TWO METHODS OF VALUATING TREES ON RESIDENTIAL SITES

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The contribution of trees to residential property value plays an important role in increasing sales price. Two studies have been done in the past decade using real estate sales to help to establish tree values (4, 5, 6,). The conclusion of these studies was that trees did indeed add appreciably to property values. How much and why was the basic question.

Time has passed and the real estate market has changed. It became evident to the three authors that an updated study should be completed which would primarily verify the original theory and secondly see how much of a change has taken place over the past seven years.

The Town of Greece, a suburb of Rochester, New York was chosen . It has shown a strong consistent growth in that region of Western New York and was in a close proximity for continued observation.

Not only was the theory to be re-explored — that trees add to real estate value but, using the professional technique of tree evaluation, there are different approaches for determining the value of mature trees on residential sites. Which is best or has the greater plausibility!

Generally the qualified professional plantsman (arborist and/or horticulturist) determines tree values by the use of the *Guide for Establishing Values of Trees and Other Plants* (3). This *Guide* has been published by the International Society of Arboriculture under the guidance of the Council of Tree & Landscape Appraisers. This Council is supported by five national and international organizations, American Association of Nurserymen, American Society of Consulting Arborists, International Society of Arboriculture, National Arborists Association and the Associated Landscape Contractors of America.

Other tree evaluation methods exist but the *Guide* has proven to be the most widely-used and accepted in horticultural evaluation today. Several

recent court cases have upheld values prepared by use of the *Guide* (1, 2, 7).

This form of evaluation sets a per cross section square inch value per tree which is modified every few years to reflect price changes. The qualified arborist then considers moderating factors such as species, size, condition, and location plus his subjective and experiential judgment.

Most real estate appraisers are not adequately prepared to place a value on existing vegetation for a given residence. A real estate appraiser or even developer may add an "incremental value" to a treed lot. These values can average anywhere from five to twenty per cent, sometimes quite inconsistent, especially with arboricultural appraisal.

Another real estate approach to determine tree values on residential sites is to observe comparable houses with and without mature tree cover, then incorporate tree cover as one of the many variables that contribute to residential property value (6).

It is conceivable that if an individual used each approach discussed above to determine the value of trees on a given site, he or she could arrive at several different value figures.

If the situation warranted, such as in the case of a tree loss, which value would an insurance company accept? Or equally important, which figure would the Internal Revenue Service accept? These questions must be clarified at least to the point where it is fair and reasonably acceptable to all parties concerned.

Methodology

This study was conducted in an effort to determine if *two* approaches to evaluating tree values on residential sites were similar or very far apart.

Real estate approach. To observe comparable houses with and without mature tree cover (Figures 1 & 2). The methodology used in this study is the same method used in a previous

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Figure 1. Untreed lot

Figure 2. Treed lot

study performed in Manchester, Connecticut (5). The area of Greece, New York had a similar characteristic of treed versus untreed lots.

One key factor in any residential area is location. The Town of Greece is close to the amenities of employment (i.e. Eastman Kodak), commerce and recreation. Therefore the developed lots appealed to the average and above average home purchaser. The developer of this test tract appreciated the contributions the trees made to the home site. Also the developer created the concept of unique and interesting homes. Special architectural features enable the development to break the mold of "sameness" many subdivision tracts have.

A total of 44 recently-sold comparable homes

were observed and noted. All the homes in the test area were newly constructed and all were sold over the same two-year period. These houses were then observed for tree cover or lack of tree cover. Twenty-two homes had a substantial amount of mature trees on the lot and twenty-two homes had no tree cover.

The following information was obtained from property tax records on file in the Town of Greece offices:

	Variable no.	Variable name
Dependent	1	Sales price of each house
Independent	2	Date of sale
	3	Number of rooms
	4	Square feet of lot
	5	Number of fireplaces
	6	Age in years
	7	Number of garages
	8	Square feet of house

The tree cover factor of each residence was noted for further use.

The above variables were processed in a computer for each residence to determine their comparability. After the initial comparison, a step-wise regression analysis was used. The regression analysis is the estimate of the total value of a set of components by adding their individual contributions.

A tree cover factor was established by simply noting which residences had substantial tree cover versus residences which had no tree cover.

From the data received, using the multiple regression analysis, it was found that houses with "mature trees" were comparable to those houses that had "no trees." The comparability of the houses was shown by the analysis (see Table 1) as they had similar number of rooms; square feet of house; square feet of lot; number of fireplaces; number of garages; and the home sites were sold during the same period of time.

The information also showed that houses with "good tree cover" were somewhat larger in size than houses with "no tree cover"; however, houses that had "good tree cover" were usually on a smaller size lot. Both the houses with trees and the houses without trees were located in the same neighborhood with similar accessibility to local goods and services satisfying the location factor.

Table 1. Means and standard deviations of independent & dependent variables

Variable identification	Variable number	Mature tree cover		No tree cover		Both data sets	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Date of sale	2	77.8	1.4	77.4	0.6	77.3	0.7
No. of rooms	3	7.7	0.9	7.7	0.6	7.7	0.8
Sq. ft. of lot	4	14,395	2.2	15,820	3.1	15,107	2.7
No. of fireplaces	5	1.04	0.21	1.00	0.0	1.02	0.15
Age in years	6	4.6	0.49	4.27	0.55	4.45	0.54
No. of garages	7	2.0	0.4	2.0	0.0	2.0	0.3
Sq. ft. of house	8	1900	408	1837	235	1868	331
Sales price	1	60,614	14	51,108	4	55,872	10

Since both the treed and untreed lots were comparable in all the variables considered, we can assume that by comparing sales prices this would indicate value of trees. The untreed lots sold for $51,108 and the tree covered lots sold for $60,614. Therefore, it is safe to assume $9500 would be the value of the trees.

The data generated from the analysis illustrate a large premium for wooded lots. Not all the differential can be attributed to the wooded site alone. In this particular subdivision, those near the main road and those in close proximity to the abutting land zoned for a higher density development, were also the lots that were not wooded.

Shade tree appraisal method. Each home site with trees was horticulturally analyzed. Each tree was valued using the *Guide for Establishing Values of Trees and Other Plants* (3). Indigenous species of trees in the greatest predominance with average diameters included: beech (27 cm), hickory (24 cm), red oak (49 cm), sugar maple (18 cm), basswood (37 cm), ironwood (5 cm), black cherry (24 cm), poplar (33 cm), sassafras (22 cm), swamp red maple (19 cm), and yellow birch (27 cm).

Introduced species (those planted by the homeowners) included white spruce, mountain ash, Colorado blue spruce, flowering crab, dogwood and moraine locust. The following is the composition of the average 'treed' lot: 3 beech (20 cm), 1 swamp red maple (33 cm), 1 basswood (25 cm), 1 swamp red maple clump (20 cm), 1 crabapple (planted), (5 cm), 1 sugar maple (20 cm), 2 swamp red maple (15 cm), and

3 sassafras (10 cm).

The original trees were typical of a northeast urban woodlot and their average condition was 'Fair.' None had been previously pruned; therefore, many contained broken limbs and associated rot pockets, some with base fire scars. Crowns generally did not exceed 10-18 meters.

During our inspections, many of the mature trees were showing some signs of decline due to grade change, root cutting and other maladies associated with woodland home construction although the developer did exercise tree protection to the best of his ability. The placement of homes indicated a desire to retain as many trees as possible.

The builder-developer mentioned problems he encountered with various sub-contract crews, particularly tree scrapes and soil compaction. Also, all utilities were placed underground and some additional root damage took place. It is understandable that the sub-contractors are primarily concerned with cost-effective construction and only secondarily concerned with the long term survival of the trees on a lot with substantial tree cover.

As a sidelight to the general appraisal a questionnaire was hand delivered to all homes, both those with trees and those without. The object was to see how much additional money they spent in the five years beyond their original purchase price. The owners of treed lots had an average of five trees which needed to be removed after they moved into their home. Costs ranged from nothing (in the case of a friend removing them for

firewood) to $1000 (removal cost by professionals). The owners planted some new trees (average five) and spent more than $700 on other landscaping.

The owners of untreed lots planted an average of seven trees at an average cost of $200. These owners spent less than $500 (average) for other landscaping of their lots.

Herewith is a tree appraisal of one of the typical treed lots. The appraisal values are rounded off for clarity.

Table 2.

Qty., Species	Diam. (cm)	Condition	Value
1 beech	30	Poor	$200
1 sweet birch	20	Dead	—
5 sweet birch, average	20	Poor	400
1 hickory	25	Good	600
1 ash	30	Good	500
1 swamp red maple	36	Poor	250
1 hickory	28	Fair	300
1 swamp red maple	25	Fair	250
1 ash	15	Fair to good	175
1 hickory	25	Good	450
1 swamp red maple	36	Fair	500
1 sugar maple	25	Fair	400
1 hickory	28	Fair	450
1 swamp red maple	10	Poor to fair	50
1 hickory	35	Good	600
1 beech	20	Poor	175
1 ash	30	Good	400
1 beech	23	Fair	150
Total Appraisal Value of Trees:			5850

Of the total lots with trees, herewith are the values: low value, $2500; high value, $10,750; average value, $6000.

Conclusions

The results of this study show that tree cover does contribute to residential property value in Rochester, New York. The study shows that treed lots sold for an average of $9500 more than untreed lots using the comparable house approach. This figure is much higher than the $6000 figure given when evaluating trees on individual lots using the *Guide* for arboricultural appraisal.

The reason for the difference in values using two different approaches may be explained by how the lots were marketed and developed. The contractor was aware of how trees increase the value of certain lots. Therefore, it is conceivable that the developers capitalized on this, giving a somewhat inflated value for treed lots when they were sold. Part of the $9500 figure is also due to location. Most of the treed lots were secluded in the rear portion of the development.

The average value of $6000 given to treed lots using the *Guide* might be somewhat lower than normal because most of the trees on the lots were not in good health and seemed to be suffering from various site disturbing ailments.

This study was not meant to be conclusive. It illustrates that differences still exist when evaluating trees on residential sites. Each area that may be observed has its own set of variables that may change the value trees add to properties. Different values can be arrived at by using two different approaches. One can be speculative with open market processes or use experiential judgment to give a more exact value to trees.

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