

# THE SOCIAL BENEFITS OF RESIDENT INVOLVEMENT IN TREE PLANTING

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**Abstract.** City residents who planted their own street trees were more satisfied with the outcome than residents whose trees were planted by the city or an outside agency. Within the circumstances described in the study, those residents who paid for their trees were more satisfied with the outcomes than those who received them without extra charge from the city or from a voluntary organization. The results underscore the importance of active resident involvement in tree-planting programs.

Most research on public attitudes toward the urban forest has focused on various "passive" benefits people receive from seeing or being around trees and plants, and the economic and environmental benefits of having trees in neighborhoods. Less attention has been given to active, hands-on participation in tree planting which may provide additional benefits and values beyond what is available in passive interactions. Dwyer, et al. (2) view tree-planting as contributing to an enhanced sense of community, the empowerment of inner-city residents to improve their own neighborhoods, and the promotion of environmental responsibility. Such involvement increases self-reliance skills, makes tangible improvements to the community, increases volunteerism, and reduces management costs (10). Programs of public involvement can be expected to promote a sense of ownership and pride towards street trees and thereby decrease tree mortality, leading McBride and Beatty (5) to conclude that the social environment around a tree is as important as the physical environment for ensuring early tree survival and well-being.

Tree care is a continuing responsibility and little information is available as to how proprietary attitudes can be developed and maintained over the long term. A recent survey of 20 American cities concluded that despite an all-time increase in citizen and business support for urban forestry, city programs to plant and maintain the urban

forest are in decline (7). This conclusion was buttressed by depressing statistics showing decreased tree maintenance and increased urban tree mortality. The National Research Agenda for Urban Forestry in the 1990s (4) considers community involvement to be critical to the continued vitality of the urban forest. This involvement takes many forms, ranging from individual planting efforts on their own property to group action in neighborhoods and cities. Encouraging this involvement requires a detailed understanding of what promotes shared proprietary values as well as different cultural perspectives regarding trees. Information is needed regarding how to achieve proprietary attitudes, as encompassed in defensible space theory (6), in the context of enduring partnerships among the public, professionals, industry, and government.

Benefits of resident involvement in tree planting have typically been described without specific documentation. These accounts can attract support for urban forestry in the short run, but we believe the case will be strengthened in the long run by systematic evaluation. The present study is part of a multi-method investigation of resident involvement in planting trees. Currently we are conducting participant observations of tree planting events, in which researchers attend sessions, interview participants, and record interaction patterns. When the series of observations is completed, we should have a substantive record of the immediate social experience of participation in tree planting. Documentation of long-term benefits requires a different approach, including the use of comparison neighborhoods lacking resident involvement. The present article describes the results obtained from a comparison of three neighborhoods in Fresno, CA, involving different levels of resident involvement in tree planting. The

prediction was made that involvement in tree planting would produce greater satisfaction with the condition of the tree and the neighborhood. The specific hypotheses will be presented following a description of the research site and sampling procedure.

### Site Selection

We contacted state and local officials and voluntary organizations in California seeking locations where we could compare the response to resident-planted and city-planted trees. The search for suitable comparison sites proved more difficult than originally anticipated. Some voluntary organizations distributed trees to individuals and did not promote the neighborhood participation that we wanted to study. In some cities, voluntary organizations and the city planted trees in different types of neighborhoods, e.g., city plantings in commercial areas and voluntary organizations working in residential neighborhoods. In other cities, planting was done by a team of volunteers rather than by the actual residents. However, the search identified several cities where a comparison between resident-planted and city-planted trees in similar neighborhoods seemed feasible. The marked differences between individual cities in neighborhoods and the types and methods of planting dictated separate replicated research studies rather than a single multi-city comparison. The present article describes the results obtained in the first city studied, Fresno, CA, involving three neighborhoods where street trees had been planted in association with the local Releaf organization, Tree Fresno, which collaborated in the research. Tree Fresno (TF) was started in 1985 as an independent, volunteer-based community tree advocacy organization. Funding is provided by membership dues from approximately 600 individuals and businesses, plus revenues from corporate donations, fund-raising events, and grants. The organization has coordinated tree plantings in both public areas and residential neighborhoods. Residential plantings are initiated by someone in the neighborhood who approaches TF for assistance, and then asks neighbors to participate. There is typically a \$40 per tree charge. On planting day, TF volunteers work with residents

to plant the trees. The amount of participation by local residents varies by household.

### Sampling

Consultation with TF identified three residential areas in the city where plantings had taken place between 1989-91. Records available included the street address where planting had taken place, species (most trees were Chinese hackberry or Chinese pistache), and date of planting. Two of the areas, both middle- to upper-middle-class, had high neighborhood involvement, in which the residents came together, agreed to plant the trees, paid \$40 a tree per household, and sometimes joined in the planting. These two neighborhoods were classified as the TF high involvement sample. In the third neighborhood with more modest homes and a blue collar population, the trees were supplied free by TF whose volunteers did the planting. This neighborhood was classified as the TF low involvement sample.

Using the list of street addresses supplied by TF, two researchers walked through the three neighborhoods to ascertain that the trees planted still existed. There were 11 addresses on the TF list where the tree was no longer present, either having been removed or not planted. In three additional cases, the trees were dead and still in place. These 14 addresses were removed from the TF list. Inspections also provided an opportunity to record distinctive aspects of the tree planting that could be noted in the cover letter accompanying the survey. For example, if the TF tree had been planted alongside several non-TF trees, this was recorded by the researcher, and a note to this effect was included in the cover letter to ensure that the respondent answered in regard to the TF tree, and not to any others in the front yard. The information obtained at this time also helped to personalize the cover letters, by using specific locations in describing the tree, such as "The Chinese pistache in front of the garage" or "The Chinese hackberry planted on Terrace Avenue."

At the same time that researchers verified the TF address list, they also recorded addresses in the same three neighborhoods where street trees of similar size and species as those on the TF list had been planted. These households not on the

TF list, but with street trees of similar vintage and species (again most were Chinese hackberry or Chinese pistache) were classified as the non-TF (control) sample. It was left to the survey itself to determine whether the trees had been planted by the city or by the owner. The site visits produced a list of 67 street addresses containing TF trees and 86 homes in the same or adjacent neighborhoods containing non-TF trees of similar size and species.

**Hypotheses**

TF households with resident participation in tree planting will have more favorable attitudes toward their trees and neighborhoods than will TF households where the residents did not participate actively in the planting.

Among non-TF households, residents who planted their own trees will have more favorable attitudes toward their trees and neighborhoods than will residents whose trees were planted by the city.

Regardless of whether the trees were supplied by TF or the owner, those residents who had been actively involved in tree planting will be more favorably disposed toward their trees and neighborhoods than will individuals who did not participate in the planting.

No specific predictions were made comparing the TF high involvement and the owner-planted samples, although if there were any differences, they would probably be in perceived friendliness of the neighborhood, since encouraging neighborhood interaction was an objective of the TF planting program.

**Mail Survey**

Using a format similar to that of earlier street tree surveys (8), a 20-item questionnaire was constructed dealing with the respondent's attitudes toward the street tree and the neighborhood. For the TF sample, there were two additional open-ended questions asking about the adequacy of TF planting practices. Questions were multiple-choice with space left at the end for written comments.

Because the questionnaires were mailed to street addresses without people's names, we personalized the letters as much as possible.

Attractive commemorative stamps with first-class postage were used on the exterior and return envelopes. The resident's street address and the researcher's name and return address were hand-written in blue ink on the envelope. The cover letter was personally signed by a researcher, and included a hand-written statement at the bottom indicating tree species. Each questionnaire was numbered so that the returns could be monitored. Three weeks after the initial mailing, a follow-up letter containing another copy of the questionnaire and return envelope, was sent to all non-respondents, excluding those addresses where the first mailing had been returned as undeliverable.

The time and effort involved in personalizing the survey proved to be an excellent investment. Table 1 shows that the return rate for the first mailing was 47% of delivered questionnaires. The second mailing increased the return rate to 69.4% of delivered questionnaires as of the cut-off date. An additional two questionnaires arrived after this, raising the final return rate to 71% of delivered questionnaires.

Non-respondent bias. The question often arises in mail surveys as to whether those individuals who respond are unrepresentative of the total sample. A procedure used by some survey researchers to address this concern is to compare early and late respondents. In the present survey, those who responded to the follow-up letter were non-respondents to the first survey mailing. The responses from the 33 questionnaires returned in the second mailing were compared with those from the 67 questionnaires in the first mailing. Using Chi-square tests on frequencies and t tests

**Table 1. Return rate by mailing and category of respondent.**

Questionnaire	Total	TF	non-TF
Initial mailing	153	67	86
Undeliverable	9	1	8
Total delivered	144	66	78
Returned first mailing	67	31	36
Returned second mailing	33	20	13
Returned after cut-off	2	2	0
Total returns	102	53	49
(% returns)	(71%)	(80%)	(63%)

to compare length of residence, none of the 19 comparisons showed differences that were statistically significant at the .05 level, indicating that late respondents (who were non-respondents in the first mailing) were similar in attitudes and characteristics to early respondents. Although this does not completely rule out the possibility of non-respondent bias, the high overall return rate plus a lack of differences between early and late respondents gives us confidence that if response bias existed, it had minimal impact on the survey results.

## Results

**TF addresses.** *High v. Low Involvement Households.* In two of the neighborhoods residents were actively involved in planting the trees and paid \$40 per tree. In the third neighborhood the planting had been organized and done by TF volunteers at no cost to the residents. High involvement households were significantly more satisfied than low involvement households with the way the tree had been staked originally, the location chosen for the tree, and the impact of the trees on the block and neighborhood. These households also had a higher overall opinion of the tree and were more satisfied with the friendliness and attractiveness of their neighborhood, the amount of greenery, privacy, and more satisfied with the neighborhood as a place to raise children.

**TF households.** *Those who had planted the Tree v. Those who had not.* Among those addresses on the TF list, those respondents who had actually participated in the planting had a higher overall opinion of the tree, were more satisfied with the quality of tree maintenance and the impact of the tree on the neighborhood. They were also less likely to want the tree removed, and gave higher ratings to the friendliness, attractiveness, and amount of privacy in the neighborhood.

**Non-TF households.** *City-planted v. Owner-planted Trees.* Because there were only 12 respondents in the owner-planted group, none of the differences was significant at the .05 level. Those with owner-planted trees tended to have a higher overall opinion of the tree and give higher ratings to the quality of tree maintenance than did those with city-planted trees; both these differences

were significant only at the .10 level.

**Total sample.** *TF v. non-TF Households.* Of the 100 respondents, 51 had been included on the TF list of addresses and the remaining 49 households had trees of the same size and species planted by the city or the owner. There were no significant differences on any of the survey items between the households on the TF list and the other households in the sample.

*Participated in Tree Planting v. Did not Participate.* The 29 households where someone had assisted in the tree planting, regardless of whether the household was on the TF list, were compared with the 65 households reporting that no one in the household had assisted in the tree planting. The responses from the two groups were very different. Table 2 shows that those who had participated in the tree planting were significantly more satisfied with the way that the tree had been staked, its location, quality of maintenance, with the impact of the tree on the block and neighborhood, had a higher overall opinion of the tree, were more satisfied with the friendliness of the neighborhood, and were less likely to want to see the tree removed or to regret that this particular tree had been planted.

Four group comparison. ANOVA tests were used to compare the responses of the four samples (TF high involvement, TF low involvement, owner-planted and city-planted samples) with respect to five items: overall opinion of the tree, satisfaction with staking the tree, satisfaction with location, the belief as to whether or not the tree had improved the block or neighborhood, and satisfaction with the friendliness of the neighborhood. In each case the ANOVA tests were followed by Fisher's LSD (a multiple comparison test) to evaluate the differences among the four groups.

**Overall opinion.** Figure 1 shows that residents in the TF high involvement and in the owner-planted groups had a higher overall opinion of the trees than did residents in the TF low involvement condition.

*Tree Staking.* The TF high involvement group was significantly more satisfied than any of the other groups with the way the tree had been staked when planted.

*Tree Location.* The TF high involvement group

**Table 2. Participation in planting tree and satisfaction.**

Item	Degree of satisfaction (1-5)		X <sup>2</sup>	df	p
	Participated in planting (n=29)	Did not participate (n=65)			
Tree staked	4.4	3.9	4.3	1	.05
Tree location	4.5	4.0	7.3	2	.05
Quality of maintenance	4.4	3.7	8.9	2	.02
Tree improves block	4.9	4.3	9.3	1	.01
Overall opinion of tree	4.4	3.5	11.9	2	.01
Desire to remove tree	1.3	2.2	1.4	1	.001
Desire for different tree	2.2	3.1	4.3	1	.05
Satisfaction with neighborhood:					
Open space	4.0	4.1	0.9	2	NS
Quiet	3.7	3.9	0.8	2	NS
Place to raise children	4.2	3.6	4.6	2	NS
Greenery	4.0	3.7	3.4	2	NS
Friendliness	4.6	3.9	11.3	2	.01
Safety	3.7	3.1	3.5	2	NS
Attractiveness	4.1	3.7	2.1	2	NS
Privacy	4.1	3.7	3.7	2	NS

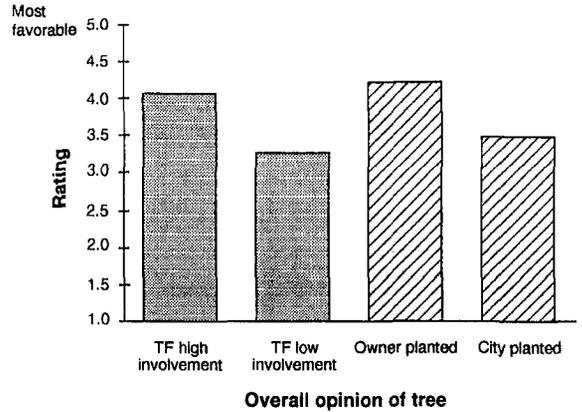
was significantly more satisfied with tree location than were the TF low involvement group and the city-planted group.

*Improvement of Street or Neighborhood.* The three other groups, relative to the TF low involvement sample, saw more improvement to the street or neighborhood brought about by the tree planting.

*Neighborhood Friendliness.* Residents in the TF high involvement condition gave higher ratings to neighborhood friendliness than did residents in the TF low involvement group; residents with owner-planted trees rated neighborhood friendliness higher than did those in the TF low involvement group.

**Discussion**

As predicted, participation was associated with greater satisfaction with tree and neighborhood than having a tree planted by the city or a voluntary organization. We are particularly impressed with the increased user satisfaction with tree location and staking when people do these things themselves. Presumably the city-planted trees and



**Fig. 1. Overall opinion of tree according to each respondent group.**

those planted by TF volunteers involved as much or greater professional judgment than when householders perform these activities, but satisfaction is higher in the latter case. Within the limits of the present study, households who paid for the trees themselves, either as private individuals or as part of the TF program, were more positive regarding the outcome than were households whose trees were planted by the city or without charge by TF volunteers.

We do not want to extend these findings beyond a single community, but if they are confirmed in further research, they have significant implications for the national movement to encourage urban forestry. Giving households street trees without involvement on their part or cost may be a strategic error. This point is consistent with other research in social and environmental psychology documenting the benefits of active user involvement in environmental change, e.g., community gardens, user-designed parks, building renovation, and neighborhood design (3), and with the results of cognitive dissonance theory which predicts that the more people pay for something, in exertion, time, or money, the more they will come to like it (1). Programs to actively include the residents in the design and planning produce more user satisfaction than efforts to do things for the residents which often contribute to alienation and hostility toward the outcome and the outside providers.

The present study lends itself to longitudinal analysis. Our intention is to return to these neigh-

borhoods in several years to make physical inspections of the condition of the trees. This will enable us to determine whether active resident involvement in tree planting is associated with improved tree health over time. This may also allow us to evaluate the effectiveness of instructions provided by Tree Fresno to assist homeowners with tree maintenance tasks.

**Acknowledgment.** This research was supported by a cooperative agreement with the North Central Forest Experiment Station and a challenge grant from the International Society of Arboriculture. We would like to express our appreciation to Susan Stiltz of Tree Fresno for help in identifying households.

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**Résumé.** Les citoyens qui plantèrent eux-mêmes leur propres arbres étaient plus satisfaits du résultat que ceux qui virent leurs arbres plantés par la municipalité ou une agence extérieure. Les résultats soulignent l'importance d'une implication active des résidents dans les programmes de plantation.

**Zusammenfassung.** Stadtbewohner, die ihre eigenen Strassenbäume pflanzen, sind zufriedener mit dem Ergebnis, als Anwohner, deren Bäume durch die Stadt oder eine auswärtige Firma gepflanzt wurden. Die Ergebnisse unterstreichen die Wichtigkeit von aktiver Bürgerbeteiligung an Baumpflanzprogrammen.