Public Attitudes Toward Urban Trees and Supporting Urban Tree Programs

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In this article, we analyze survey responses regarding Alabama urban residents' attitudes toward urban trees and the provision and maintenance of urban forest by federal, state, and local governments, as well as personal willingness to volunteer and donate money in support of urban tree programs and activities. Using ordered probit analysis, our results showed that individuals who are aware of forestry-related programs, hold a full-time job, belong in the age group of younger than 56 years, and earn an annual income greater than U.S. $75,000, have a positive relationship with willingness of donating money and voluntarily contributing time toward urban forestry programs and activities. Individual characteristics such as race, gender, and residence were not statistically significant factors in explaining attitudes toward urban forestry programs. In addition, with few exceptions, attitudes toward government financing of urban forestry programs and activities were influenced by similar factors.

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Urban and community trees provide value and services like other forms of municipal infrastructure. Markets have already developed for environmental services from trees, such as credits for carbon sequestration and ecotourism. Other services provided by trees and green space to communities include energy savings, improved air quality, aesthetics, health benefits, habitat for birds and other wildlife, and recreation opportunities. These values are reflected in higher real estate prices, lower water bills, and an influx of tourists, as well as well-talented people and businesses (Bradley, 1995; Dwyer, McPherson, Schroeder, & Rowntree, 1992; Orland, Vining, & Ebreo, 1992). Indeed, recent evidence increasingly shows that amenities drive urban growth and dynamics (Clark, Iloyd, Wong, & Jain, 2002). These trends in economic activity, in turn, are indicative of changing public values. America's growing population is increasingly spreading into the countryside and the rural–urban interface, in search of green areas and associated amenities. Therefore, trees and green space play a special role in the livability of communities.

Urban tree programs are, however, still a new concept as compared with programs for other public infrastructure. Many people are not aware of its importance and are unaware of the need for reliable budgetary support. Municipal responsibility for urban tree programs is not well established. Depending on individual communities, responsibility for the urban trees can fall under public works, engineering, planning, parks, urban forestry, or a combination of these entities. In some cases, responsibility for urban trees is characterized by a situation where no department is responsible. In addition, the "public good" nature of these services is a source of market failure; that is, individuals lack incentive to invest in activities that benefit everyone regardless of their financial contribution. Consequently, urban tree programs often struggle for consistent and sustainable financial support, not only from governmental entities but also from individuals, businesspeople, and nonprofit organizations. In many cases, voluntary activists and business people provide significant in-kind contributions in terms of services and goods.

Public attitudes have a significant influence on many aspects including the public budgetary process and subsequent fund allocation, public involvement and participation, the integration of tree programs into social infrastructure, and community identity. Therefore, it is important to consult the public and better understand their attitudes in developing a diverse and adaptable strategy. Obtaining information regarding public attitudes to support urban tree programs is, therefore, important. Although many studies on urban forestry have analyzed public attitudes about the benefits of urban trees (e.g., Dwyer & Miller, 1999; Gorman, 2004; McPherson, Simpson,

Peper, & Xiao, 1999; Thompson, Hanna, Noel, & Piirto, 1999; Tyrvainen, 2001), a more critical issue is developing a sustainable and adequate community forestry support program (e.g., Lorenzo, Blanche, Qi, & Guidry, 2000). The purpose of this article is to examine public attitudes from the perspective of funding urban forestry programs. Following a brief literature review, we present the methodology used and describe the sources of data, followed by results and conclusions.

Literature Review

A review of earlier research on urban forestry reveals that most studies have examined mainly public attitudes toward urban forestry from an aesthetic perspective and people's perception of the associated benefits. To develop sustainable programs for urban forestry, studies focusing on how to fund and finance urban forestry activities are needed. Questions regarding people's willingness to pay for urban forestry activities or if they consider them as the government's (local, state, or federal) responsibility still remain unanswered. For instance, Gooch (1995), Kellert (1979, 1980), Rauwald and Moore (2002), and Scott and Willits (1994) advanced our understanding of public attitudes toward the environment. Manzo and Weinstein (1987), Martinez and McMullin (2004), Pearce (1993), and Yen, Boxall, and Adamowicz (1997) provided insights about individual behavior to volunteer for environmental improvement activities. Sanders (1984) examined vegetation configurations and how people might react to planning changes in 12 of Dayton's 79 neighborhoods (Ohio). Sullivan (1994) investigated citizens' perception of and preferences for natural and developed settings in the rural–urban fringe in Washtenaw County, Michigan, where farmers, township planning commissioners, and other citizens were asked to rank 32 pictures taken at the rural–urban fringe. The results indicated that settings including farm and forest were preferred, and housing developments with mature trees were preferred over development with few trees. Likewise, Tahvanainen, Tyrväinen, Ihalainen, Vuorela, and Kolehmainen (2001) evaluated the public attitudes toward and perceptions of the impacts on scenic beauty and recreational value of forest practices near cities. Five different management practices—clear cutting, thinning, removal of undergrowth, natural state, and traditionally managed cultural landscape—and two evaluation methods—visual presentation (pictures produced by image-capture technology) and verbal questions—were used. Scenic beauty and recreational value were assessed from slides in which management measures were presented by the

pair-wise comparison technique. The results indicated that scenic beauty and recreational preferences differ considerably from each other.

Balram and Dragicevic (2005) measured the dimensions of citizen attitudes toward urban green spaces. Geographic information systems (GIS) techniques and informal interviews were used to generate complementary insights about the spatial and nonspatial factors influencing attitudes toward urban green spaces. Affinity analysis was used to aggregate the issues into three homogeneous categories that in turn guided the construction of questionnaire items. Factor analysis and reliability analysis were applied to the items set to create a valid attitude measurement scale. The analysis showed that households were characterized by a two-factor attitude structure toward urban green spaces: behavior and usefulness. It was concluded that urban green spaces attitude is a multidimensional construct.

Ozguner and Kendle (2005) examined the public attitudes toward urban naturalistic landscapes in contrast to more formal designs of urban green spaces. Attitudes of the general public were investigated using a site-based questionnaire survey in contrasting two public green spaces of Sheffield, United Kingdom. The results showed that the general public perceived *nature* or *natural* in two ways in different contexts as the opposite of *formal* in a park context and as the opposite of the *built-up environment* in a town- and/or city-wide context. Results indicated that the public preferred both types of natural areas in an urban setting for different reasons; in addition, design styles seemed to have an influence on preferences. Summit and McPherson (1998) found that shade and appearance played more of a role in the decision to plant trees than did concerns about energy savings and environmental benefits. Lohr, Pearson-Mims, Tarnai, and Dillman (2004), who surveyed residents of the largest metropolitan areas in the United States about the benefits and problems of trees in urban areas, found that the ability of trees to shade and cool surroundings was the highest ranked benefit. Their potential to help people feel calmer was ranked second highest. Potential problems such as causing allergies were bigger concerns than were financial issues. People who strongly agreed that trees were important to their quality of life rated the benefits of trees more highly than people who did not strongly agree. Responses varied slightly based on demographic factors. The general public, not just the people who volunteer for tree programs, were strongly positive toward trees in cities. Fraser and Kenney (2000), who conducted a similar study for Canadian cities, found how public attitudes varied across cultures. Their results indicated that the British community reacted in most positive terms and expressed the greatest willingness to pay to plant shade trees and had the most shade trees per square meter on their properties. In contrast, the

Chinese community showed the least yard maintenance compared to other communities and indicated that they did not want to add trees to their property. Italian and Portuguese communities emphasized fruit trees and vegetable gardens. Gorman (2004) found that there was a statistically significant difference in residents' opinions depending on whether there was a street tree planted in front of their house. Thompson et al. (1999) developed a model to predict the value added by forest conditions on small urban wild-land interface properties and found that contributions varied from 5% to 20%.

Lorenzo's et al. (2000) work could probably be the only one that looked into factors explaining public support for urban forestry programs. This study assessed residents' willingness to pay for community urban forest preservation in Mandeville, Louisiana, and suggested that (a) residents' willingness to pay for urban forest preservation was positively associated with their perceptions of the benefits of trees but negatively associated with their perceptions of the annoying features of trees, (b) the willingness to pay a premium for tree preservation and protection was directly related to income levels, (c) more female than male respondents were willing to pay for tree preservation, and (d) age, level of education, and type of residential ownership were not significantly associated with willingness to pay.

An important limitation of earlier studies on urban forestry relates to the appropriateness of methods used. Public opinions and attitudes are usually measured on an ordinal scale, and it would make sense to use methods that account for this aspect of the data, yet researchers have so far ignored it. In this article, we use a method, outlined below, that improves on existing analyses of urban forestry.

Method

Consistent with research by others (see, for instance, Saz-Salazar & Garcia-Menendez, 2001; Yen et al., 1997), we hypothesize that an individual's response to support urban tree programs depends on his or her income, education, race, gender, experience, and residential location. Furthermore, given the ordinal nature of individuals' responses[1] (the dependent variables in the current study), we used the ordered probit model as described below:

$$y_i^* = \beta'x_i + \varepsilon_i$$

where y_i^* is related to a continuous latent variable, ranging from $-\infty$ to $+\infty$, indicating an individual's intensity of concern about the potential implications

of participation in or attitudes toward urban forests; x_i are the factors that influence the attitudes y_i; ε_i are errors that are not accounted for by x_i.

Given the relationship between y_i and y_i^* and the distribution of error term ε_i, the probabilities of observing an individual who is unlikely (= 0), likely (= 1), or most likely (= 2) to donate money or time to urban forestry activities is written as:

$$\text{Prob } (y_i = 0 | x_i) = 1 - \Phi (\beta'x_i)$$
$$\text{Prob } (y_i = 1 | x_i) = \Phi (\mu - \beta'x_i) - \Phi (-\beta'x_i)$$
$$\text{Prob } (y_i = 2 | x_i) = 1 - \Phi (\mu - \beta'x_i)$$

The μ is threshold level. Of the three threshold levels, only one threshold level can be estimated. The corresponding marginal effects as:

$$\partial \text{ Prob } (y_i = 0 | x_i)/ \partial x_i = 1 - (\Phi'x_i)\, \beta$$
$$\partial \text{ Prob } (y_i = 1 | x_i)/ \partial x_i = \Phi (\mu - \beta'x_i) - (-\beta'x_i)\, \beta$$
$$\partial \text{ Prob } (y_i = 2 | x_i)\, \partial x_i = \Phi (\mu - \beta'x_i)\, \beta$$

Where $\Phi (.)$ and $\Phi (.)$ are respectively the cumulative normal distribution function and standard normal density function. *Marginal effect* refers to change in the probability of response outcome given a unit change in a given explanatory variable. Estimates of marginal effects are especially helpful to find answers to questions such as: will a person be more willing to donate time or money regardless of his or her income rises? Will a person be more willing to donate money and time if he or she becomes more aware of the role of urban forestry in improving air quality or its role in protecting water quality by reducing water runoff?

To be able to properly interpret marginal effects, it is important to note the following: (a) in the case of continuous explanatory variables such as annual household income, marginal effect is the change in the probability of outcome response given a unit change in a given explanatory variable. In the case of a dichotomous variable, it is the change in the outcome response, given a change in the classification of an explanatory variable such as gender or race. For instance, are men (Whites) more likely to donate money to urban forestry causes than women (Hispanics); (b) The expressions for marginal effects only partially suggest the signs of the estimated marginal effects. Although the sign of the marginal effect for J = 0 is opposite to that of β, the sign of the marginal effect for j = 2 is the same as that of β because the density, $\Phi (.)$, is nonnegative. The sign of the marginal effect for the category j = 1 will depend on the densities for j and j − 1 (j = 2,…, J − 1) and cannot be determined from the

estimates alone. For this reason, interpreting the marginal effects of changes in the explanatory variables can be difficult without additional computations (Greene, 2003, p. 739).

Data

Requisite data for the current study were generated using a statewide telephone survey from July 14 to July 24, 2003. Prior to the survey, each interviewer received training on proper interviewing and data entry techniques. To participate in the survey, a respondent needed to be at least age 18 years and to reside in an incorporated Alabama municipality. Excluding various reasons (such as busy line, phone technical problems, no answer, and business phone number, not eligible), we had a total of 1,379 participants. We had 405 households (29%) who refused to answer, 62 participants (5%) who only partially answered our questions, and about 29% (406) asked for callback. In the end, we got 506 valid respondents with a 36% response rate for this survey. For this kind of telephone survey, a high response rate cannot be expected. We believe the data are qualified to derive some general information.

Questions related to the following aspects were asked: (a) the perception of the added value by mature trees to personal property, (b) perceived importance of urban trees on personal and community property, (c) support for public funding of urban forests, (d) perceived benefits and negative features of urban trees and forests, (e) participation in urban forestry activities, (f) acceptance of common urban forest practices and tree ordinances, and (g) willingness to donate money or volunteer time to urban tree activities (please refer to Tables 1 and 2 for more exact wording in the questionnaires).

The survey also asked about sociodemographic information such as age, education, employment status, income, gender, number of children, and size of the city where a respondent lived. About 10% of the respondents did not release their annual income. Because income is so strongly related to education, missing information on income was generated, given information on the level of education. Thus, those with a high school education were assigned to the income class "less than $20,000," those with some college, associate and/or technical, and bachelor's degree education were assigned to the income class "$20,000-$39,000" whereas respondents having master's or a higher degree were assigned to the income class "$40,000-$74,000."

Respondents were also asked about their awareness of forestry services and programs. These included: (a) U.S. Department of Agriculture (USDA) Forest Service, (b) National Arbor Day Foundation, (c) American Forest, (d) International Society of Arboriculture, (e) Alabama Forestry Commission,

Table 1
**Summary of General Attitude Toward Urban Trees and Urban Tree
Programs (percentages are in parentheses; *N* = 506)**

	Very Important	Somewhat Important	Somewhat Unimportant	Not at All Important	Don't Know
Importance of trees on property when selecting a residence	377 (75)	104 (21)	5 (1)	19 (4)	1 (0)
Importance of trees in a community when selecting a residence	389 (77)	100 (20)	5 (1)	10 (2)	2 (0)
Practice of tree topping	210 (42)	184 (36)	43 (8)	45 (9)	24 (5)
Utility companies should prune trees on private property to clear a zone for utility wires	167 (33)	184 (36)	51 (10)	90 (18)	14 (3)
Support for tree ordinances applicable to builders and developers	338 (67)	106 (21)	21 (4)	16 (3)	25 (5)
Support for local ordinances to govern the planting, maintenance, and removal of urban trees on public property	217 (43)	167 (33)	41 (8)	36 (7)	45 (9)
Support for local ordinances to govern the planting, maintenance, and removal of urban trees on private property	82 (16)	100 (20)	101 (20)	196 (39)	27 (5)

(f) Auburn University School of Forestry and Wildlife Sciences, and
(g) Alabama Urban Forestry Association. Although individual responses
were invoked on a Likert-type scale of 1 to 5, observations on the depen-
dent variable were recoded to obtain only three categories. The purpose of
recoding five categories to three categories for the dependent variables was
to increase the sharpness of the comparison. The use of three categories is
more common in similar types of studies. This was necessary given the rel-
atively low frequencies for certain values of the scale. Variable descriptions
and descriptive statistics are presented in Table 3.

Empirical Results

Overall, most Alabama residents have a strong appreciation for the
state's urban forests based on survey responses (Table 1). For example,

Table 2

Summary of Attitude Toward Financing Urban and Community Forestry (percentages are in parentheses; $N = 506$)

	Very Important (Very Likely)	Somewhat Important (Likely)	Somewhat Unimportant (Unlikely)	Not at All Important (Unlikely)	Don't Know
How likely would you be to volunteer your time to support urban trees activities (y_1)	94 (19)	201 (40)	95 (19)	89 (18)	27 (5)
How likely would you donate money to support urban trees activities (y_2)	64 (13)	219 (43)	112 (22)	76 (15)	35 (7)
Importance of local government funding the planting and maintenance of trees on public property (y_3)	349 (69)	121 (24)	11 (2)	10 (2)	15 (3)
Importance of Alabama state government funding to help communities to plant and maintenance of trees (y_4)	311 (61)	140 (28)	17 (3)	21 (4)	17 (3)
Importance of the Federal government funding to help individual communities to plant and maintenance of trees (y_5)	263 (52)	150 (30)	29 (6)	47 (9)	17 (3)

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Table 3
Descriptive Statistics of Variables Included in the Analysis

Variables	Variable Descriptions	Definition	M	SD
y_1, y_2, y_3, y_4, y_5	Respectively willingness to donate time, money, and attitudes to the roles of local, state, and federal government	2 = if very important (very likely); 1 = if somewhat important (likely); 0 = otherwise.		
X1	Be aware of the forestry services and programs	= number of programs	4.621	1.838
X2	The resident place	1 = for living in city, 0 otherwise	.543	.499
X3	Full-time job individuals	= 1 if yes, 0 otherwise	.492	.500
X4	Part-time job individuals	= 1 if yes, 0 otherwise	.085	.279
X5	Retired individuals	= 1 if yes, 0 otherwise	.227	.419
X6	Family with children	= 1 if yes, 0 otherwise	.356	.479
X7	Age younger than 34 years	= 1 if yes, 0 otherwise	.364	.482
X8	Age between 34 and 56 years	= 1 if yes, 0 otherwise	.362	.481
X9	Annual income less than U.S. $40, 000	= 1 if yes, 0 otherwise	.557	.497
X10	Annual income between $40,000 and $74, 000	= 1 if yes, 0 otherwise	.253	.435
X11	White people	= 1 if yes, 0 otherwise	.735	.442
X12	Gender (male)	= 1 if yes, 0 otherwise	.387	.488

98% of the respondents recognized that urban trees provide positive values, including aesthetics, shade, and improved air quality to people and their communities. The survey also found that urban trees play an important role in people's decisions on where to locate—75% said trees are important in selecting a home, while 77% said trees are important in selecting a community to live in. The survey also revealed that many Alabama residents have performed at least one type of tree care activity. In the survey, several questions were asked regarding statewide urban forestry issues. It is surprising to note that 43% strongly believed that tree topping is a legitimate tree care option, with an additional 38% stating that they somewhat agreed with this practice. When asked about utility tree trimming, 69% agreed that utility companies should be allowed to prune trees on private property when necessary.

An important aspect of the survey was to investigate attitudes toward supporting community forestry program activities from a variety of perspectives (Table 2). As shown in Table 2, although personal attitudes toward supporting community forestry program activities were similar in terms of contributing time and money, respondents seemed slightly more likely to contribute time. A great majority of the respondents wished, but in decreasing order, local, state, and federal government would provide financial support for community forestry programs.

Results based on an ordered probit model are presented in Table 4. First, all five models fit well, as judged from the chi-squared statistic. In addition, the threshold parameter estimate (Mu) is statistically significant, suggesting the reasonableness of grouping the outcome variables into the three categories of "very likely/very important," "likely/not so important," and "not likely/not important."

Results corresponding to the willingness to donate time and willingness to donate money models (Table 4) show that knowledge of natural resource–related programs, having a full-time job, being in the age group of younger than 56 years, and earning an annual income greater than U.S. $75,000 increased the probability of donating time or money to community forestry programs and activities. Race, gender, and residence were not statistically significant. The only difference between the two models pertained to the significance of the variable *families with children age younger than 16 years*, which was significant only in the willingness to donate time model.

Differences and similarities between the two models become more visible when we look at the estimated results on marginal effects (Table 5). Thus, we find that in the case of individuals who were more aware of natural resource–related management programs, their willingness to donate time and money increased by 5% (i.e., –.03 to .02) to 6% (i.e., from –.04 to .02). In

Table 4
Results for Ordered Probit Models (Observations = 506)

Variable	Description	Willingness to Donate Time (y1) Coefficient (t ratio)	Willingness to Donate Money (y2) Coefficient (t ratio)	Attitude Toward Local Government Role (y3) Coefficient (t ratio)	Attitude Toward State Government Role (y4) Coefficient (t ratio)	Attitude Toward Federal Government Role (y5) Coefficient (t ratio)
ONE	Constant	-.543 (1.916)	-.699 (2.407)	.826 (2.637)	.637 (2.318)	.319 (1.185)
X1	Be aware of the forestry, services and programs	.109 (3.999)	.082 (3.100)	.059 (1.877)	.061 (2.013)	.098 (3.333)
X2	The resident place	-.012 (.113)	.096 (.890)	.031 (.265)	-.129 (1.129)	-.180 (1.686)
X3	Full-time job individuals	.232 (1.588)	.194 (1.449)	-.102 (.624)	-.042 (.265)	-.059 (.400)
X4	Part-time job individuals	.136 (.618)	.250 (1.057)	.229 (.930)	.373 (1.482)	-.002 (.008)
X5	Retired individuals	.132 (.620)	-.008 (.034)	.330 (1.443)	.304 (1.565)	.134 (.665)
X6	Family with children	.183 (1.474)	.133 (1.115)	.244 (1.776)	.232 (1.727)	.204 (1.643)

	X7 Age younger than 34 years	X8 Age between 34 and 56 years	X9 Annual household income below U.S. $40,000	X10 Annual household income between $40,000 and $74,000	X11 White people	X12 Gender (male)	Mu (1)	Chi-square (12)	Log-likelihood	Res Log-likelihood
	.329 (1.589)	.281 (1.449)	−.177 (1.350)	−.360 (2.082)	−.078 (.669)	.009 (.078)	1.359 (17.016)	41.69	−477.61	−498.45
	.786 (3.427)	.656 (3.119)	−.215 (1.674)	−.235 (1.421)	−.014 (.121)	−.026 (.226)	1.206 (16.761)	76.53	−490.08	−528.35
	.307 (1.311)	.336 (1.573)	−.042 (.276)	−.110 (.600)	.151 (1.159)	−.081 (.619)	1.000 (11.979)	18.35	−388.73	−397.91
	.665 (3.233)	.545 (2.933)	−.027 (.191)	−.204 (1.172)	.076 (.609)	−.326 (2.705)	1.009 (12.695)	42.73	−431.95	−453.32
	.599 (2.981)	.622 (3.292)	−.048 (.355)	−.137 (.833)	−.241 (1.965)	.012 (.103)	.910 (13.697)	47.11	−488.47	−512.02

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contrast, in the case of individuals who were in the age class 34 to 56, the probability of their willingness to donate time increased by 16.5% percent (i.e., from –.11 to .05) whereas the corresponding increase in the probability of their willingness to donate money was 43% (i.e., from –.27 to .16). This relatively higher valuation of time by this class of individuals is understandable, and we concluded that it is easier for them to donate money than time.

Results corresponding to the three models—financing urban forestry is local government responsibility, financing urban forestry is state government responsibility, and financing urban forestry is federal government responsibility—showed the influence of certain variables on attitudes toward urban forestry. For instance, individuals, who are aware of natural resource–related programs, have a family with children of age 16 years or younger, and are younger than age 56 years, are more likely to regard the local, state, and the federal government as being responsible for financing urban forestry initiatives. In this respect, results of these models are similar to the willingness to donate time and money models. There are differences as well though. For instance, retired employees rather than full-time employees are more likely to regard the local or state government as being responsible for urban forestry initiatives. Likewise, individuals belonging to the non-White race are more likely to regard federal government as being responsible. In terms of marginal effects, age continued to have the largest impact on attitude. Thus, individuals in the age group *younger than age 56 years* were more likely to assign responsibility to the local, state, and federal government by a factor of 10% to 25%, according to marginal effect estimate.

Discussion and Implications

Our results show that public attitudes toward urban trees in general are positive. More than 90% of citizens appreciated urban trees in choosing their residential location and community. A majority of people also supported urban tree activities, including tree topping, tree ordinances, particularly for builders and developers on public property. However, individual support for urban forestry programs and activities did not seem broad based. A majority of people considered the promotion and development of urban forestry programs as a local, state, and/or federal government responsibility. The hypothesis that individual attitudes depend on personal characteristics could partially be supported by the analysis. An interesting finding is that the knowledge of public urban tree programs has a positive relationship with favorable attitudes toward urban forestry initiatives. As

Table 5
Marginal Effects of the Ordered Probit Models
(Observations = 506)

Variable	Willingness to Donate Time			Willingness to Donate Money			Attitude Toward Local Government Role			Attitude Toward State Government Role			Attitude Toward Federal Government Role		
	$y_i = 0$	$y_i = 1$	$y_i = 2$	$y_i = 0$	$y_i = 1$	$y_i = 2$	$y_i = 0$	$y_i = 1$	$y_i = 2$	$y_i = 0$	$y_i = 1$	$y_i = 2$	$y_i = 0$	$y_i = 1$	$y_i = 2$
X1	-.04	.02	.02	-.03	.01	.02	-.01	-.01	.02	-.01	-.01	.02	-.03	-.01	.04
X2	.01	.00	.00	-.04	.01	.02	.00	-.01	.01	.02	.03	-.05	.05	.03	-.07
X3	-.09	.05	.05	-.08	.03	.05	.01	.02	-.04	.01	.01	-.02	.02	.01	-.02
X4	-.05	.03	.03	-.10	.04	.06	-.03	-.05	.08	-.06	-.08	.14	.00	.00	.00
X5	-.05	.03	.03	.00	.00	.00	-.04	-.07	.12	-.05	-.07	.12	-.03	-.02	.05
X6	-.07	.04	.04	-.05	.02	.03	-.03	-.05	.09	-.04	-.05	.09	-.05	-.03	.08
X7	-.13	.07	.06	-.31	.11	.19	-.04	-.07	.11	-.11	-.14	.25	-.15	-.09	.24
X8	-.11	.06	.05	-.26	.10	.16	-.04	-.08	.12	-.09	-.12	.21	-.16	-.09	.25
X9	.07	-.04	-.03	.08	-.03	-.05	.01	.01	-.02	.01	.01	-.01	.01	.01	-.02
X10	.14	-.07	-.07	.09	-.03	-.06	.01	.03	-.04	.03	.04	-.08	.04	.02	-.06
X11	.03	-.02	-.02	.01	.00	.00	-.02	-.03	.05	-.01	-.02	.03	.06	.04	-.10
X12	.00	.00	.00	.01	.00	-.01	.01	.02	-.03	.06	.07	-.12	.00	.00	.01

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the analysis in the current research provides tentative directions as to how the general public considers urban forestry, future research on urban forestry needs to investigate the level of willingness to donate time and money for community forestry programs.

It is widely believed that the stated preference and revealed preference are different but have some relationship (e.g., Adamowicz et al., 2004). It could be interesting to see the difference between stated preferences (willingness to pay) and revealed preference regarding supporting urban forestry. In addition, future study should also consider Ajzen's (1991) theory of planed behavior (TPB) to examine what effect the public urban forestry attitudes have on intended and actual willingness to pay. Finally, it is noteworthy that although telephone surveys often result in a higher response rate, the quality of data may not be good because respondents may not like to reveal their perceptions, attitudes, and household incomes as openly on the phone as they would in a face-to-face interview. As the reader of this article will note, we did not ask how much they were willing to donate either in open-ended questionnaire or in close-ended questionnaire. This concern was addressed in our 2005 survey with more properly worded questions.

Note

1. The use of ordinary linear regression (OLS) to ordinal responses such as "very important," "somewhat important," "somewhat unimportant," "not at all important" would be inappropriate because the spacing of these outcome categories cannot be assumed to be uniform (Liao, 1994, p. 37).

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