Evaluating Public Open Space Preservation Priorities

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Abstract

Public natural resource management agencies are increasingly charged with preserving open space under threat from urban sprawl. Most agencies prioritize properties by awarding points from a checklist of environmental attributes. The objective of this research is to investigate how these point-value assignments correspond to actual purchasing behavior. I use a logit model to estimate the probability that an open space property will be purchased based on its various environmental attributes from the evaluation checklists. The study area is the Town of Brookhaven, on eastern Long Island, NY. Variables describing the physical characteristics of the properties contributed significantly to the likelihood of purchase, which is consistent with the evaluation sheets. Natural resource managers can use this information to refine their open space prioritization criteria to incorporate cost estimates, ensuring that purchased properties efficiently deliver substantial environmental benefits.

Keywords: open space preservation, benefit targeting, ecosystem services

I. Introduction

Public natural resource management agencies are increasingly charged with preserving open space under threat from urban sprawl. Developed land, as a percentage of total land area of the 48 contiguous states, increased from 3.9% in 1982 to 5.2% in 1997 and is projected to reach 9.2% by 2025 (Alig et al. 2004). Concern for the continued loss of open space has stimulated action in both the public and private sector. Governments at all levels have adopted polices to manage urban growth and preserve open space (e.g. Kline 2006, US Forest Service 2006, Bengston et al. 2004). Private land trusts saw a 54% increase in conserved land between 2000 and 2005 (Land Trust Alliance 2006).

Bengston et al. (2004) note the public acquisition of open space "reflects a social decision that [open space properties] should be managed for the benefit of the general public." The public benefit and social value of open space include the ability to generate ecosystem services (Kline et al. 2004). Acquisitions are popular, certain, and expensive policy tools for protecting open space (Bengston et al. 2004, Kelly 1993). The Town of Brookhaven, NY, has implemented such a program to preserve open space.

Theory: Benefit targeting approach

The acquisition of lands for preservation, whether by a public agency or private trust, usually involves evaluating the benefits of the property under consideration. In the benefit targeting approach, a conservation organization evaluates potential acquisitions for their ecological benefit. The organization then seeks to acquire the highest ranking properties until the organization exhausts its budget. Following Messer (2006), let $i=1,2,\ldots,I$ represent an index for various individual properties, let $j=1,2,\ldots,J$ represent an index of various environmental attributes, and let A_{ij} 0 represent the conservation benefit score for the j^{th} attribute of the i^{th} parcel. The conservation organization usually assigns a weight (W_j) to each of the J attributes. The conservation value (V_i) of the i^{th} property can be written:

$$V_i = \sum_{j=1}^{J} W_j A_{ij} \tag{1}$$

Normally acquisition costs do not enter into the decision-making process until the group begins negotiations with the landowner (Messer 2006). Property costs can be estimated through appraisals or hedonic modeling, but these can be difficult and/or time consuming. The appeal of benefit targeting is that the organization can quickly assess the ecological benefits without the added hassle and expense of collecting cost information. Despite this advantage, it is well known that the benefit targeting approach produces suboptimal results (Underhill 1994). Many economists have noted that greater overall conservation benefits can be achieved by incorporating acquisition costs into the decision-making process (e.g. Messer 2006, Ferraro 2003, Ando et al. 1998, Babcock et al. 1997).

The USDA Natural Resources Conservation Service uses the Land Evaluation and Site Assessment (LESA) system, a benefit targeting approach, to determine a site's suitability for agriculture. The LESA system divides agricultural suitability factors into two groups: soil-based factors ("land evaluation") and all other factors ("site assessment") that influence the suitability. Site assessment factors may include measurements of non-soil-based agricultural productivity, development pressure, and scenic or historical value. LESA has since been modified to assess site suitability for a variety of land uses, including forestry (FLESA), and riparian area protection (RESA) (Pease and Coughlin [no date]).

The LESA Guidelines suggest each factor (site attribute) should be rated on a 0-100 scale. Each factor is then multiplied by a corresponding factor weight, resulting in a weighted factor rating. The analyst can then obtain a total LESA score, between 0 and 100, by summing the weighted factor ratings. The analyst can apply a LESA score threshold to divide sites into multiple groups for further consideration (Pease and Coughlin [no date]). Generally the highest scoring properties, or those that are above some threshold, would be the properties selected for acquisition.

This study is an in-depth look at the purchasing behavior of one agency charged with open space preservation: the Town of Brookhaven, New York's Division of Land Management. The objectives of this research are to determine 1) if observed environmental attributes can be used to explain and predict which open space properties will be purchased; 2) whether high-point-value attributes are, in practice, those that most influence the likelihood of purchase; 3) whether incorporating property cost estimates could lead to more economically efficient purchases and greater overall benefits.

Study Area

The Town of Brookhaven, in Suffolk County, NY (Figure 1), typifies the rapid urbanization of the late 20th century. In 1950 Brookhaven's agricultural setting supported a population of less than 50,000. By 2000 its population had swelled to 450,000 and Brookhaven had lost much of its rural character. Town officials, fearing the effects of continued growth on the drinking water aquifer and other environmental resources, proposed a land acquisition program to preserve what open space remained (Town of Brookhaven 2004a). Brookhaven first began acquiring open space properties in 2000. In 2004 Brookhaven's citizens voted to accept a $100 million Clean Water Open Space Bond Act (Town of Brookhaven 2004b). Seventy percent of the votes were cast in favor of the act, highlighting town residents' concerns about overcrowding, congestion, and diminished quality of life.

Brookhaven's Division of Land Management supervises the open space program. Any citizen or organization, not necessarily the landowner, may nominate a property for consideration. A staff member visits the site, conducts an evaluation using a Parcel Ranking Sheet (PRS), and enters the information into a GIS database along with parcel boundaries, aerial photographs, and landowner information. Nominated properties are brought before the Environmental Bond Act Advisory Committee ("Open Space Committee"). This group of scientists, environmental advocates, planners, and business leaders votes on whether to pursue acquisition of the property. If in favor of acquisition, the Committee sends a letter to the landowner expressing Brookhaven's interest. Brookhaven contracts with a third-party appraiser to estimate the property's market value. If the landowner is interested, the two parties negotiate a selling price. As of July 2005, Brookhaven has purchased more than 1000 acres, either alone or in partnership with Suffolk County or New York State.

Brookhaven uses a property evaluation system that is similar to the LESA system. The Parcel Ranking Sheet includes 55 variables (not including total score) in six weighted categories (Table 1). A property earns points if a particular attribute is present. For example a property would earn 5 points for a dune and 20 points for a stream or pond. Unlike the LESA system, the variables, or factors, are not standardized on a 0-100 scale. Points for the size category are awarded one per acre, so there is no upper limit to the score a parcel can earn. The weights sum to 1.15.

The benefit targeting approach assumes that Brookhaven will pursue the purchase of the highest scoring properties. By comparing the environmental attributes of actual purchases against the Parcel Ranking Sheet scores, the analysis will show if the presence of high-point-value attributes increases the likelihood of purchase. This logit model builds on previous work by incorporating cost estimates from a hedonic model of open space. Table 2 lists this study's hypotheses.

II. Methods

Data Collection

Brookhaven completes a Parcel Ranking Sheet for every parcel, or group of parcels, that is nominated. In many cases, the evaluation comprises several parcels, as in a residential subdivision. The group of parcels that was evaluated together, called a *project*, was the unit of analysis.

All the Parcel Ranking Sheets were completed by the same individual at the Division of Land Management (D. Cole, personal communication). This ensures consistency across site visits. The original data set included early versions of the Parcel Ranking Sheet. The analysis was conducted using only April 14, 2000 revision or later, all of which contained the same site characteristics and point scores. Only fee simple acquisitions were included in the analysis. Donated properties were excluded. The final data set consisted of 189 projects, 54 dummy variables for environmental attributes, and three continuous variables (*Size*, *Score, and Est_CostAcre*).

Exploratory Data Analysis

The full data set (n=189) was tested using the Kruskal-Wallis *H* to determine if the Parcel Ranking Sheet *Score* was significantly different between purchased and unpurchased properties.

The Kruskal-Wallis was used instead of one-way ANOVA because the Kruskal-Wallis test makes no assumptions about the distribution of the data.

Regression Model

Binary logistic regression, also known as a logit model, was used to evaluate how the environmental characteristics contribute to the likelihood of purchase. The dependent variable *Purchase* was coded as a dummy variable such that y_i=1 if the property was purchased and y_i=0 otherwise. The logistic regression model describes the probability of a property being purchased as:

$$\Pr(y = 1 \mid X_1, X_2, \ldots X_k) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k)}} \qquad (2)$$

where X_1, X_2,…, X_k are the k explanatory variables and β_1, β_2,…,β_k are the k estimated coefficients. There were far too few observations to include all 56 PRS variables in the regression model. The selection of model variables began with those having unweighted PRS scores of 15 or higher. This group of 23 variables was tested for correlation to avoid multicollinearity problems. Harmful multicollinearity is suspected if any of the bivariate correlations exceed the model's R^2_{adj} (Mason and Perreault 1991). Because logit models do not have a true R^2_{adj} value, significant correlations of r^2 0.40 were deemed unacceptable. Thirteen environmental attribute variables met the criteria for the regression model (Table 3). *Score* was not included because of endogeneity concerns. The mean for a dummy variable is interpreted as the proportion of observations having that attribute.

Estimating Property Cost

An estimated property cost variable was added to the model, though no cost data was included in the Parcel Ranking Sheets. Nordman (2006) estimated a public hedonic model of open space purchases for Brookhaven. The hedonic model used environmental attributes from the Parcel Ranking Sheets to estimate implicit prices for the various attributes. A revised form of this hedonic model (Nordman and Wagner, forthcoming) was used here to estimate the per acre property costs for purchased and unpurchased properties. Ideally, the hedonic model coefficients would be estimated from a data set separate from that of the logit model and would include a validation data set to test its out-of-sample predictive ability. Given the small number of purchased properties, this was not feasible. The estimated cost per acre (*Est_CostAcre*) agreed well with the actual property cost per acre and was determined to be a reasonable proxy (r^2 = 0.76, n=34). The estimated property cost per acre (*Est_CostAcre*, 2005 dollars) was included in the logit model, but computer software limitations did not allow the standard error to be included in the model, as it should be. The author recognizes that the failure to include standard errors for the estimated cost per acre may result in t-statistics that are biased downward.

The Logit Model

The logit model as estimated was:

$$\begin{aligned}\Pr(Purchase = 1) = \beta_0 + \beta_1 Intertidal\_WL + \beta_2 Fresh\_WL + \beta_3 Adjacent\_WL \\ + \beta_4 Species + \beta_5 Historical + \beta_6 Adjacent + \beta_7 Component + \beta_8 FEMA\_V \\ + \beta_9 \mathrm{Re}creation + \beta_{10} Vista + \beta_{11} RoadView + \beta_{12} FarmSoil + \beta_{13} Size \\ + \beta_{14} Est\_CostAcre + \varepsilon\end{aligned} \qquad (3)$$

The estimated coefficients of logit models are in log-odds units which are difficult to interpret directly. The standard procedure is to convert the estimated coefficients into odds-ratios by computing the exponentiation of the coefficients (UCLA Academic Technology Services 2007). Both the coefficients and odds-ratios are presented in the results.

A random sample of about 10% (n = 17) of the observations were withdrawn from the model building data set and used to validate the model.

The regression model coefficients for the dummy variables were obtained and compared against their weighted PRS scores. Spearman's *rho* rank correlation was used to determine if the two techniques prioritized the variables similarly.

III. Results

The Kruskal-Wallis *H* test was applied and the mean ranks for *Score* were found to be significantly different among purchased (y=1) and unpurchased (y=0) properties (χ^2 = 11.31, df = 1, p = 0.001). Parcel Ranking Sheet *Score* and *Purchase* were significantly positively correlated with one another (r^2 = 0.25, p < 0.01). The estimated logit model was statistically significant (χ^2 = 33.86, df = 14, p < 0.01). Three model coefficients were statistically significant at the α = 0.05 level, and another three were significant at the α = 0.10 level (Table 4). Four of the six statistically significant coefficients had the expected positive sign. *Vista* and *Adjacent_WL* had negative coefficients, as did several others that were not statistically significant. In the validation data set, the model correctly predicted the outcome for the 14 properties that were not purchased as well as 1 of the three properties that was purchased. The two ranking methods, by model coefficient and by PRS weighted point value, were significantly correlated at the α = 0.05 level (r^2 = 0.63, p = 0.04).

IV. Discussion

The mean rank for Parcel Ranking Sheet *Score* differed significantly between purchased and unpurchased groups, indicating that Brookhaven's observed behavior is consistent with its stated preferences in terms of PRS scores. The positive significant correlation between *Score* and *Purchase* supports hypothesis H_1 that high scoring properties are more likely to be purchased than lower scoring ones.

The model's modest success in explaining the variation in likelihood of purchase hinges on only six of the 14 explanatory variables. Four of these six are from the most heavily weighted Physical Characteristics category. Wetland features rate highly on the Parcel Ranking Sheets, so it was not surprising that properties with *Intertidal_WL* are 8.43 times more likely to be purchased than similar properties without these features. 47% of all properties in the analysis contain either intertidal or freshwater wetlands. Surprisingly properties that are adjacent to other properties with wetlands (*Adjacent_WL*) are 2.56 times *less* likely to be purchased, all else equal. Properties that support a population of endangered or threatened species are relatively rare in Brookhaven (7% of surveyed properties), yet the presence of these organisms increases the likelihood of purchase by 5 times, all else being equal.

Several variables had almost no effect on the likelihood of purchase. Whether the project was a component of a larger open space acquisition (*Component*) had almost no effect on the likelihood of purchase, nor did a location within a FEMA “V” flood zone (*FEMA_V*). This is not entirely unexpected, given the relatively low weighted point value (4 for both) for these attributes. More surprising was the lack of explanatory power for *Size* and *Est_CostAcre*. While it may seem counter-intuitive that property costs do not matter, this finding is consistent with the benefit targeting approach. Recall that in this approach, properties are ranked according to their benefit scores and the agency purchases as many of the high-ranking properties as possible within the budget constraint. Property cost does not factor into the decision-making until the contract negotiation phase. The logit model results confirm the belief that Brookhaven is using the benefit targeting approach. Brookhaven is pursuing the purchase of high-scoring properties without consideration of their property costs.

A few high-scoring attributes were dropped from the analysis because of multicollinearity concerns. This group included attributes describing surface water, which were highly correlated with the wetland variables. Properties adjacent to wetlands were highly correlated with attributes describing both access to open space or surface water and having a water view. In this case, the latter two variables were dropped. Brookhaven records five different variables describing farmland, all of which were highly correlated with one another. One variable describing farmland would probably be sufficient. These redundancies demonstrate the difficulty in selecting appropriate attributes for the rating systems.

The purchase of a property is the result of a willing buyer and a willing seller coming together. The properties with wetlands, endangered species populations, and historical or archeological resources are clearly valuable to Brookhaven, but more significantly, are all subject to regulatory constraints. Landowners holding properties with these attributes may be constrained in how they may develop the property. Faced with these constraints, not to mention any altruistic motives, the landowner may be more inclined to sell to Brookhaven.

This willing seller idea also offers an explanation for the significant negative coefficients for *Vista* and *Adjacent_WL*. Properties with a significant scenic view are 0.31 times as likely (or, equivalently, 3.23 times *less* likely) to be purchased by Brookhaven as those without a view. The landowner's alternative to selling to Brookhaven, i.e. residential or commercial development, attracts a higher price. The owners of properties with a view also do not face the regulatory constraints that wetland owners do. The negative coefficient suggests that *Vista* owners are less likely to sell to Brookhaven, and therefore, Brookhaven is less likely to purchase these properties. The same reasoning applies to *Adjacent_WL*. Properties that are adjacent to wetlands, but do not contain them, are not regulated in the same way that wetland properties are.

Other attributes, including *Adjacent* and *RoadView*, also had negative, but statistically insignificant, coefficients. A number of hedonic analyses have shown that residential homebuyers are willing to pay a premium for increased proximity to preserved natural areas (McConnell and Walls 2005). For example, Thorsnes (2002) found that lots that border a forest preserve in Grand Rapids, Michigan, sold at a $5,800 - $8,400 premium over lots in the subdivision that did not border the preserve. Road frontage and views are attractive to commercial developers. Wichelns and Kline (1993) used a hedonic model of the development right purchases for farmland in Rhode Island. They determined that development right value increases by 0.197 % with a 1.0% increase in farmland road frontage. These high value alternative uses suggest that Brookhaven is less likely to entice the landowner away from development.

The logit model's modest explanatory power and predictive ability weakly support H_2 (Table 2). More observations of purchased properties would probably improve the model's predictive ability. The willingness of the seller is also a large unknown in this model. The negative coefficients for *Adjacent_WL*, *Adjacent, Component*, *FEMA_V*, *Vista*, and *RoadView* do not support H_3 (Table 2).

The regression coefficients and weighted PRS scores in Table 5 show that the high weighted-score variables are the ones most positively influencing likelihood of purchase. Freshwater wetlands have somewhat less impact than one would expect from their contribution to PRS score. Conversely, *FarmSoil* contributed very little to the total PRS score, yet it was a statistically significant variable with a relatively large coefficient in the logit model. For the most part, Brookhaven's stated preferences, gleaned from the Parcel Ranking Sheets, seem to match their observed purchasing behavior. These results support H_4 (Table 2).

Most agencies use the benefit targeting approach because property costs, especially for undeveloped properties, are difficult or costly to estimate. The hedonic model developed for Brookhaven by Nordman (2006) and revised in Nordman and Wagner (forthcoming) can provide the Division of Land Management with the capacity to estimate property costs and make more economically efficient open space choices.

The following scenario illustrates the advantage of incorporating property costs into decision making. Under the current benefits targeting approach, Brookhaven’s total estimated expenditure was $36,058,570 (2005 dollars). This sum purchased 35 properties with an aggregate PRS score of 2,062. This amount is assumed to be the budget constraint. If all the properties in the data set were available for sale at once, the idealized benefit targeting approach in which all properties are ranked by their scores and purchased until the budget is exhausted would acquire 44 properties with an aggregate benefit score of 3,558. Brookhaven could have improved its conservation of open space by including cost data, such as in a benefit score-cost ratio (Messer 2006, Ferraro 2003). In this approach, the benefit score for each property is divided by the total estimated property cost. Properties are ranked according to this ratio, and the agency purchases the properties down the list until the budget is exhausted. Using the estimated property costs from the hedonic model, Brookhaven could have purchased 115 properties with an aggregate benefit score of 5,969 under the same budget constraint. The aggregate benefit score for the benefit-cost ratio approach is nearly 300% more than the current approach and 67% more than the idealized benefit targeting approach. Conservation agencies, including Brookhaven's Division of Land Management, can dramatically improve their results by incorporating cost data.

V. Conclusions

The results of this logit model of open space purchases support some of the hypotheses laid out in the introduction and also produced some enlightening surprises. First, the results support the hypothesis that PRS *Score* is significantly positively correlated with the binary variable *Purchase*. High-scoring properties do indeed have higher likelihood of being acquired, but a high score is not a sufficient condition to guarantee purchase. Second, the logit model with environmental attributes successfully explained a fair portion of the variation in likelihood of purchase. Brookhaven tracks more than 50 environmental variables in the evaluations, yet only six of the model's variables were statistically significant. Several variables were dropped from the analysis for multicollinearity problems, suggesting that many of the variables are redundant. The model successfully predicted the purchase of 1 of three out-of-sample observations. Third, while all of the attributes contribute positively to the PRS score, not all of the variables in the logit model contributed positively to the likelihood of purchase. The discussion of the *Vista* variable highlights the need for more information on what motivates a landowner to sell to a public open space program or land trust. Fourth, the correlation between weighted PRS scores and logit model coefficients suggests that Brookhaven is following through on its stated preferences by purchasing properties with high-value attributes.

The analysis suggests several areas where Brookhaven might improve the open space evaluation process. Standardizing the variables to follow the LESA system would aid transparency and implementation. The presence of highly correlated, redundant variables suggests the number of attributes evaluated could be streamlined. Finally, the incorporation of cost data, through the use of a hedonic model or appraisals, could dramatically improve the conservation benefit from the open space program. The results demonstrate that Brookhaven is following the benefit targeting approach, but a decade's work by environmental economists and the scenarios presented here show that the benefit targeting approach is far from optimal.

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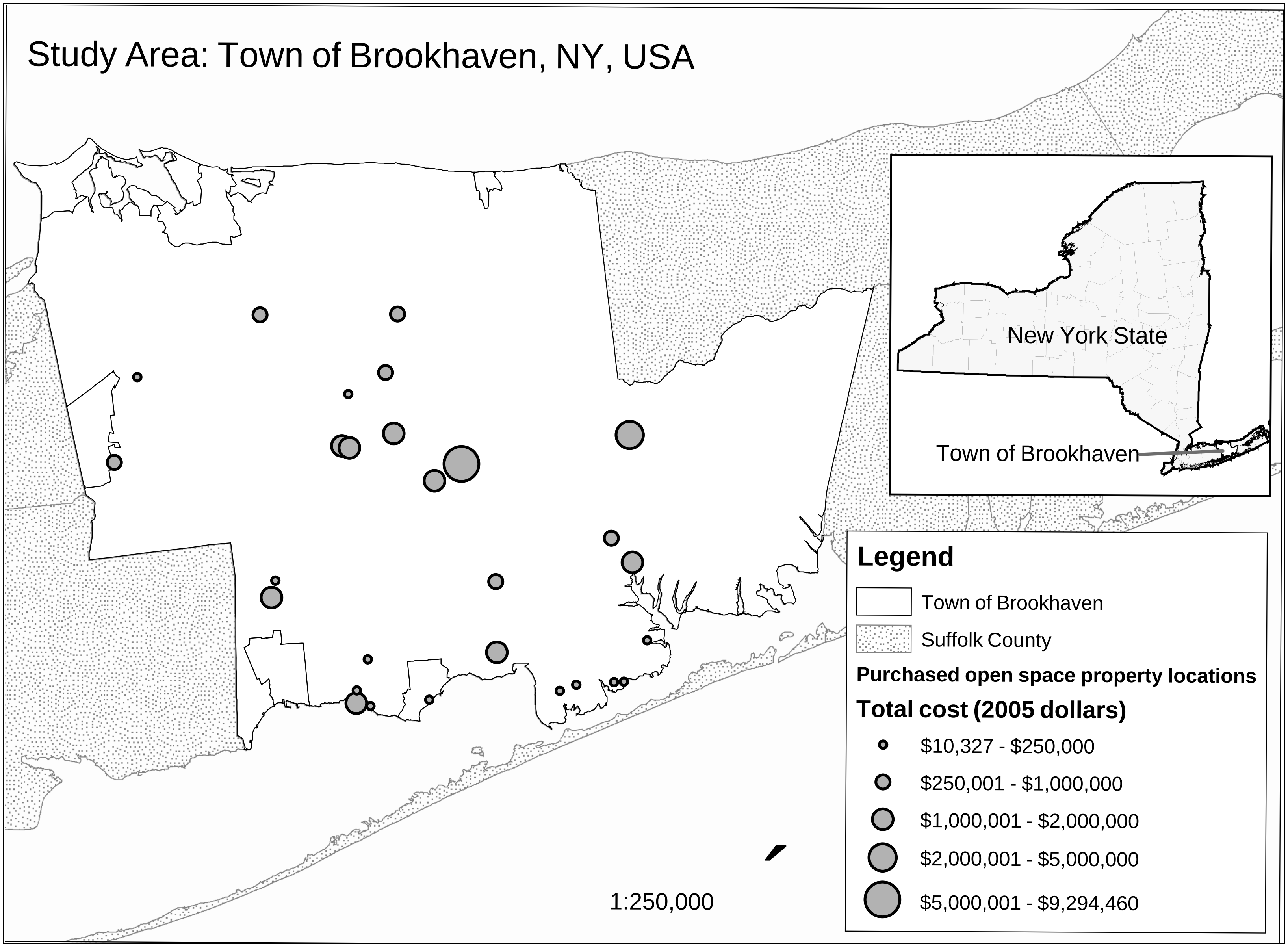
Study Area: Town of Brookhaven, NY, USA
New York State
Town of Brookhaven
Legend
Town of Brookhaven
Suffolk County
Purchased open space property locations
Total cost (2005 dollars)
$10,327 - $250,000
$250,001 - $1,000,000
$1,000,001 - $2,000,000
$2,000,001 - $5,000,000
$5,000,001 - $9,294,460
1:250,000

Table 1: Parcel Ranking Sheet Attribute Categories

Category	Maximum Total Score	Weight
I Physical Characteristics	312.5	0.40
II Size	No limit	0.15
III Location	105	0.20
IV Community Values	100	0.15
V Aesthetic Values	65	0.10
VI Farmland	70	0.15

Table 2: Hypotheses

	Hypothesis	Test
H_1	Parcel Ranking Sheet *Score* and the binary variable *Purchase* will be positively associated with one another.	Correlation
H_2	The environmental characteristics identified on the Parcel Ranking Sheets can explain and predict Brookhaven's observed purchasing behavior.	Binary logistic regression
H_3	All of the binary logistic regression model's independent variables will be positive.	Binary logistic regression
H_4	The variables with large coefficients will also have high weighted PRS point values.	Rank correlation

Table 3: Summary Statistics

	Attributes	Description	Overall Mean (*N* = 189)	Purchased Mean (*N* = 35)	Unpurchased Mean (*N* = 154)
I. Physical	*Intertidal_WL*	Intertidal marsh wetlands, 1 if present, 0 otherwise	0.13 (0.34)	0.20 (0.41)	0.12 (0.32)
	Fresh_WL	Freshwater wetlands, 1 if present, 0 otherwise	0.33 (0.47)	0.57 (0.50)	0.28 (0.45)
	Adjacent_WL	Wetlands in adjacent area within 150 feet, 1 if present, 0 otherwise	0.32 (0.47)	0.34 (0.48)	0.31 (0.47)
	Species	Home to species on New York State or Federal lists of endangered or threatened species, 1 if present, 0 otherwise	0.07 (0.26)	0.20 (0.41)	0.05 (0.21)
	Historical	Property has historical or archeological significance, 1 if present, 0 otherwise	0.46 (0.50)	0.71 (0.46)	0.40 (0.49)
II. Size	*Size*	Size of the property, in acres	23.23 (45.25)	31.75 (65.39)	21.30 (42.32)
III. Location	*Adjacent*	Adjacent to other publicly held lands, 1 if present, 0 otherwise	0.75 (0.44)	0.69 (0.47)	0.76 (0.43)
	Component	A component of larger open space acquisition, 1 if present, 0 otherwise	0.63 (0.48)	0.60 (0.50)	0.64 (0.48)
	FEMA_V	Property located in a FEMA “V” flood zone, 1 if present, 0 otherwise	0.04 (0.19)	0.06 (0.24)	0.03 (0.18)
IV. Community Values	*Recreation*	Property would provide opportunity for passive recreation, 1 if present, 0 otherwise	0.74 (0.44)	0.83 (0.38)	0.72 (0.45)
V. Aesthetic Values	*Vista*	Site contains significant scenic vistas, 1 if present, 0 otherwise	0.55 (0.50)	0.46 (0.51)	0.57 (0.50)
	RoadView	Property contains important views along expressway or major road corridors, 1 if present, 0 otherwise	0.27 (0.45)	0.17 (0.38)	0.29 (0.46)
VI. Farmland	*FarmSoil*	Property contains soil types suitable for high agricultural production, 1 if present, 0 otherwise	0.18 (0.39)	0.23 (0.43)	0.17 (0.38)
	Est_CostAcre	Estimated property cost per acre, in 2005 dollars	$89,710 (82,808)	$76,856 (77,305)	$92,632 (83,973)
	Score	Total weighted Parcel Ranking Sheet score	45.54 (25.77)	58.92 (24.09)	42.50 (25.25)

Table 4: Logit Model Results

Category	Variable	β	S.E.	p-value	Exp(β)
	Constant	-1.98	0.74	<0.01	0.14
I. Physical	*Intertidal_WL*	2.13	0.77	<0.01**	8.43
	Fresh_WL	0.77	0.54	0.16	2.17
	Adjacent_WL	-0.94	0.57	0.10*	0.39
	Species	1.68	0.80	0.04**	5.36
	Historical	0.95	0.52	0.07*	2.60
II. Size	*Size*	0.001	0.005	0.87	1.00
III. Location	*Adjacent*	-0.59	0.61	0.33	0.55
	Component	-0.07	0.53	0.89	0.93
	FEMA_V	-0.03	1.12	0.98	0.98
IV. Community Values	*Recreation*	0.80	0.62	0.20	2.22
V. Aesthetic Values	*Vista*	-1.17	0.57	0.04**	0.31
	RoadView	-0.88	0.59	0.14	0.42
VI. Farmland	*FarmSoil*	1.07	0.64	0.09*	2.92
	CostAcre	0.00	0.00	0.73	1.00
Summary Statistics	N = 172, -2 log likelihood = 131.39		χ^2 = 33.89, df = 14, $p < 0.01$		

**significant at ά = 0.05 level
*significant at ά = 0.10 level

Table 5: Comparison of regression coefficients and PRS scores

Attribute	Regression coefficient	PRS weighted score
Intertidal_WL	2.13	20.00
Species	1.68	10.00
FarmSoil	1.07	3.00
Historical	0.95	10.00
Recreation	0.80	2.25
Fresh_WL	0.77	20.00
FEMA_V	-0.03	4.00
Component	-0.07	4.00
Adjacent	-0.59	4.00
RoadView	-0.88	1.50
Vista	-1.17	2.00
r^2=0.63, p=0.04, Spearman's rho		