.

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Introduction

The many environmental, financial, physiological, and social benefits provided by urban trees have increased calls to protect and grow the urban forest. Thus, we see a growing number of municipalities engaged in urban forestry activity, with the aim of meeting ambitious canopy cover targets or tree planting goals (Young, 2011; Pincetl et al., 2013). Many of these programs emphasize tree planting on residential land and active participation by residents. The central role of residents in current initiatives builds on a long discourse that situates tree planting as part of residents' civic duty (Cohen, 2004), with these new programs often emphasizing the environmental benefits of trees (Pincetl et al., 2013). The need for residents' participation is a result of two basic characteristics of

most urban forests. First, case studies suggest the majority of existing urban trees (McPherson, 1998) and many potential planting locations fall on private property (Troy et al., 2007). Second, in a study of 14 North American cities, Nowak (2012) found that most residential trees are planted rather than establish as a result of natural regeneration. Thus, residents are needed to plant and maintain trees on their own properties to make ambitious planting or canopy cover targets possible.

Many municipalities' residential urban forestry efforts utilize a mix of encouragement and legal restrictions. New plantings on residential property are typically addressed through programs educating residents about the benefits of trees and/or providing free or low cost planting material to homeowners (Perkins et al., 2004; Conway and Urbani, 2007). Alternatively, measures to protect existing trees typically take a restrictive approach, with municipalities increasingly adopting regulations that limit property-owners' ability to remove trees on their property (Landry and Pu, 2010; Sung, 2012). However, even when a regulatory approach is used,

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communication and education are still key as little active enforcement occurs due to the logistical challenges of identifying and stopping violators (Conway and Urbani, 2007).

An underlying assumption made by many practitioners and researchers is that residents desire trees (Braverman, 2008; Kitchen, 2013), and that a sparse urban forest indicates a lack of resources (time, money, political power) needed to produce high canopy cover and/or a lack of knowledge regarding the benefits of trees (Heynen, 2006). However, not all urban residents want trees in their yard or neighborhood (Fraser and Kenney, 2000; Schroeder et al., 2006; Kirkpatrick et al., 2012). Additionally, little is known about the level of support for increasingly common municipal urban forestry policies targeting residential areas, even though residents' active support is often required for these policies to be successful. Thus, a better understanding of residents' interest in growing the urban forest and their support for municipal urban forestry policy is needed to develop successful urban forestry programs.

The objectives of this research are to (1) assess levels of support for common municipal urban forestry policies directly targeting residential areas; (2) determine if there is a relationship between level of policy support, household characteristics, and property-level conditions; and (3) explore why some residents may be unwilling partners in order to identify strategies to increase the number of active participants. The study area is four neighborhoods within the City of Mississauga (Ontario, Canada), which includes residents and properties that represent a range of socioeconomic characteristics, building ages and tree cover conditions, allowing for exploration of support for municipal policies by residents living in different environments.

Residents, trees and effective municipal policy

Studies examining residents' attitudes toward the urban forest found most people express overwhelmingly positive attitudes toward trees (Sommer et al., 1990; Lohr et al., 2004; Zhang and Zheng, 2011), suggesting they should be supportive partners in municipal efforts to increase the urban forest. For example, in a telephone survey of residents in US metropolitan areas, all participants indicated positive attitudes toward urban trees. Slightly higher support was seen among middle-age women, those with university-level education, people from high income households, respondents who identified as white, and those who grew up in a rural area (Lohr et al., 2004). Schroeder and Ruffalo's (1996) study of eight species of street trees in a Chicago suburb found generally positive opinions by residents who had one in front of their house, with esthetic reasons primarily identified as the main benefit of the tree.

However, many people love the idea of urban trees, but are not always in love with the reality of them. Schroeder et al. (2006) discuss a number of studies in the UK documenting an 'I love trees but...' phenomena. A study in Pennsylvania identified a significantly worse attitude toward street trees by residents who had one in front of their house, as oppose to those without (Gorman, 2004). A few studies have also suggested that different ethnic and socioeconomic groups have divergent ideas about desired canopy-level and preferred species type in their yards and neighborhoods (Fraser and Kenney, 2000; Grove et al., 2006). Thus, at least some residents will not be reliable partners in urban forestry activities.

While municipal planting initiatives clearly hold the potential to increase the number of trees, recent research has only begun to examine who actually participates in municipal urban forest activities aimed at residents (Straka et al., 2005; Fleming et al., 2006; Wall et al., 2006). Fleming et al. (2006) found those most likely to

participate in general urban forestry activities were middle age (30–49), with higher education and income-levels. In terms of municipal programs focused on residential tree planting, Perkins et al. (2004) determined that participants in Milwaukee's adopt-a-tree program were most likely to be homeowners, who are disproportionately high income and white. A study of a privately administered planting program in the Toronto Metro Area found that age and type of housing were most commonly related to participation-levels, although there were substantial regional differences among characteristics of participants and their properties (Greene et al., 2011).

In addition to municipal urban forestry program participation rates, residents' characteristics are also related to the actual distribution of the urban forest, with neighborhoods inhabited by residents who own their homes, have university degrees, and have higher household incomes typically associated with more canopy cover (Landry and Chakraborty, 2009). Kirkpatrick et al. (2012) found that income and education were also positively related to tree planting behavior outside municipal planting projects. The findings that those with higher income-levels are most likely to participate in programs that provide trees at a reduced cost to residents, but are also already more likely to live in neighborhoods with higher canopy cover and are more likely to plant trees on their own, raises questions about the ability of municipal programs to engage the wide variety of residents needed to significantly grow the urban forest. In other words, are municipal planting programs only attracting residents who would be planting and caring for trees regardless of municipal action? We begin to address this question, by looking at the relationship between support for planting policies, residents' recent tree plantings activities, and other property characteristics.

Beyond encouraging residents to plant trees, municipalities are increasingly restricting removal of trees on private property. While many tree removal regulations are relatively new, initial evidence suggests they are an effective way to increase and protect canopy cover. For example, in the Tampa area, Landry and Pu's (2010) examination of neighboring municipalities with and without a tree removal ordinance found that the policy had some positive impact on canopy cover extent. In Austin (Texas) Sung (2012) found higher average tree height, based on LiDAR data, in a neighborhood with a tree removal permit program – where residents need to apply for a permit in order to remove trees on their property – than a comparative neighborhood without such a program. While most private tree removal policies have a legislative basis and monetary penalties, most municipalities do not actively monitor for violators (Conway and Urbani, 2007). Thus, tree removal policies, like many planting programs, require resident buy-in in order to succeed. While a growing number of municipalities in North America have policies enabling and restricting residents' tree-related activities, a better understanding of residents' support for such policies is needed to assess who are willing partners. Perhaps even more important, an understanding of which residents are likely unwilling partners is needed to identify ways to broaden participation to facilitate their success.

Methods

Study area

The four study neighborhoods are in Mississauga (Ontario, Canada), a city of 713,443 people (Statistics Canada, 2011). Mississauga is located within the Greater Toronto Area, on the shore of Lake Ontario (Fig. 1). It contains a mix of residential neighborhoods (ranging from large apartment towers to fully detached homes),

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