
The State of Urban Forestry in California -1992

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for:

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Protection

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EXECUTIVE SUMMARY

This report documents the status of urban forestry programs in California. It presents the results of the 1992 California Community and Urban Forestry Survey, which was conducted in the first quarter of 1993. We have included many comparisons between the results of this survey and the 1988 California Urban Forest Survey, which was conducted in the first quarter of 1989. Both surveys were commissioned by the California Department of Forestry and Fire Protection to encourage and support urban forestry programs in cities and counties.

The 1992 survey was returned by 74% of the incorporated cities and 81% of the counties in the state. California cities that have tree programs differ in several ways from those without tree programs. Large cities and cities in urbanized areas are more likely to have tree programs than small cities and cities located in rural areas. On average, cities with tree programs also have higher operating budgets on a per capita basis than cities that lack tree programs.

The survey results indicate that many tree programs have not fared well since the 1988 survey was conducted. Since 1988, city and county urban forestry programs have been adversely affected by the tight economic times that the state has experienced since 1990, the six-year drought that ended in 1993, and the freeze of 1990. Some of the findings for cities and counties with tree programs are presented below.

THE TREES OF THE URBAN FOREST

- **More than 5.8 million trees are being cared for** by cities and counties along streets and in parks (page 4).
- **The number of city-maintained street trees per resident has declined**, as population growth continues to outstrip street tree planting (pages 4-5).
- **About 38% of the reporting cities care for fewer trees now** than they did in 1988 (page 6).
- **City tree programs planted fewer trees in 1992** than in 1988. Organizations outside of city and county tree programs planted more than a third of all new city and county trees in 1992 (pages 8-9).
- **City and county tree programs continue to "downsize" their urban forests by planting more small-statured trees** and fewer large-statured trees (pages 14-15).
- **Many tree programs are still relying too heavily on only a few species** in their urban forests (pages 16-18).
- **Species selection is considered to be the most effective method for reducing damage by tree roots** to sidewalks and curbs (page 19).

MANAGING THE URBAN FOREST

- **Tree budgets have declined since 1988**, after adjusting for inflation. **The average city spends less than 1% of their total operating budget on the tree program.** On average, less than 0.1% of county operating expenses go toward tree care (pages 20-21).
- **The general fund remains the primary source of the tree program budget** in over 85% of city tree programs. Compared to 1988, more programs are using additional funding sources to reduce their reliance on the general fund (pages 22-23).

- About **31% of reporting city tree programs lost employees, and an equal percentage gained employees between 1988 and 1992**. Most programs that rely principally on their own employees for tree care work are staffed at a ratio of one employee for every 1000 to 5000 trees (pages 24-25).
- **Most tree programs (83%) used private contractors** for at least some of their tree care work in 1992, up from 62% in 1988 (page 26).
- **No progress has been made toward increasing planning intervals** since 1988. Few tree programs plan beyond a five-year horizon, and even short-term planning has suffered in many programs (pages 27-29).
- **Over 70% of cities and counties monitor tree-related hazards** to limit tree-related liability claims (page 30).
- Compared to 1988, **many more tree programs are recycling their waste wood** into mulch, firewood, and other uses. Fewer tree programs are disposing of their pruning waste in landfills (page 33).
- **Nearly 70% of all tree programs require employees and contractors to follow established pruning standards**. Few cities or counties require utilities or private tree workers to follow pruning standards (page 34).
- The undesirable practice of **tree topping is common in many California communities** (page 35).
- About 40% of the responding tree programs reported that **California's extended drought caused increased tree mortality**. Many tree programs responded to the drought by planting more drought-resistant tree species (page 37).

THE COMMUNITY AND THE TREE PROGRAM

- **Ratings of local government support for the tree program have decreased since 1988**, but ratings of citizen support have remained constant (page 38).
- **Citizen commissions or boards interact with the tree program in almost half of the cities** and a quarter of the counties. Both citizen and local government support were rated higher in communities with commissions or boards that interact with the tree program (page 40).
- In cities with tree ordinances, **only about half of the respondents thought that their city tree ordinance was adequately enforced**. Nearly two-thirds of the respondents from cities without tree ordinances thought that their city needed a tree ordinance (pages 42-43).
- **Increased funding for the tree program was the highest priority need** identified by survey respondents (page 45).

Faced with declining budgets, cities and counties will need to focus their urban forestry efforts on areas where they can provide the greatest impact to the community. In order to accomplish the tasks needed to maintain the urban forest, tree programs may need to further expand their use of volunteer labor to stretch scarce funds. These demands will increase the need for strategic long-range planning by tree programs, an area of urban forestry that has been neglected by most California cities and counties.

INTRODUCTION

In 1988, the California Department of Forestry and Fire Protection Urban Forestry Program commissioned its first survey to assess the urban forestry programs of California's cities and counties. The results of that survey were presented in a comprehensive report, *The State of Urban Forestry in California: Results of the 1988 California Urban Forest Survey*, which was distributed statewide. Many city and county tree program managers used the report to compare the status of their programs with others in the state. The information in the report has also been used to support proposed program changes and budget requests.

In the years that have passed since the 1988 survey, state and federal government efforts in support of urban forestry have increased greatly. In the same period, California has experienced the most prolonged drought of the century, and its once robust economy has suffered through a damaging recession. There is a clear need to reevaluate the current status of urban forestry programs in light of these developments.

At the start of this project, we solicited feedback on the 1988 report from city and county tree program managers and other urban foresters. We used the comments we received to help plan a new urban forestry survey. In many instances, questions from the 1988 survey were

used again in the new survey so that direct comparisons could be made. The new survey was conducted in the first quarter of 1993.

This report presents an updated view of the current status of urban forestry in California, based on the new survey. The report highlights changes in city and county tree programs that have developed since 1988. The information presented in this report will be of interest to anyone involved with urban forestry planning, management, education, and advocacy in California.

Except where otherwise noted, the results presented in this report are based on responses to the 1988 and 1992 surveys. Technical notes and references cited in the report are included in Appendix 1. The survey questionnaire is also included as Appendix 5.

Requests for copies of this report and other inquiries about the report can be directed to:

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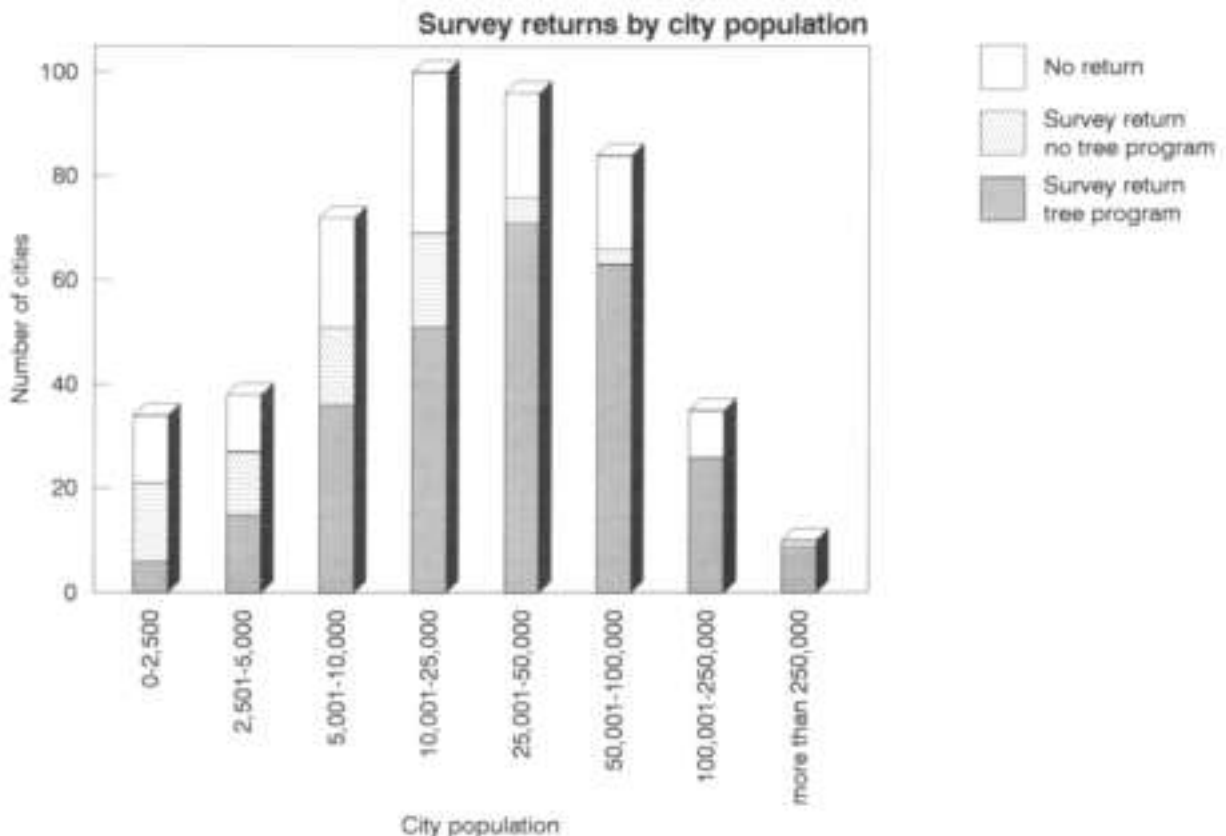
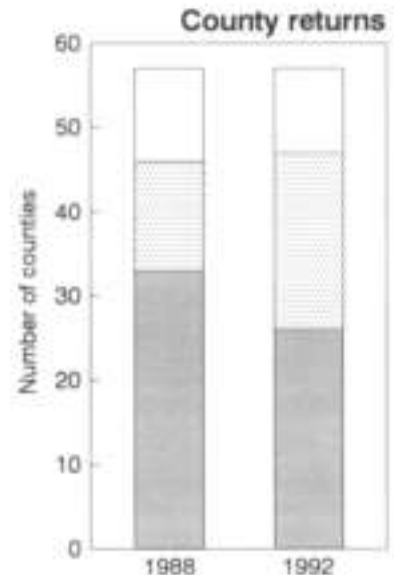
SURVEY RETURNS

The 1992 California Community and Urban Forestry Survey was mailed to all 468 cities incorporated as of December 1992, and to all 58 counties in the state. Since 1988, when the survey was first conducted, 18 additional cities have become incorporated.

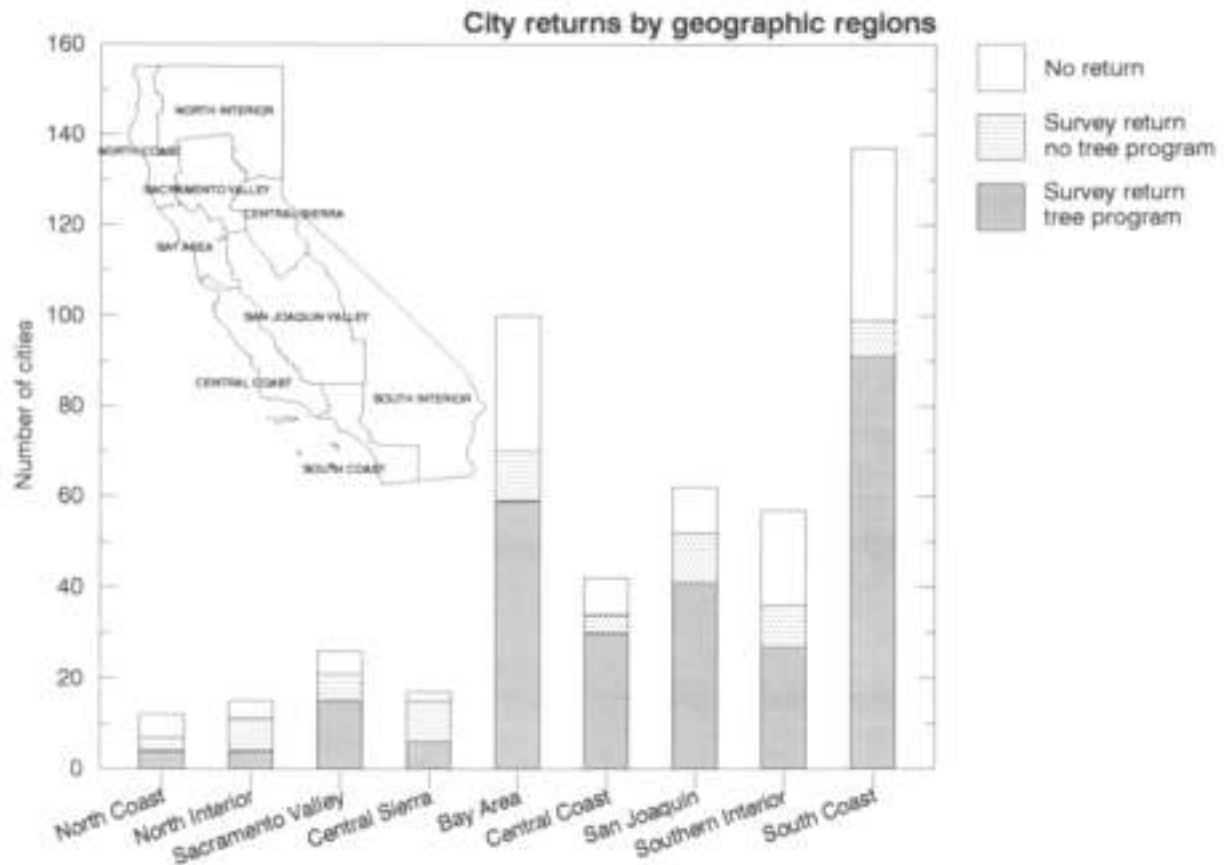
For comparative purposes, we defined nine geographic regions within the state drawn along selected county boundaries (facing page inset map; Appendix 3). Within these regions, response to the survey ranged from 58% to 88% (facing page, graph).

Overall, **74% of the incorporated cities returned the survey.** We received 361 survey returns from 349 cities, since nine cities sent returns from more than one department. **Eighty-one percent of the counties also responded to the survey.** We received 49 returns representing 47 different counties. Two counties sent returns from more than one department.

Among cities, return rates were lowest (62%) in the smallest population group and highest (90%) in the largest population group (lower left graph). Return rates in the remaining population groups were more similar to each other, ranging from 68% to 80%.



SURVEY RETURNS



Any city or county that reported using public funds to plant or care for trees is considered to have a "tree program" in this report. The term "tree program" therefore includes all types of tree care or planting efforts, small or large, simple or sophisticated. Among cities that returned the survey, 281 (80%) had tree programs of some sort. The remaining 68 responding cities, and 21 of the 47 responding counties (facing page, upper graph) were categorized as having no tree program. However, it is likely that even some of these cities and counties spend minimal amounts of public funds on tree care activities.

Some cities are more likely to have tree programs than other cities. **Large cities are more likely to have tree programs than small cities** (facing page, lower graph). Cities in urban areas are more likely to have tree programs than those in rural areas (graph above).

Most of the information in this report is based on responses from the cities and counties with tree programs. The number of responses to each question varies because some respondents were not able to answer every question. Cities and counties without tree programs were asked to fill out the ordinance section of the survey, and their responses are included in the analyses for those questions. Paired comparisons between the 1988 and 1992 surveys are drawn from the 220 cities and 34 counties that responded to both surveys. A complete list of cities and counties responding to the 1992 survey is presented in Appendix 4.

THE TREES OF THE URBAN FOREST

TREE NUMBERS

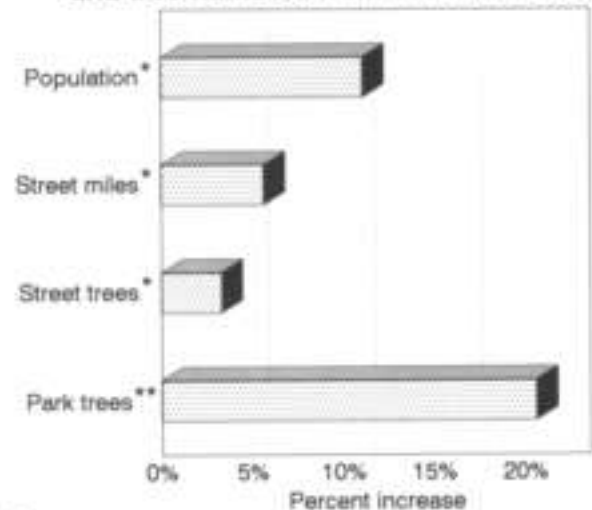
Almost 5.8 million street and park trees are maintained by cities and counties that returned the survey (graph below). We estimate that in 1992, there were approximately 5.2 to 6.3 million street trees and 1.3 to 1.5 million park trees under municipal care in all of California's 468 incorporated cities. The wide range in these estimates is due to uncertainty in estimating tree numbers for the nonresponding cities.

To find out how tree numbers have changed since the 1988 survey, we compared tree numbers for cities that provided data in both surveys. Since 1988, there has been a large increase in the number of park trees, but a small increase in the number of street trees (graph right).

City street tree numbers have not kept pace with increases in city population and street mileage between 1988 and 1992. Among cities reporting street tree numbers in both surveys, the average number of street trees per street mile has decreased slightly (1.9%) since 1988, from 105.5 to 103.5 trees per street mile. In these same cities, the average number of street trees per person has decreased 6%, from

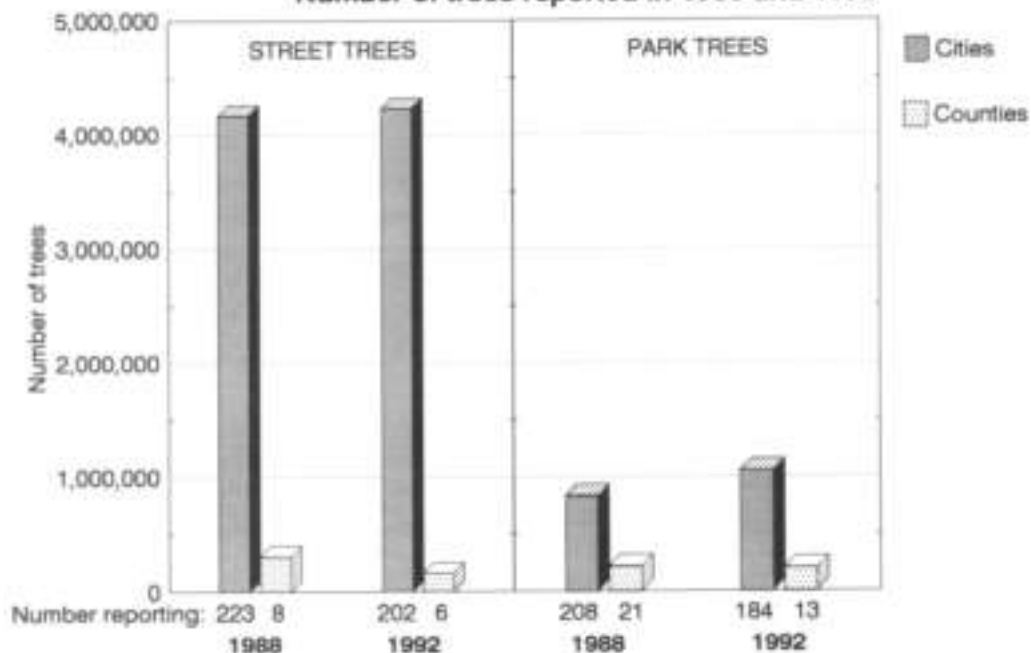
.26 in 1988 to 0.24 in 1992. This continues a trend noted in our previous report (Bernhardt and Swiecki 1989). Between 1979 and 1988 the number of street trees per person and street trees per street mile declined despite a small increase in total street tree numbers.

Increases in city population, street mileage, and tree numbers from 1988 and 1992



* for 135 cities providing street tree numbers both years
 ** for 116 cities providing park tree numbers both years

Number of trees reported in 1988 and 1992

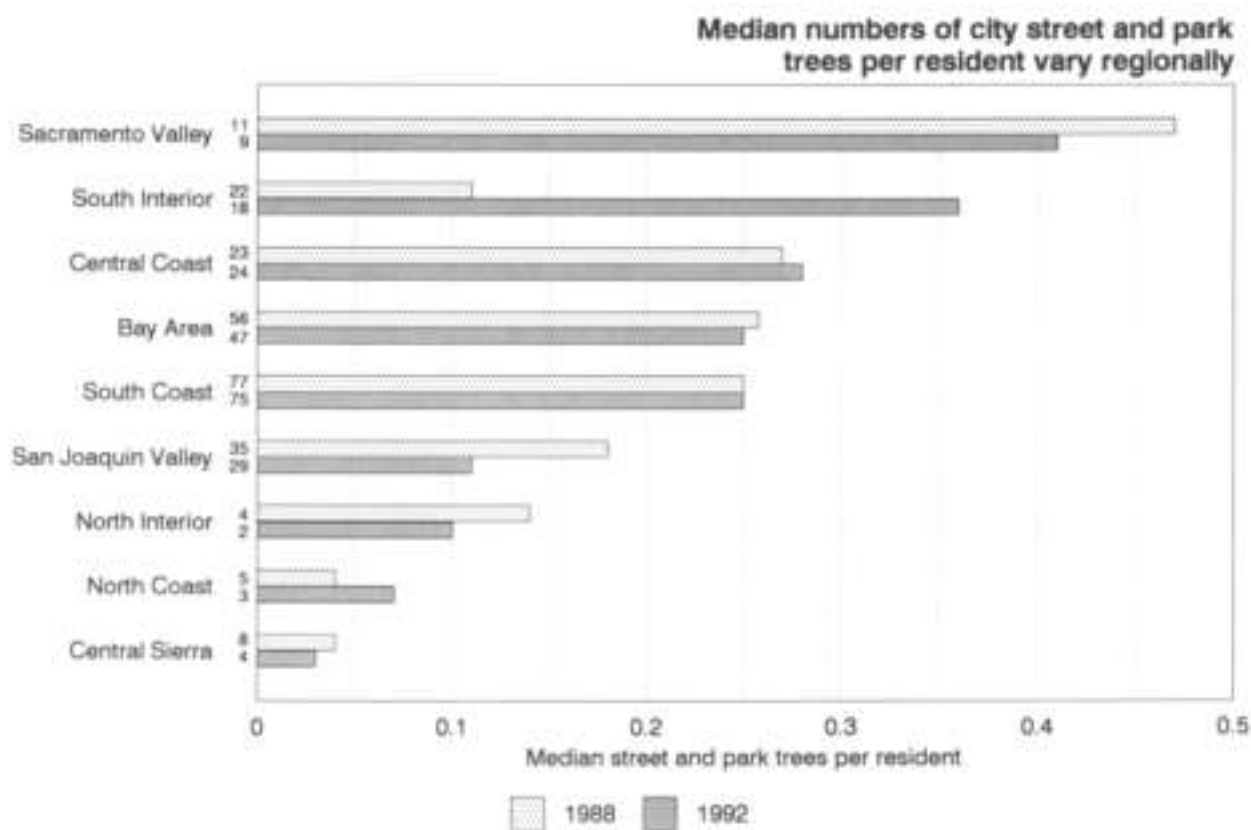


TREE NUMBERS

The number of street and park trees reported by cities with tree programs ranged from 50 to 760,000. When programs are compared by looking at the number of trees they care for on a per-resident basis, the differences become smaller. **Almost all cities with tree programs care for between 0.01 and 1 trees per resident.** Half of all cities care for less than 0.24 trees per resident.

The number of city-maintained street and park trees per resident also varies between different regions of the state. In general, **cities in rural regions of the state care for far fewer trees per resident than cities in more urban regions** (graph below). There is also a wide range of variation in trees per resident within many of the regions.

We asked cities and counties to estimate the number of open space and wildland trees under their care. This was a new question for the 1992 survey. Eighty-one cities (23% of those responding) and 13 counties (28% of those responding) indicated that they are responsible for trees in open spaces and wildlands. The 52 cities that provided estimates reported a total of 575,175 open space and wildland trees under their care. A total of 316,400 open space and wildland trees were reported by the seven counties that provided estimates for these tree numbers.



Number at left of bar represents the number of cities reporting street and park tree totals

TREE GAINS AND LOSSES WITHIN PROGRAMS

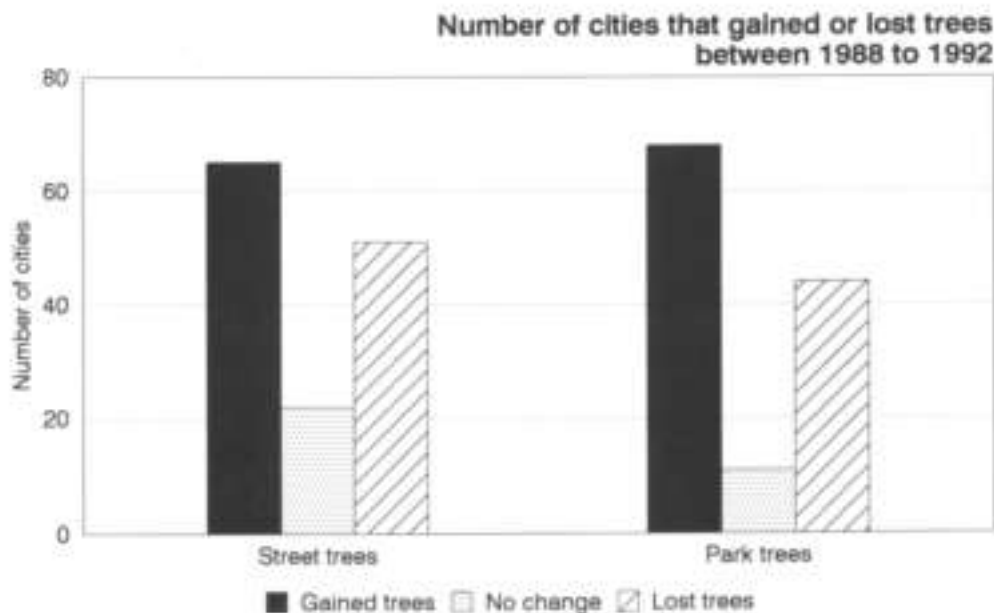
Statewide changes in city tree numbers do not reveal gains and losses by individual tree programs. An examination of tree numbers from cities that provided data in both survey years shows that **about half of these cities care for more trees now than they did in 1988** (graph below). Over 85% of the cities that reported gains increased their tree numbers by more than 10%.

On the other hand, **38% of the cities reported that they care for fewer trees now than they did in 1988** (graph below). In more than a quarter of these cities, tree totals dropped by more than 50%.

The following three factors probably account for most of the reported decreases in street and park tree numbers.

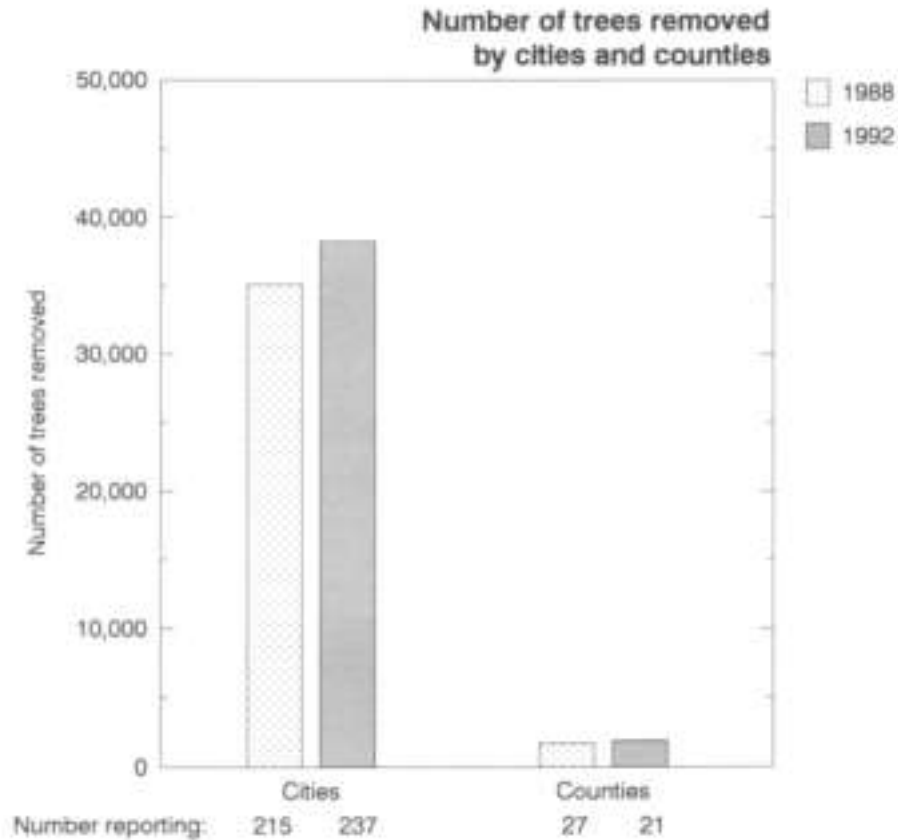
- *Estimation errors.* In cities that lack tree inventories, small changes in tree numbers may be due to different estimates for the two survey years. This type of error can result in both overestimates and underestimates of tree numbers.

- *Discontinuing tree care.* Budget cutbacks have forced some tree programs to abandon maintenance responsibilities for trees that had been under their care.
- *Removal exceeds planting.* Of the 174 cities that provided estimates for both trees planted and removed, **18% removed more trees than they planted.** Many cities indicated that they experienced increased tree mortality during the six year drought that ended in 1992 (see also page 37). The devastating freeze of 1990 also contributed to increased tree mortality between 1988 and 1992.



Based on 135 cities reporting street tree totals and 116 cities reporting park tree totals in both survey years

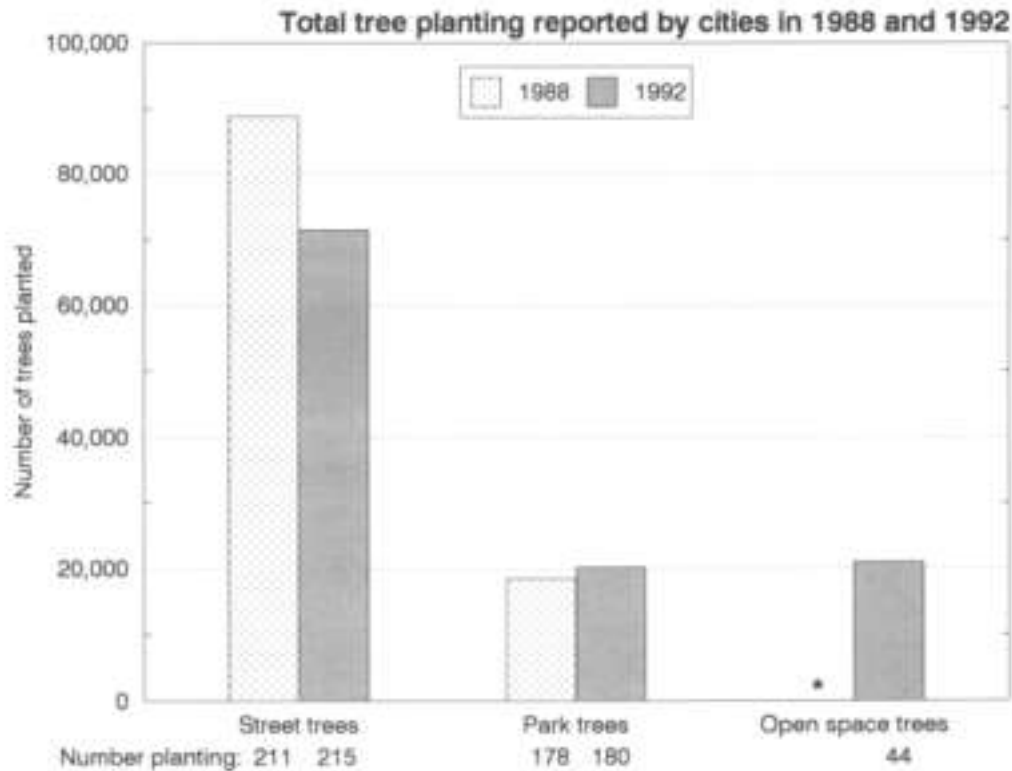
TREE REMOVAL



More cities reported removing trees in 1992 than in 1988 (graph above). The total number of trees removed was also higher in 1992 than in 1988 (graph above). Tree removals were up 3% (from 29,015 to 29,875) among 151 cities that estimated the number of trees they removed in both survey years. Among programs that reported both tree removals and overall tree numbers, the majority (61%) removed less than 1% of the trees under their care.

In 1992, over three-quarters of the cities with tree programs reported that they planted more trees than they removed. This same pattern was observed in the 1988 survey.

TREE PLANTING



*Open space tree planting totals were not requested in 1988

Fewer trees were planted by city tree programs in 1992 than in 1988. Based on total numbers reported in both years (graph above), street tree planting has declined substantially. Among cities that provided tree planting data in both 1988 and 1992, street tree planting dropped 27% and park tree planting dropped 4% from 1988 to 1992.

Many respondents indicated that they were planting fewer trees as a result of the drought (page 37). Although the drought is officially over, tree planting in many cities may continue to be curtailed by reduced tree program budgets (page 20).

Few county tree programs report planting trees, and the number of trees planted by each program is generally small. Trends in tree planting among counties are therefore much less clear. Among counties that provided tree planting data, street tree planting has increased and park tree planting has decreased from 1988 to 1992 (table right).

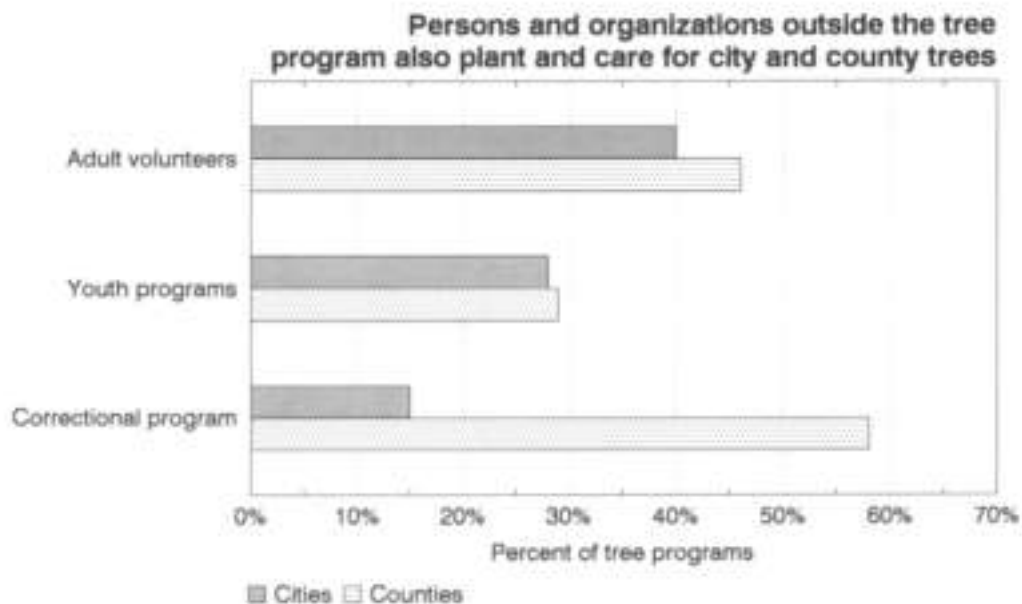
The reported number of trees planted in city open space or wildland areas in 1992 was equal to the number planted in city parks (graph above). The purpose of planting open space trees is to restore or restock areas where native woodlands or forests once prospered. In some cases, open space plantings are required as mitigation for the loss of existing tree or woodland resources, so not all of these plantings represent significant net gains in tree numbers.

Tree planting reported by counties in 1988 and 1992*

	1988	1992
Street trees planted	216	1524
Counties reporting	6	8
Park trees planted	5560	3772
Counties reporting	20	15

* Excludes data from Orange County (see Appendix 1)

TREE PLANTING BY VOLUNTEERS AND DEVELOPERS



Volunteer citizen groups, developers, and other persons outside of the tree program also plant city and county street and park trees. In 1992, **persons and groups other than tree program employees planted 54,140 city-maintained trees in 114 cities.** This represents 37% of the total number of trees reported planted in 1992. Eight counties reported 22,676 trees planted by people outside the tree program, although almost all of these were planted in Orange County.

Certain jurisdictions have used these outside planting efforts to accomplish the bulk of their plantings. For example, San Jose reported 23,000 trees planted by outside groups, more than any other city and ten times more trees than their own tree program planted. In Orange County, 22,000 of the 35,600 county street, park, and open space trees planted in 1992 were planted by persons outside of the tree program.

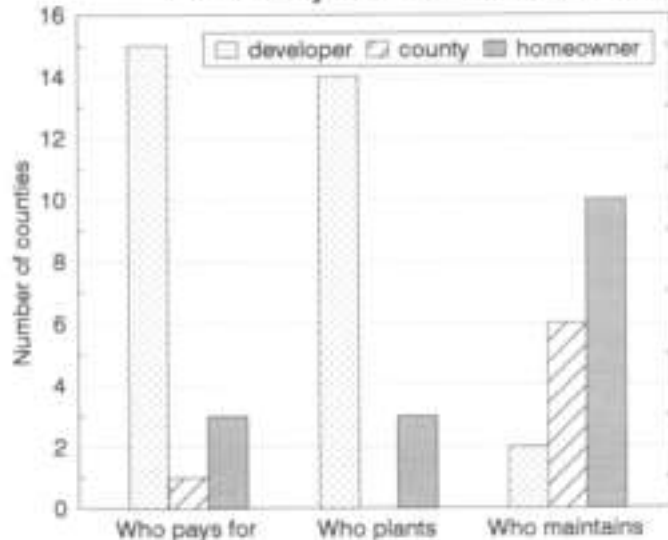
In about 40% of the tree programs, adult volunteers play an active role in helping to plant and care for the urban forest (graph

above). Youth programs, administered through schools or groups such as Boy and Girl Scouts, are also active in urban forestry in about 28% of the tree programs. Workers from correctional programs or institutions are used by a higher percentage of county tree programs than city tree programs (graph above), but such workers are not available to all cities.

Successful tree planting projects by local groups can contribute to a sense of community ownership and pride in the urban forest. In addition, by having trees planted by groups outside the tree program, cities and counties can increase the number of public trees without a large investment of public funds. However, since city and county programs assume tree care responsibilities for these plantings, they do not come entirely free of cost. Community planting efforts can help generate public enthusiasm for trees. The challenge that faces tree program managers is to sustain and direct this enthusiasm into support for the long-term effort of maintaining and managing the urban forest.

TREE PLANTING IN RESIDENTIAL SUBDIVISIONS

Who pays for, plants, and maintains trees in new county residential subdivisions?

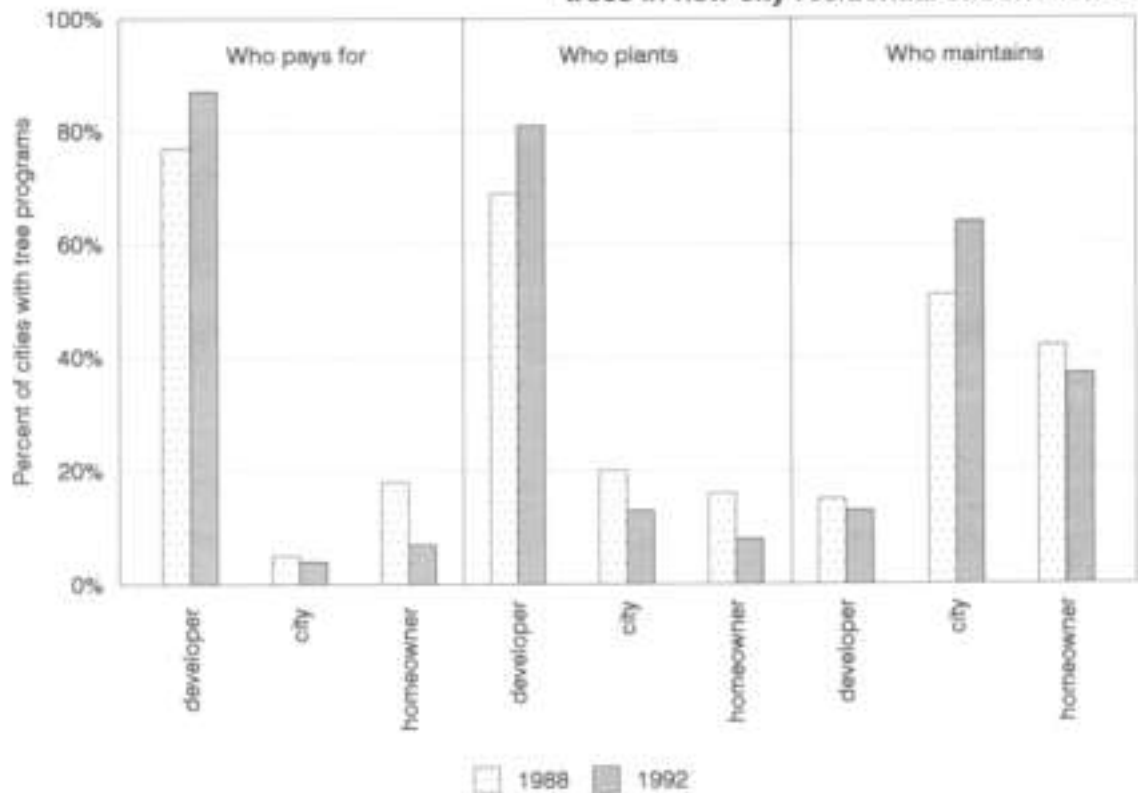


1992 data only

Tree planting in new residential subdivisions by developers is a major source of new street trees in many communities (graphs left and below). **Over 80% of cities with tree programs require developers to pay for and plant trees.** Overall trends in tree planting in new residential subdivisions have not changed since 1988 (graph below).

In over 60% of the cities, the tree program assumes responsibility for maintaining street trees in new residential areas (graph below). Thus, residential growth usually leads to more tree care duties for the tree program. County tree programs are much less likely than city programs to maintain trees in new residential subdivisions (left graph).

Who pays for, plants, and maintains trees in new city residential subdivisions?



TREE PLANTING

From Orange County: *We rely heavily on requiring developers and successor homeowner associations to install and maintain probably 80% of all new community trees (excluding public parks).*

From Los Angeles County: *A Girl Scout Grove was planted at Kenneth Hahn State Recreation Area from liner stock, and the area has matured into an urban forest.*

From the City of Danville: *Danville has established a program called "Trees of Danville" whereby citizens or businesses can donate a set amount of money to get a street tree planted, with decorative paving and a bronze plaque with the donor's chosen text at the base of the tree. The only problem is that the donation hasn't covered costs.*

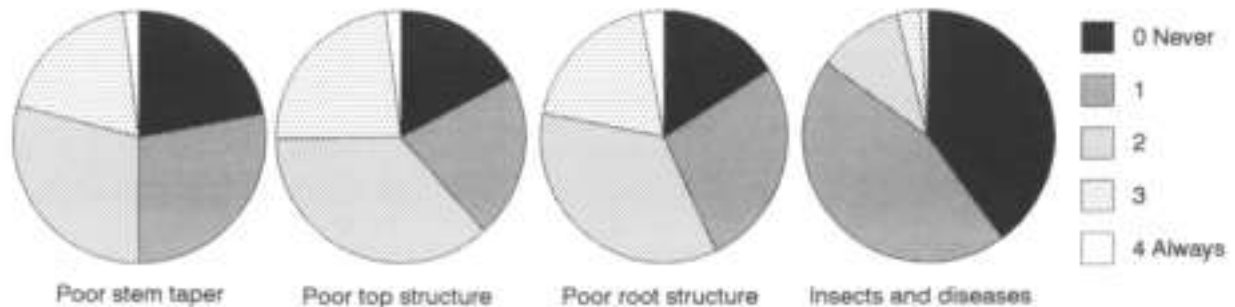
From the City of Carlsbad: *The city had received several calls regarding an Arbor Day/Earth Day program. With the help of several groups we were able to plant 1500 to 2000 trees on public land in 1990. In 1991 we did things a little differently. The city purchased 1000 five-gallon trees and gave them to the public to be planted on private property. These programs were very successful.*

From the City of Lincoln: *With budget cutbacks limiting tree planting, the City of Lincoln tries to keep an ear to the ground in looking for alternative funding opportunities. One recent example was a Caltrans road-widening project on the outskirts of town which required extensive tree replacement mitigation on the part of Caltrans. The city took the initiative in contacting Caltrans to volunteer potential "mitigation planting areas" within an existing city park and future expansion area of the park. City staff will be coordinating with the Caltrans Landscape Architecture Division to bring the proposal to fruition.*



NURSERY PLANTING STOCK

Reported frequency of selected problems in tree planting stock



Most of the trees in California's urban forest start out as nursery-grown planting stock. The quality of the planting stock has a significant impact on tree health, vigor, and longevity. To obtain a healthy, high-quality tree, it is critical to start with planting material that is not compromised with structural defects or other problems.

We asked survey respondents to indicate how frequently they encountered certain quality defects in nursery stock. Although almost a quarter of the respondents indicated that problems such as poor root structure were fairly common, a sizable percentage of the respondents indicated that they never encountered these same problems (graph above). Differences between nurseries or species used could explain some of this discrepancy. However, it is more likely that **certain quality problems in nursery stock are simply not recognized by many tree managers.** Updated standards for nursery stock quality have been published (Harris 1992), and some cities have begun to use more stringent specifications for planting stock to improve the success rate of their tree plantings.

Horticultural researchers and other experts have long recognized the need for better quality nursery stock, but the quality of planting stock is low on the list of concerns of most city and county tree managers. When respondents were asked to select the three greatest needs of their tree program from a list of seven choices, "Better quality planting stock" tied for last place (see page 45). As more tree managers begin to recognize nursery stock defects that can compromise tree performance, better quality planting stock may become a higher priority.

From the City of Vallejo: We have had trees falling over left and right throughout the City as well as trees dying for no outward physical reason. So we started digging trees up. We found that all were buried too deep, some well below graft, and every one was root bound. We now require that all trees be inspected prior to shipment from the nursery and then they are to be planted 1 to 2 inches higher than the soil surface. We also have written tighter specs on tree selection and are ruling out some of the more hazardous trees.

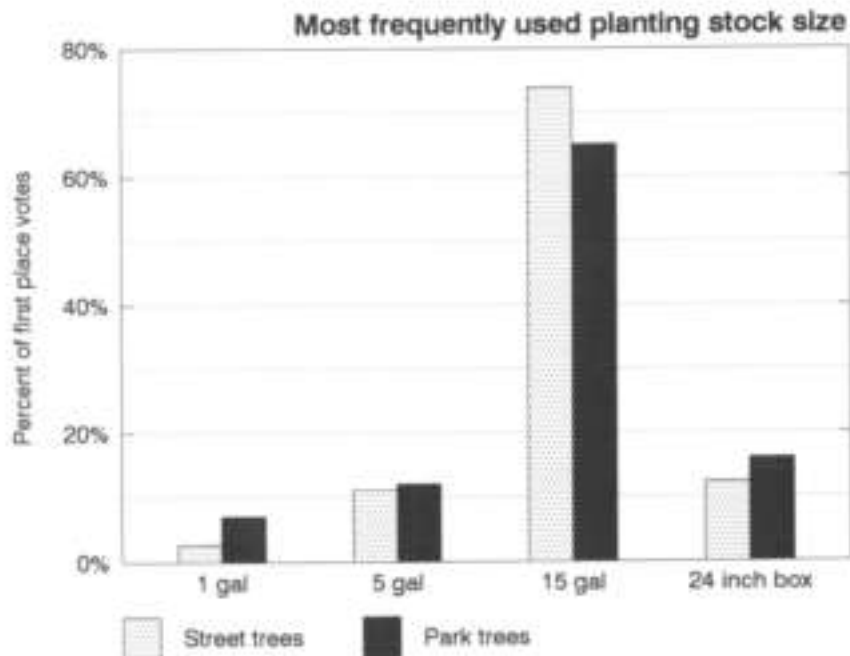
NURSERY PLANTING STOCK

In 1992, at least one-quarter of the tree programs were unable to obtain the nursery stock they wanted. Cost, quality, size, and cultivar availability were all listed as problem areas (table right).

We also asked respondents to rank how commonly they used different sizes of tree nursery stock. By far, the most commonly used size for both streets and parks is 15 gallon stock (graph below). A few programs wrote in that they primarily plant bare-root stock rather than container-grown planting stock. By using bare-root stock, these programs avoid many of the root problems associated with container-grown stock. On the other hand, the use of bare-root stock may limit species availability and planting season.

In the past year, which of these factors have affected your tree planting program?

Factor	Percent of programs affected in the past year
Desired trees available but too expensive	35%
Tree nursery stock of acceptable quality not available	31%
Desired sizes of tree nursery stock not available	28%
Desired tree species or cultivars not available	26%



MATURE SIZE OF PLANTED TREES

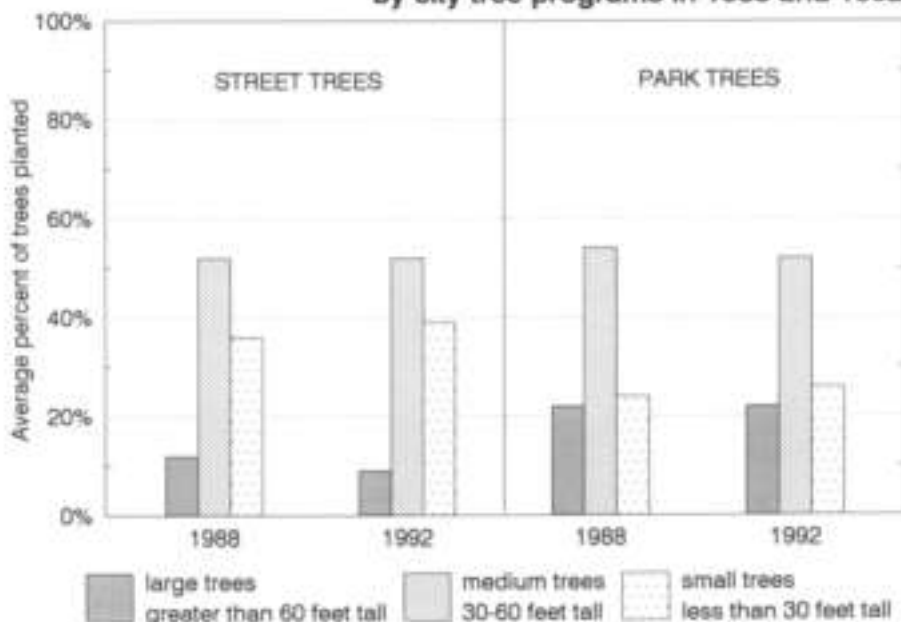
In 1980, 68% of the California city tree managers responding to a survey (Giedraitis and Kielbaso 1982) indicated that there was a trend toward planting small-growing rather than large-growing street trees. Results from the 1988 California Urban Forest Survey showed that in many cities, large-statured trees were being replaced by small-statured trees. Data from the current survey also indicate that **California cities are continuing to "downsize" their urban forests** by planting far more small-statured than large-statured trees.

Based on estimates by tree program managers, over 90% of the trees planted along city streets and almost 80% of the trees planted in city parks will be small or medium sized at maturity (graph upper right). Overall, counties planted more small street trees and more large park trees than cities did in 1992 (graph lower right).

Compared to 1988, more tree programs reported planting small-statured trees in 1992. In 1988, 77% of responding programs planted at least some small trees, whereas in 1992, 85% of programs planted at least some small trees. In both survey years, **42% of the responding programs planted no large-statured trees at all.**

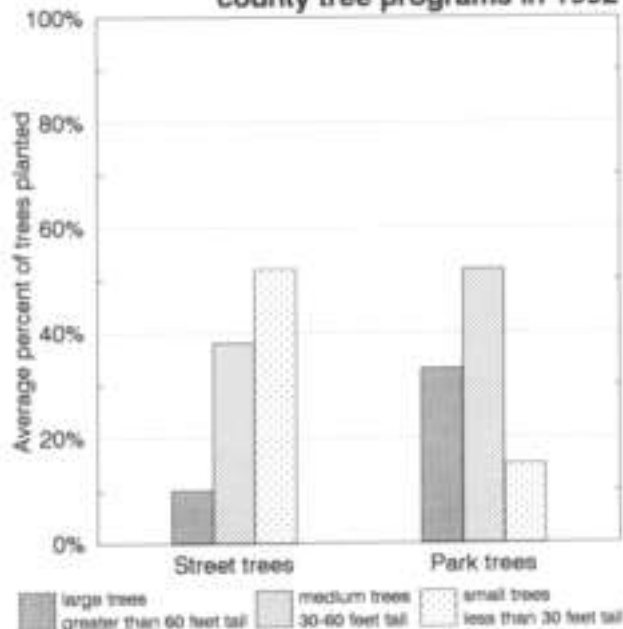
Many of the benefits that the urban forest provides are directly related to tree size. Compared to small trees, large trees are more effective at providing shade and cooling for energy conservation, absorbing air pollutants, and intercepting rainfall to slow storm runoff. However, despite the increased awareness of these tangible economic benefits, results from the 1992 survey show that the long-term trend toward planting small-statured trees is continuing. If the urban forests of California become significantly shorter, many of the

Size at maturity of street and park trees planted by city tree programs in 1988 and 1992



benefits that they provide will be greatly diminished.

Size at maturity of trees planted by county tree programs in 1992



FACTORS INFLUENCING PLANTING DECISIONS

Tree program managers were asked to rate four factors for their importance when choosing trees for streets and parks:

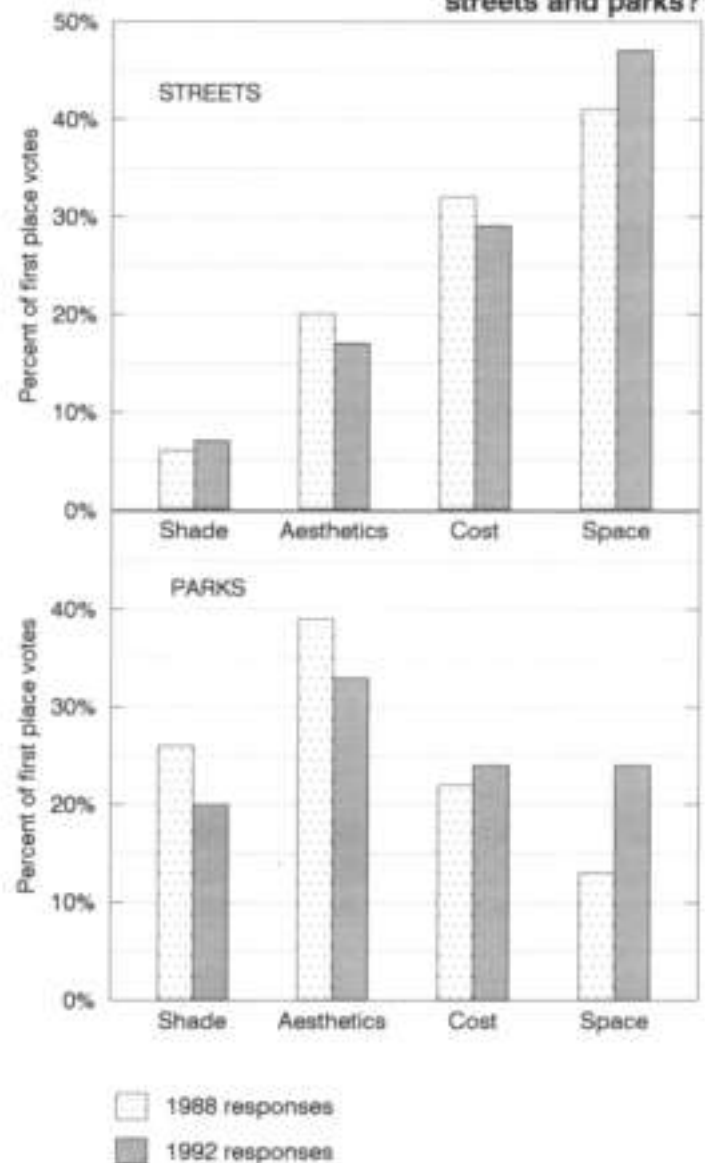
- amount of shade the tree will cast,
- aesthetics of the tree,
- cost of future maintenance, and
- space available for growth.

'Space available for growth' was consistently rated as the most important factor for selecting street trees. The overall ranking of the four factors was identical in 1988 and 1992 (graph upper right).

'Aesthetics of the tree' was most frequently cited as the primary consideration for selecting park trees (graph lower right). However, there was no clear consensus on the importance of the other three factors in choosing trees for parks. The amount of space available for growth was given higher priority in the 1992 survey than in the 1988 survey.

These tree selection priorities help to explain why large-statured trees, in spite of their considerable environmental benefits, are not planted more often in the urban forest. If communities want to have more large-statured trees, they will need to increase the space available for trees and find additional funding to pay for maintenance.

Which factor is most important when choosing trees for streets and parks?



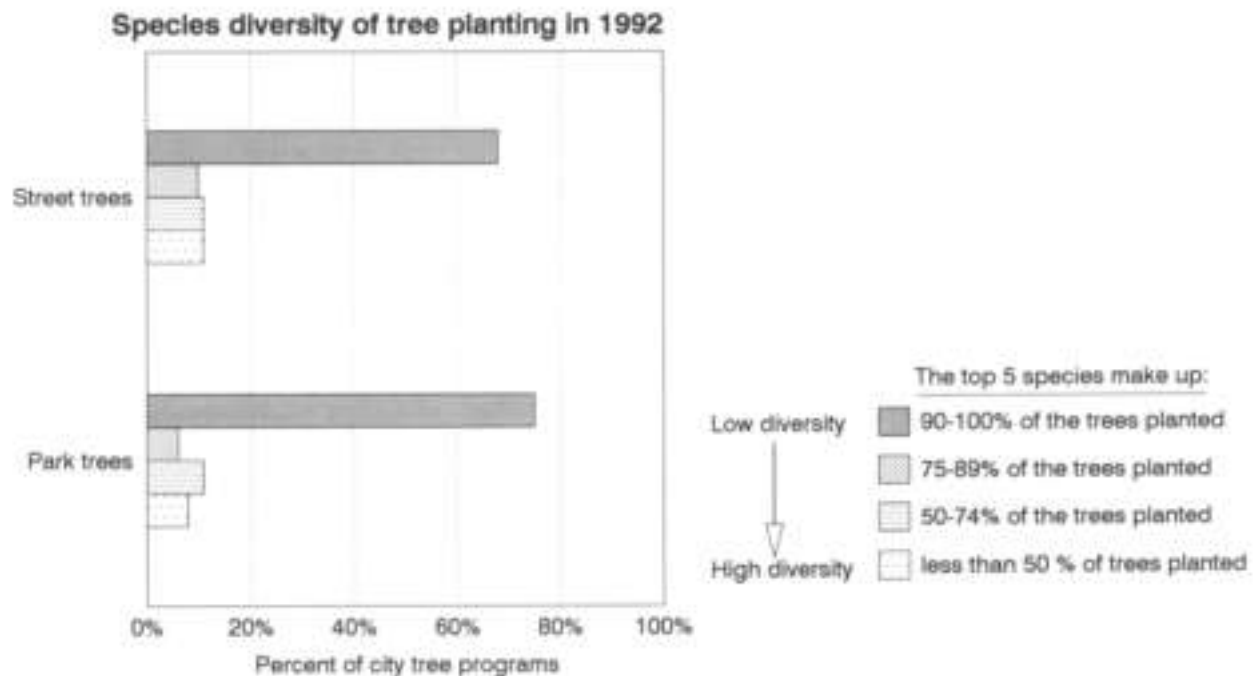
SPECIES DIVERSITY

Results from the 1988 survey showed that the species diversity of the urban forest was low in most California cities. Species diversity in street and park plantings is important because it helps provide a measure of stability to an urban forest. In an urban forest which is made up of a diverse mix of appropriate tree species, problems that develop with one tree species will have a minor impact on the condition of the urban forest as a whole. On the other hand, if the urban forest is dominated by one or a few species, any problem that develops in one of the common species will be greatly magnified. Such problems can have serious, long-term impacts on the condition of the entire urban forest.

Most tree programs did not have high levels of species diversity in their 1992 plantings. In 68% of the reporting cities, more than 90% of the street trees planted were drawn from five or fewer species.

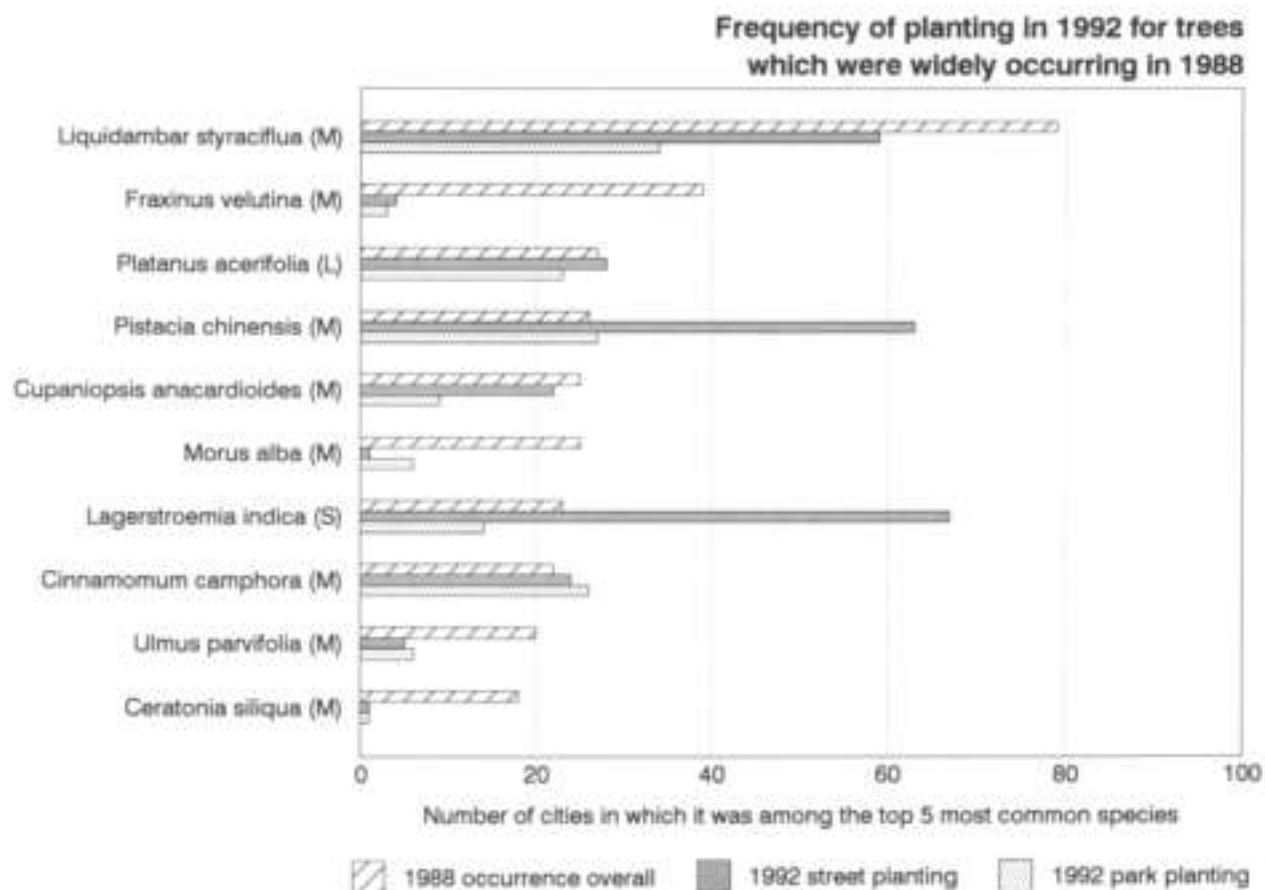
or fewer species (graph below). In 75% of the cities, more than 90% of the park trees planted were also drawn from five or fewer species. Among responding counties, 16 of 17 programs used five or fewer species for all of their street and park tree plantings in 1992.

In an established urban forest, higher levels of species diversity can be developed over a period of many years by planting an appropriate mix of species. If different species are planted from year to year, the mix of species planted in a single year is less important. Strategic long-range planning is needed to ensure that year-to-year planting selections will contribute to the overall goal of achieving a stable urban forest.



Based on 134 responses for street trees and 93 responses for park trees

SHIFTS IN SPECIES SELECTION



Many programs no longer plant some of the street and park tree species that have been widely used in the past. Thirty-five percent of responding programs did not plant significant numbers of any of their five most commonly occurring trees. Two main factors appear to contribute to this change: avoiding 'problem' species and planting smaller trees.

The graph above helps to illustrate these two trends. The tree species listed in the graph above were most frequently listed among the five most common city street and park trees in the 1988 survey. The number of cities that reported these species among their five most commonly planted trees in 1992 is plotted in the same graph.

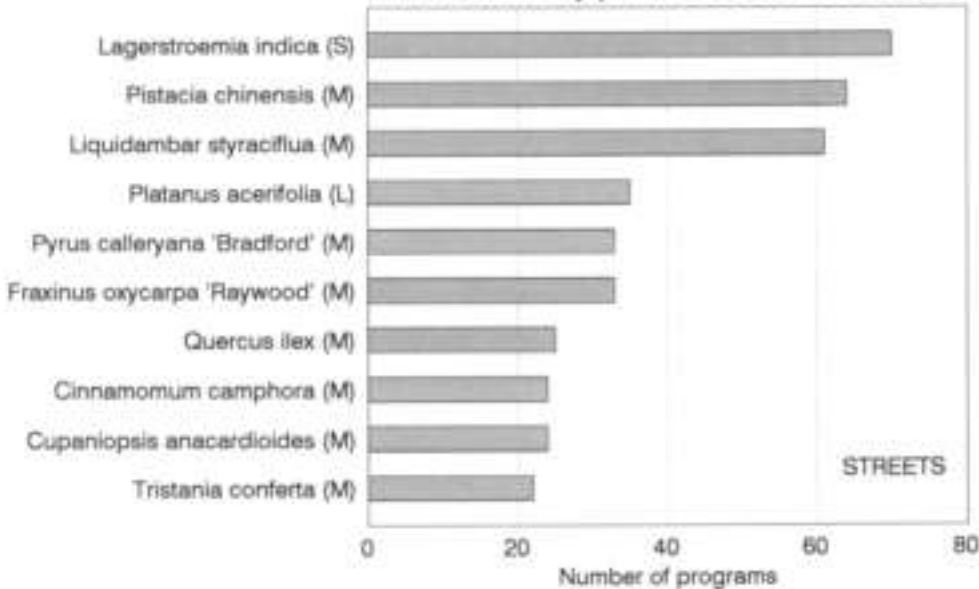
Four species that occurred commonly in the urban forest in 1988 were planted infrequently in 1992 (graph above). Like other widely-planted species and cultivars that were once thought to be 'ideal', these species have turned

out to have major drawbacks. Each of these four species was reported to have several significant problems in the 1988 survey. For Modesto ash (*Fraxinus velutina* 'Modesto') and Chinese evergreen elm (*Ulmus parvifolia*), susceptibility to severe disease and insect attack has proved to be a major problem. The roots of carob (*Ceratonía siliqua*) and fruitless mulberry (*Morus alba*) have been found to damage sidewalks or other pavement.

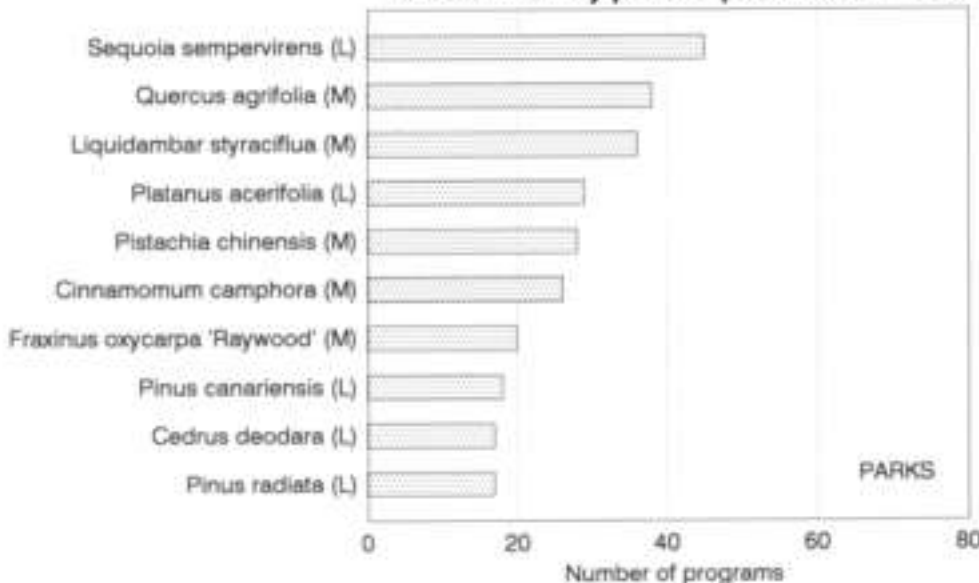
Two species, crape myrtle (*Lagerstroemia indica*) and Chinese pistache (*Pistacia chinensis*), are planted as street trees more often now than in the past (graph above). These species have been successful in small street tree planting spaces. Small trees, such as crape myrtle, may pose few maintenance problems, but also provide smaller benefits than large-statured trees.

COMMONLY PLANTED TREES

Species listed most frequently as among the most commonly planted street trees in 1992



Species listed most frequently as among the most commonly planted park trees in 1992



Graphs show city and county combined responses
 Letters in parentheses refer to likely mature height of tree:
 S-less than 30 ft, M-30 to 60 ft, L-more than 60 ft

Of the hundreds of native and cultivated tree species that are grown in California, a few tend to be used much more frequently than others. With the exception of London plane (*Platanus acerifolia*), the most commonly planted street tree species are generally of small to moderate stature. All of the most common species are hardwoods, and none are native to California. The three most commonly planted street trees, crape myrtle (*Lagerstroemia indica*), Chinese pistache (*Pistacia chinensis*), and sweet gum (*Liquidambar styraciflua*), were cited almost twice as often as any other street tree species (upper left graph).

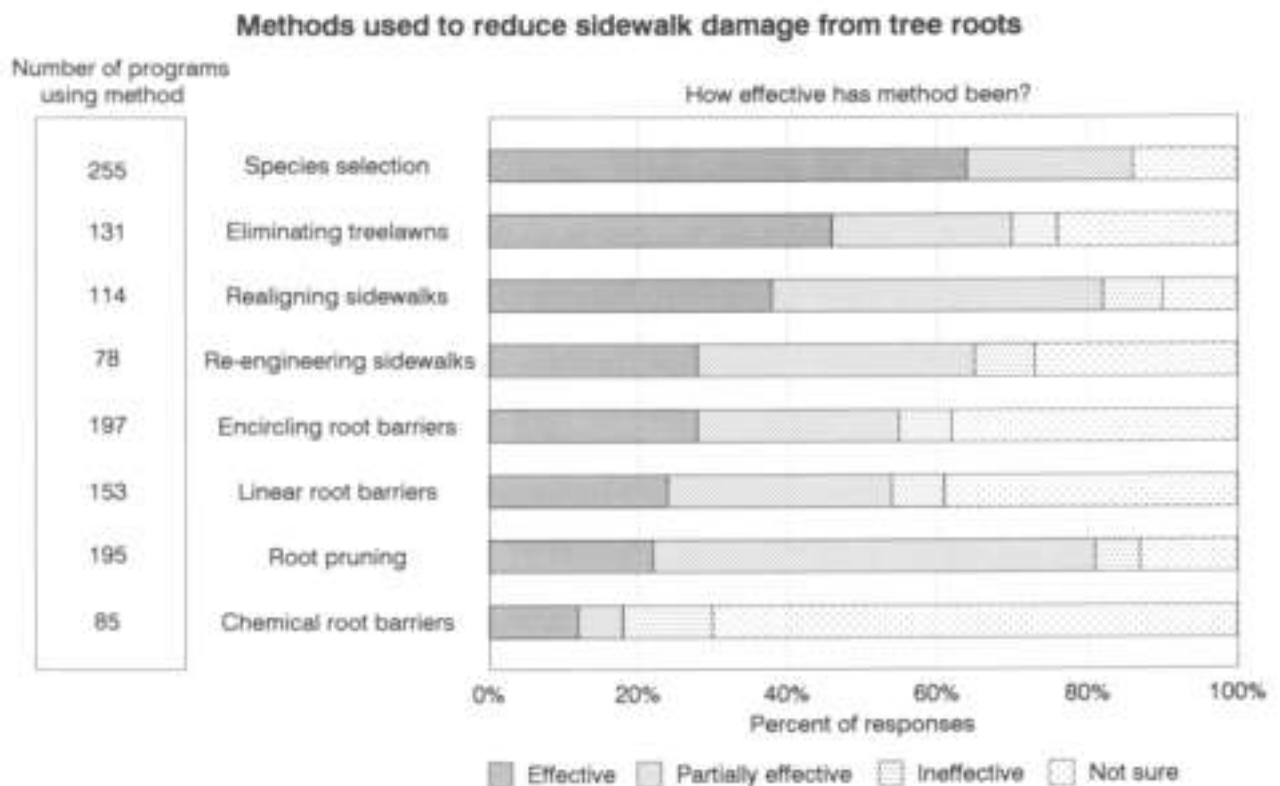
The most commonly planted park trees are a somewhat more diverse group, because growing conditions in parks are usually much more favorable than along streets. Four of the ten species are conifers and three are native to California (lower left graph).

DAMAGE CAUSED BY TREE ROOTS

Tree programs have used a variety of methods to reduce damage to sidewalks and curbs caused by tree roots. **The most widely used and most effective method for reducing root-caused damage is the selection of appropriate tree species** (graph below). About half of the tree programs reported in the 1988 survey that they had stopped planting certain tree species because of undesirable root growth characteristics. Avoiding species with problem roots, especially in street plantings, is the most economical way to prevent damage caused by tree roots over the long term.

Root pruning is also used by about 60% of the tree programs, but most respondents using this method rated it as only partially effective (graph below). An acknowledged problem is that some species tend to become hazardous or fail after root pruning. Pines, oaks, and eucalyptus were among the species that were most often reported to be likely to develop serious problems after root pruning. A complete list of species that were reported to become hazardous after root pruning is presented in Appendix 2.

Root barriers were used by about 60% of the respondents, compared to about 50% in 1988. **Many of those who use root barriers are still unsure of the effectiveness of these products.**



MANAGING THE URBAN FOREST

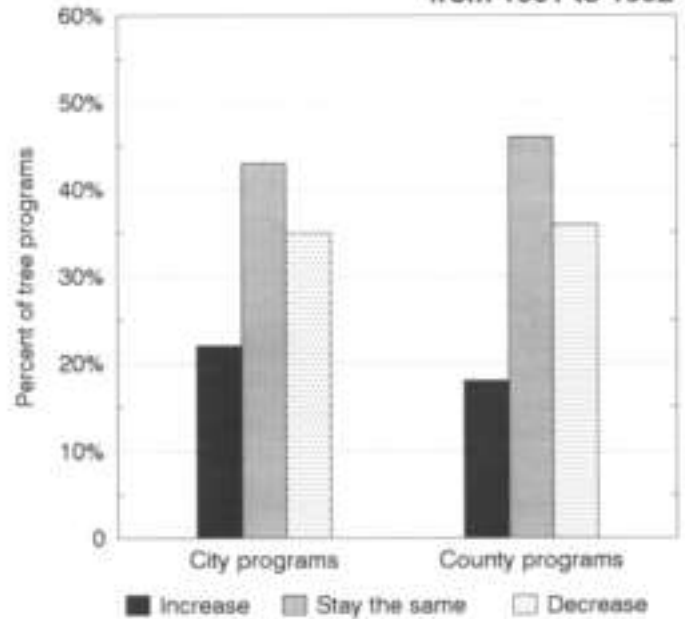
BUDGETS

The responding programs reported tree care budgets totaling \$80,076,272 in 1992. Only 26% of respondents from city programs and 18% of the respondents from county programs felt that their tree planting and maintenance budgets were adequate.

By several measures, tree program budgets have not kept pace with inflation. On average, city and county tree programs received fewer dollars per resident and per tree in 1992 than in 1988 after correcting for inflation (table below). Among 129 cities which reported tree budgets in both the 1988 and 1992 surveys, 54% had lower budgets in 1992 than in 1988 after adjusting for inflation.

Between 1991 and 1992, more tree programs reported budget cuts than budget increases (graph right). City and county tree program budgets fared similarly in this regard. For city programs, reported budget decreases ranged from 1% to 100% and increases ranged from 0.2% to 100%. County program budget decreases in 1992 ranged from 8% to 75% and increases ranged from 20% to 100%.

Changes in tree program budgets from 1991 to 1992



Based on responses from 270 city programs and 28 county programs

Average tree budget expenditures per resident and per tree in cities and counties with tree programs*

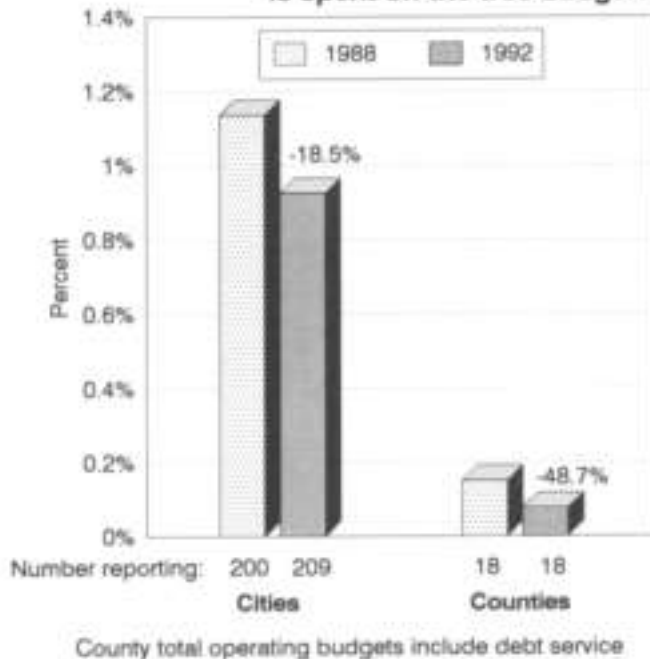
	1988 expenditures**	1992 expenditures**	Percent change 1988-1992 corrected for inflation
Cities			
Dollars per resident	\$4.58	\$4.36	-19.8%
<i>number reporting</i>	202	205	
Dollars per tree	\$17.64	\$18.32	-12.5%
<i>number reporting</i>	200	170	
Counties			
Dollars per resident	\$.31	\$.32	-13%
<i>number reporting</i>	17	17	
Dollars per tree	\$15.33	\$13.59	-25.3%
<i>number reporting</i>	13	12	

*Cities and counties that report no funding for tree programs are excluded from the calculations.

**Expenditures shown for 1988 and 1992 are in 1988 and 1992 dollars, respectively.

BUDGETS

What percent of total operating budget is spent on the tree budget?



Not only have tree program budgets declined in terms of real dollars, but urban forestry's tiny slice of the city and county budget pie has gotten even smaller. **The average percent of city operating budgets that goes to the tree program has dropped to less than 1%, a decline of over 18% between 1988 and 1992** (graph left). The already minuscule budget slice for county tree programs was almost halved.

In trimming budgets, cities and counties have apparently decided that no program is too small to cut, and many have cut a larger percentage from the tree program than from other programs. In 127 cities reporting street trees in both survey years, average total city operating expenses between 1988 and 1992 have increased 20% after adjusting for inflation. During the same period, average tree budgets in these cities fell 7.3% after adjusting for inflation.

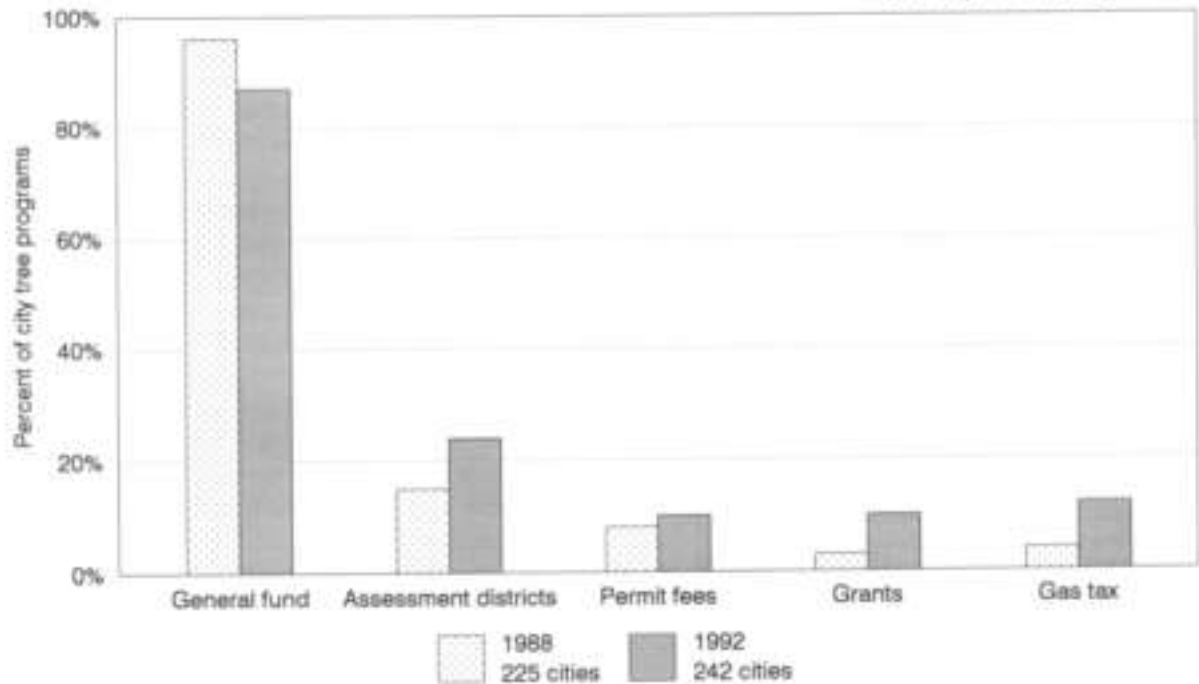
As noted on page 3, large cities are more likely to have tree programs than small cities. In addition, the total city operating budget per resident is higher in cities with tree programs than in those without tree programs (table below). Cities without tree programs spend almost 20% less per resident than cities with tree programs. Cities without tree programs are also well below the state average in total operating budget per resident.

Average total operating expense per resident for cities with and without tree programs

	Number of cities	Average total operating expense per resident
State average	463	\$601
All survey respondents	343	\$602
With tree program	276	\$624
Without tree program	67	\$509

FUNDING SOURCES

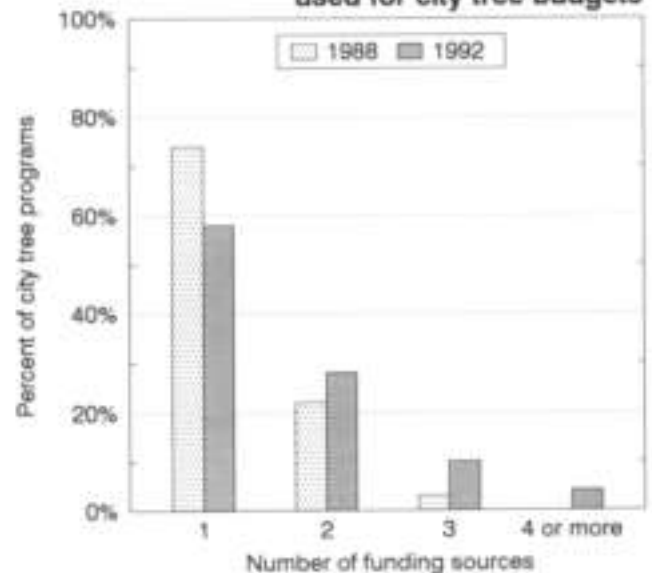
What sources of funding are used for city tree programs?



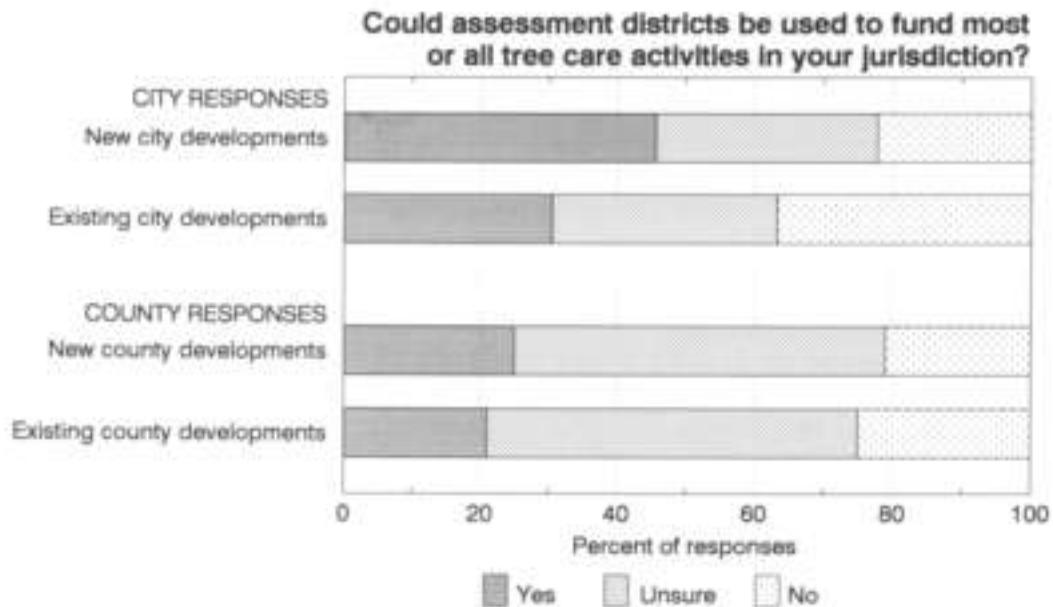
The general fund remains the most common source of funds for city and county tree programs (graph above). The general fund is also the single most important source of funding. Tree programs that use the general fund derive an average of 87% of the tree program budget from this source, down slightly from 92% of the tree program budget in 1988.

Faced with the loss of support from the general fund, more tree programs are using additional funding sources to supplement their budgets, compared to 1988. Almost half of the city and county tree programs reported that their budgets are derived from two or more funding sources (graph right). The most common funding sources are shown in the graph above. Other sources of tree program funds include fines, timber harvest revenue, redevelopment funds, hotel taxes, and special sales taxes. Donations also play an important role in many communities.

Number of funding sources used for city tree budgets



FUNDING SOURCES



Assessment districts are the second most common source of tree program funds. On average, cities using assessment district funds obtain 43% of their total budget from this source.

Could tree programs obtain most or all of their funding from assessment districts? The replies of survey respondents to this query were mixed. Nearly half of the city respondents felt that this was a viable option in new developments, but fewer believed that this would work in existing developments (graph above). The majority of county respondents were unsure whether assessment districts were a viable option for tree program funding in either new or existing developments.

Although the gas tax is used by relatively few programs, it can also be a major source of funding for tree care. Programs that use gas tax revenues derive an average of 60% of their tree budget from this source. In contrast, grants and permit fees generally serve as minor sources of funds. Funds from these sources only provide an average of about 15% of the funding for programs that use them.

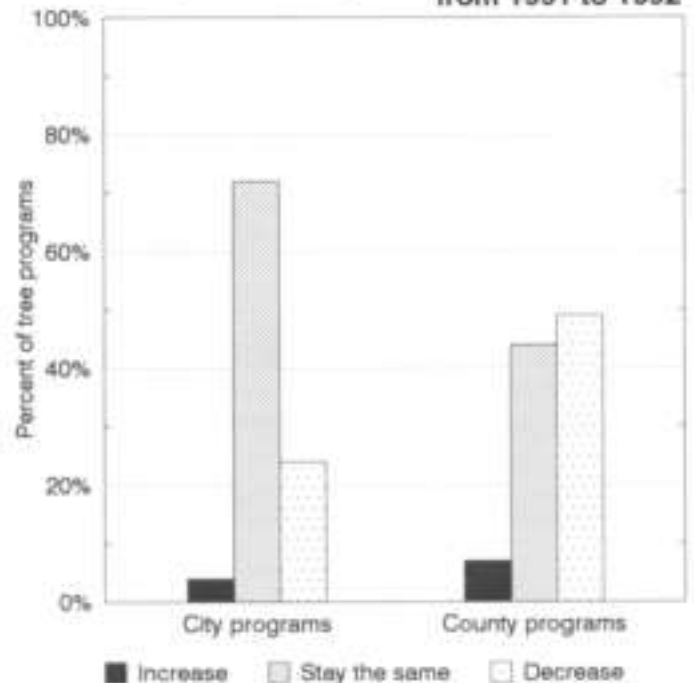


PERSONNEL

Among cities which supplied employment figures in both 1988 and 1992, the average number of full-time and part-time employees per tree program has not changed. Although the overall average number of full-time employees is 9.6, half of the programs had four or fewer full-time employees. In 1992, the number of full-time employees reported by tree programs ranged from 1 to 251.

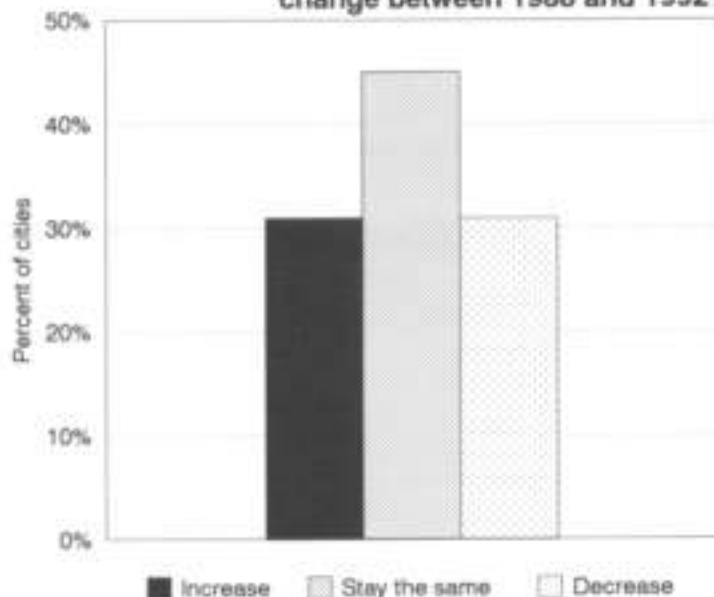
About 31% of reporting city tree programs lost employees, and an equal percentage gained employees between 1988 and 1992 (graph below). Among reporting counties, three gained employees, five lost employees, and three programs were unchanged. Over a shorter time horizon, 1991 to 1992, far more programs lost employees than gained employees (graph right).

Changes in staffing levels of tree programs from 1991 to 1992



Based on responses by 271 city programs and 27 county programs

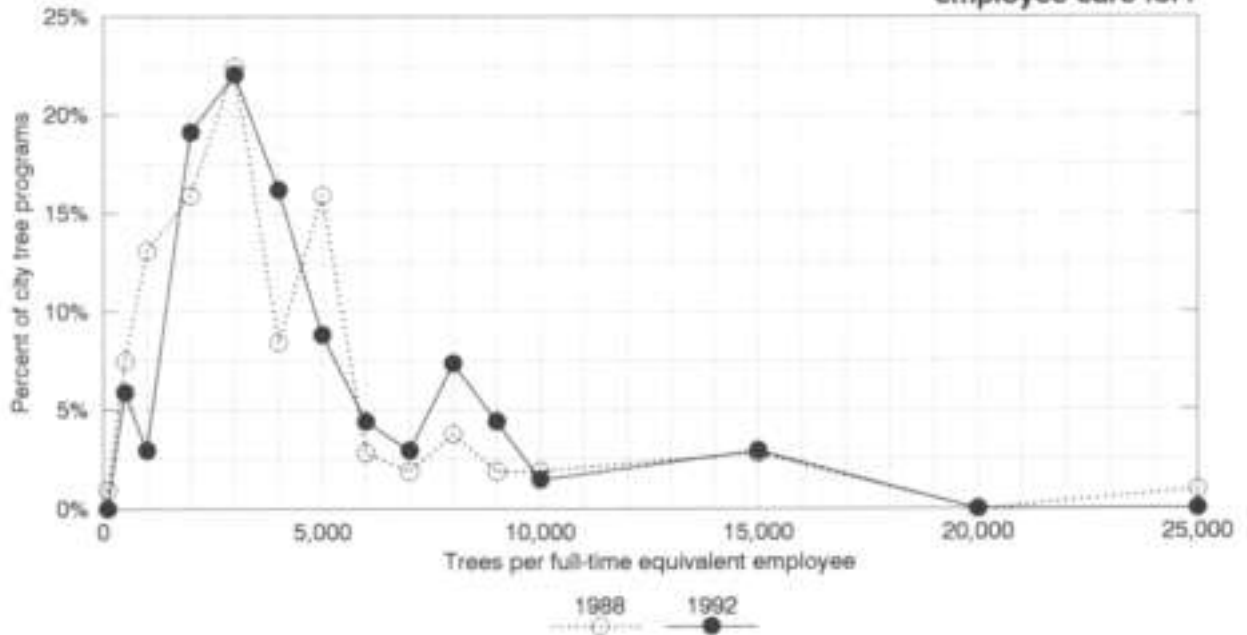
How did city tree program staffing levels change between 1988 and 1992?



Based on 119 cities reporting in both survey years

PERSONNEL

How many trees does each full-time equivalent employee care for?



Based on 107 city tree programs in 1988 and 68 city tree programs in 1992

One way to compare staffing levels between programs of different sizes is to look at the ratio of trees per employee. We calculated this ratio by dividing the number of street and park trees by the number of full-time equivalent employees for each program that spent less than 10% of its budget on contract labor. There was relatively little change between 1988 and 1992 in the number of trees per employee. **Most city tree programs are still staffed at a rate of between 1000 and 5000 trees per employee.**

In an effort to encourage better tree care, the International Society of Arboriculture has developed certification programs for arborists and tree workers. Currently, about 20% of the cities and 7% of the counties in California have employees who are certified arborists. Among cities returning the survey, the number of tree programs with certified arborists on staff has more than doubled since 1988.

PRIVATE CONTRACTORS

Many tree programs increased their use of private contractors for tree care work between 1988 and 1992. Among responding cities, 83% reported using private contractors in 1992 compared to 62% in 1988. Counties showed an even larger increase, from 36% (12 of 33) in 1988 to 73% (19 of 26) in 1992.

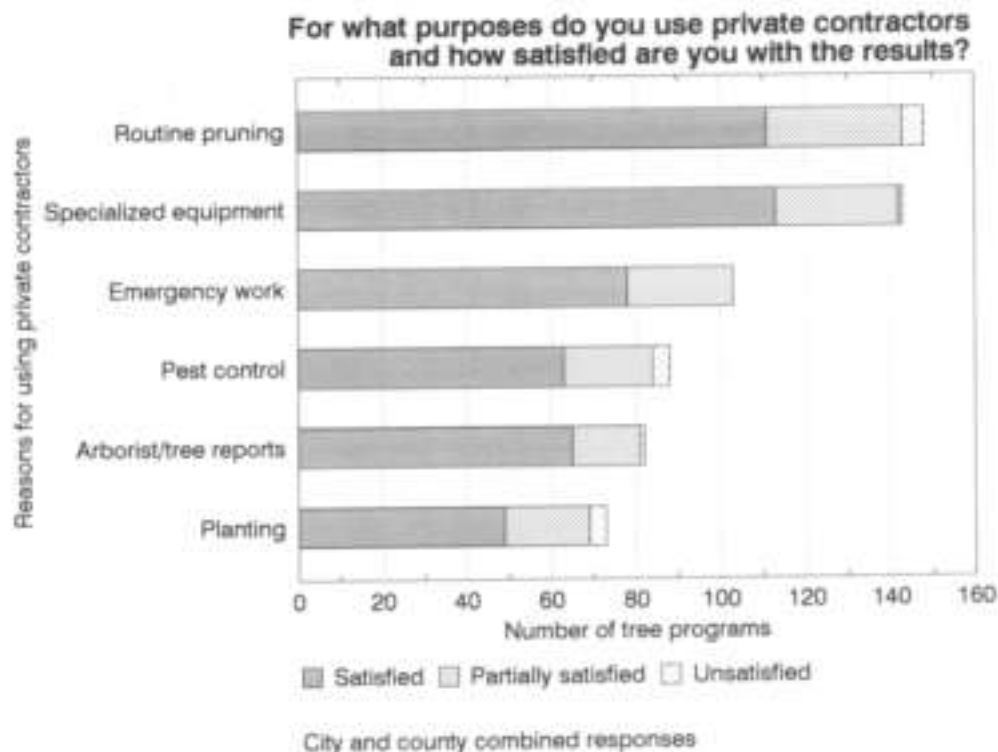
Among 114 cities that provided figures in both 1988 and 1992, the portion of the tree program budget spent on private contractors increased from 33% to 38%. As was observed in the 1988 survey, large cities tend to spend a lower percentage of their tree budget on contractors than small cities. Of the responding cities with populations greater than 130,000, none spent more than 30% of their tree budget on contractors.

The use of private contractors for routine tree maintenance appears to be on the rise. In 1988, 40% of the survey respondents used contractors for routine maintenance. In 1992, 49% of the responding programs used

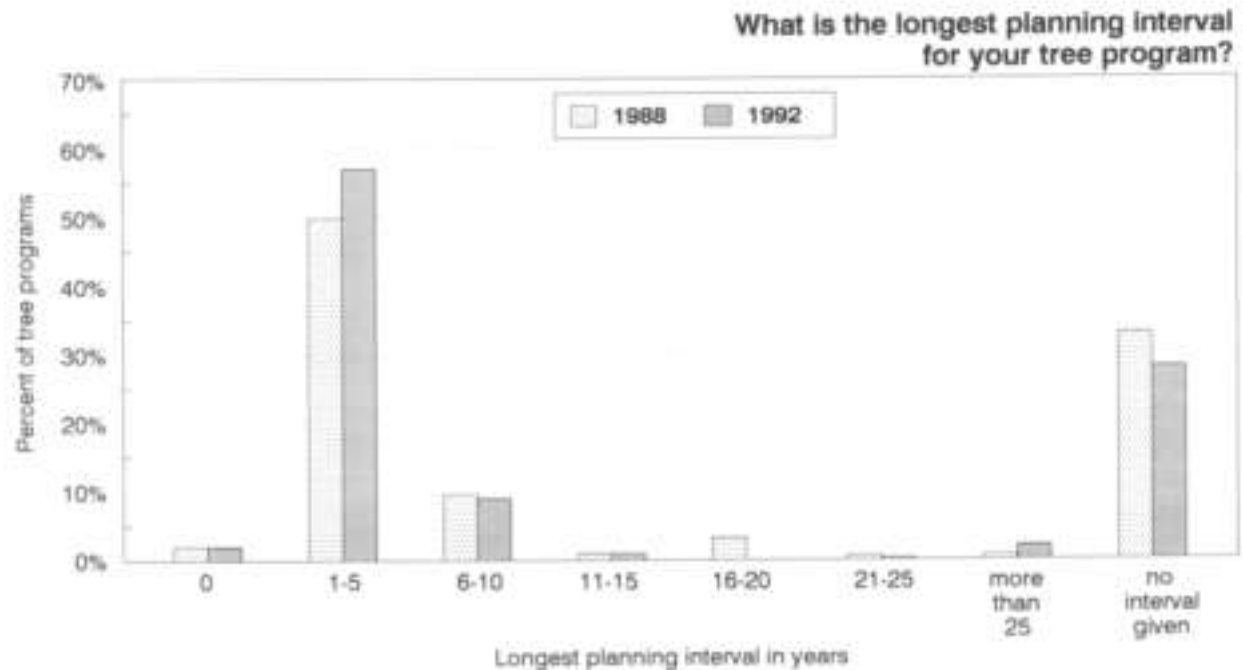
contractors for routine pruning. (This question was worded slightly differently in the two surveys.) In 1992, routine pruning was cited as the most common reason for using contractors. In 1988, tree programs most commonly used contractors to provide specialized equipment.

In addition, more tree programs are contracting out virtually all of their tree care work. In 1988, 14% of the responding programs reported that at least 90% of their tree care budget went to contractors. In 1992, 18% of responding programs spent at least 90% of their budget on contractors.

The reported use of contractors for emergency work, specialized equipment, or planting fell slightly between 1988 and 1992. Other reported uses for private contractors include climbing work, tree removal, and stump grinding and removal. In general, most programs that use private contractors are satisfied with their performance (graph below).



PLANNING



Based on 314 city and county tree programs in 1988 and 321 city and county programs in 1992

Managing the urban forest is a complex task. The urban forest manager needs to plan management activities that address several spatial scales - individual trees, groups or stands of trees, and the forest as a whole. Furthermore, plans must be developed to address both short-term operational goals and long-term program goals. Short-term planning horizons encompass daily, weekly, seasonal, and annual schedules. Intermediate-range planning may involve multiyear budgets and pruning cycles. Long-term goals for the overall density and structure of the urban forest need to be addressed by long-term planning. Long-term planning horizons should extend far enough to account for the eventual decline and replacement of the trees that make up the forest.

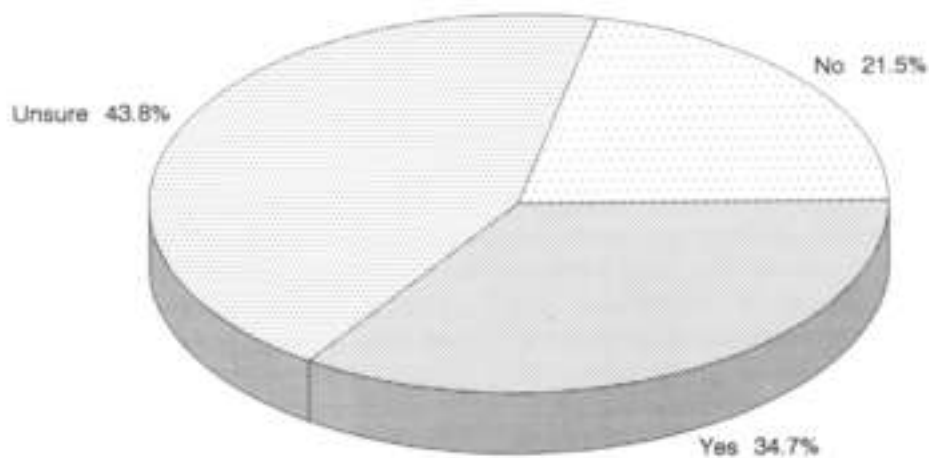
The level of long-term planning among tree programs shows no significant improvement since the 1988 survey. **At least 60% of city tree programs do not plan beyond a five-year interval** (graph above). None of the county tree programs that responded to the survey had planning intervals of more than five years. Only 21 city programs have plans that extend 10 years or more, and only seven programs indicated they have planning intervals of 25 years or more. Since even short-lived trees can live for 20 years or more, it appears that few tree programs have planning intervals that are long enough to effectively manage their trees as an urban forest.

PLANNING

If the planning process never advances beyond the single tree or short-term scales, the tree program is unlikely to rise above a strictly reactive, crisis management mode. Although crisis management is a part of almost every job, it is generally inefficient in its use of time and resources, and usually contributes little toward accomplishing long-term goals.

Over a third of all tree program managers that responded to the survey believe that their programs would be more cost-efficient if they could increase their program planning interval (graph below). Evidently, many tree program managers realize that better long-term planning would benefit their programs. Unfortunately, it appears that few programs have been able to increase their planning intervals in the four years that have passed since the 1988 survey.

Do you think your tree program would be more cost-efficient if you could increase your planning interval?



Based on responses from 274 city and county tree programs.

PLANNING

It is not surprising that no progress has been made toward more long-term planning, since **even short-term planning appears to be eroding in many tree programs.** Most programs follow regular maintenance cycles to schedule at least some of their tree maintenance (graph below). However, **64% of the programs scheduled less of their maintenance in 1992 than they did in 1988** (table below).

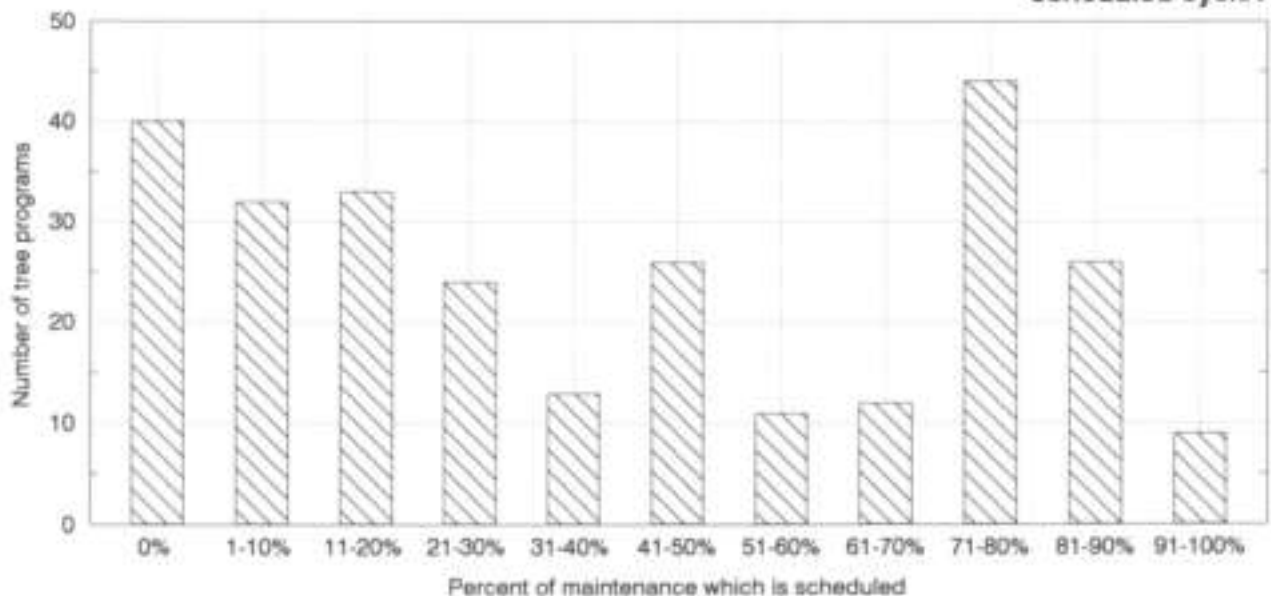
Declining tree program budgets (page 20) undoubtedly contribute to the lack of improvement in both short-term and long-term planning. If tree programs are unable to increase their planning intervals, they run the risk of spending their scarce resources more inefficiently, while contributing little toward their overall management goals.

How has the balance between regularly-scheduled maintenance and unanticipated, on-demand maintenance changed between 1988 and 1992?

Scheduled maintenance	On-demand maintenance	Percent of programs*
Increase	Decrease	31%
No change	No change	5%
Decrease	Increase	64%

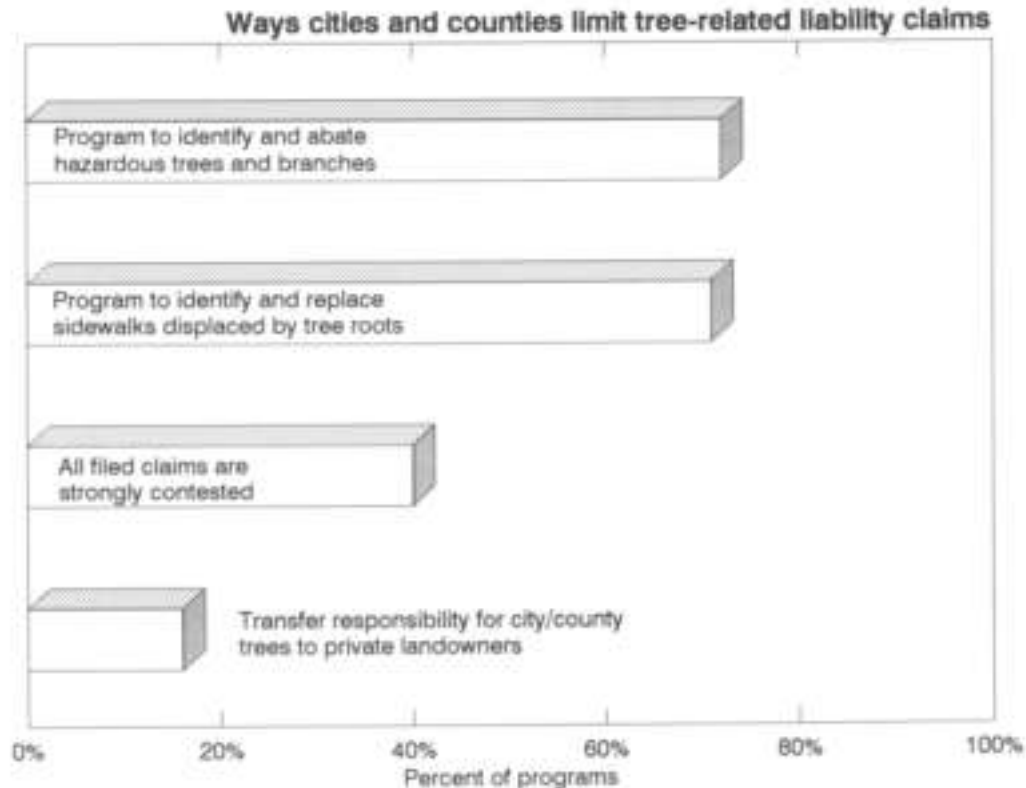
* 168 programs providing data in both the 1988 and 1992 surveys

What percent of your tree maintenance is performed on a systematic, regularly scheduled cycle?



Based on responses from 270 city and county tree programs

TREE-RELATED HAZARDS AND LIABILITY



Based on responses from 290 cities and 24 counties:

Unfortunately, trees can become hazardous to people and property. Both roots and branches can pose hazards to the public, especially if inspections and maintenance are not kept up. Tree program managers are keenly aware of the potential for liability posed by poorly-maintained trees. Most survey respondents ranked reducing hazards associated with trees as the most important benefit that their tree program provides (page 44).

Over 70% of the responding cities and counties have programs to reduce hazards due to trees and limit tree-related liability claims (graph above). Many tree programs also report that they respond quickly to citizen reports of displaced sidewalks or hazardous trees to reduce potential liability. Relatively few programs have sought to limit their potential

liability by transferring tree care responsibilities to private landowners.

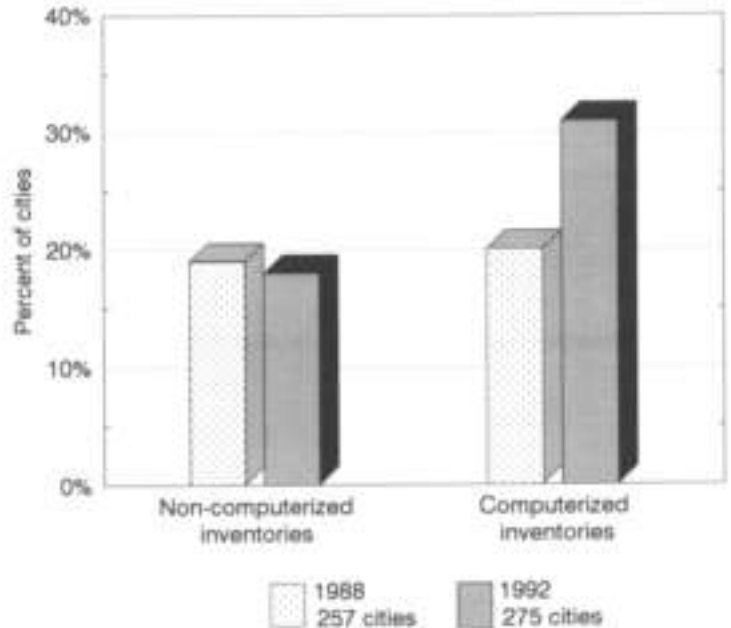
It is very difficult to determine the total amount spent by cities and counties to settle tree-related liability claims. Many cities and counties are understandably reluctant to disclose amounts paid on filed claims, and tree program managers are usually not involved in the final resolution of filed claims. Data from the 1988 survey indicate that costs associated with tree-related liability claims are highly variable from year to year and from city to city.

TREE INVENTORIES

It is difficult to manage any type of resource without good information about the resource itself. Tree inventories can provide critical information needed to effectively manage community tree resources. **The number of cities with tree inventories has increased markedly since 1988.** Respondents from 50% of the cities and eight of the county programs have a tree inventory for at least some of their trees. In 1988, only 39% of the responding cities and four counties reported having tree inventories.

Most of the growth seen is in computer-based tree inventories (graph right). In 1988, 53% of the tree inventories were computerized, compared to 62% in 1992. An obvious advantage of computer-based inventories over other systems is ease of use. Tree programs with computerized inventories use them more frequently for decision making than programs with non-computerized inventories (table below).

How many cities with tree programs have tree inventories?



How often is your tree inventory used as a tool for decision making?

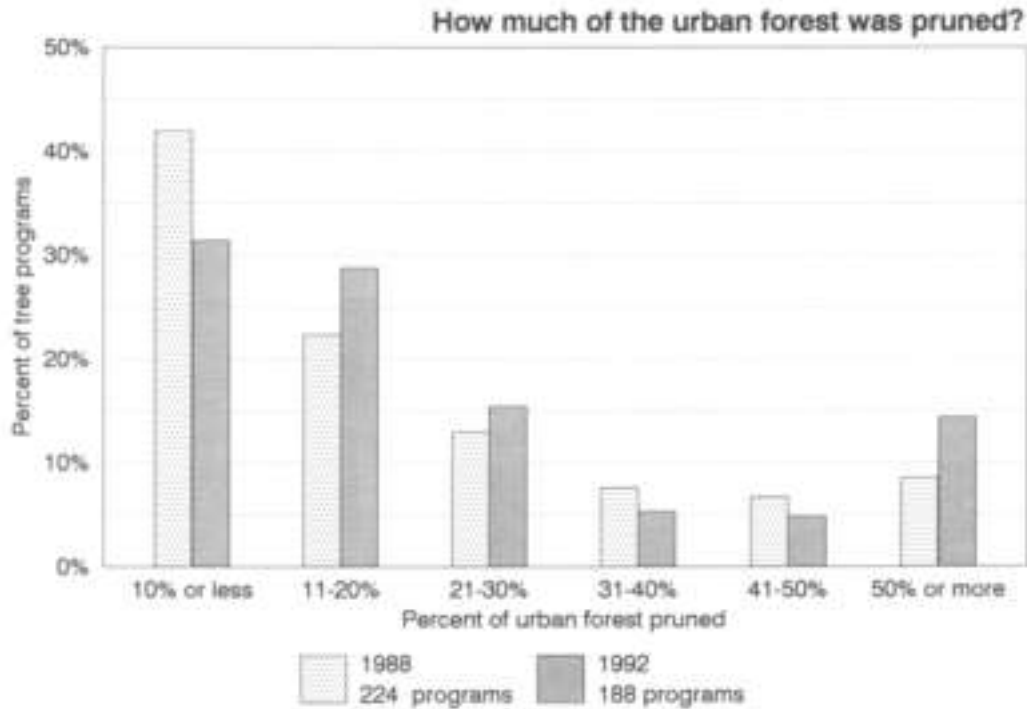
Type of inventory	Average score*
Computerized	3.43
Non-computerized	2.78

* Frequency of use was ranked by respondents on a scale of 1 to 5 where 1=rarely, 5=frequently

From the City of Tehama: We worked with the local high school and received a grant for the students of a class to map and computerize our city trees and to do some additional planting this last year. It was educational for the students and beneficial to our small city of 410 population.



PRUNING



City and county combined responses

Even though less maintenance was performed on a regularly scheduled cycle in 1992 than in 1988 (page 29), the amount of pruning performed in both years was similar (graph above). In both years, **the percentage of the street and park trees that were pruned varied widely between programs**. As shown in the table (below), much of the difference is related to the size of the tree program. Compared with large programs having many trees, **programs that care for relatively few trees generally prune a higher percentage of their trees in a given year** (table below).

In general, young trees that are being trained to develop good structure need to be pruned more frequently than mature trees. In the past year, 23% of the trees pruned by cities and 67% of the trees pruned by counties were juvenile trees being trained. However, the percentage of the urban forest pruned was not related to the percentage of trees being pruned that were juvenile (table below).

Characteristics of city and county tree programs that pruned different percentages of their urban forests

Percent of urban forest pruned in 1992	Number of programs	Average number of street and park trees	Average percent of pruned trees which were juvenile trees
10% or less	59	46,912	27%
11% to 50%	102	21,733	31%
more than 50%	27	7,080	29%

DISPOSAL OF PRUNING WASTE

The need to reduce the amount of waste materials headed to landfills has made a clear impact on California tree programs. **The percentage of programs that dump some or all of their waste wood has decreased since 1988** (graph below). Over the same period, the percentage of programs that chip and use waste wood has increased dramatically, from 46% in 1988 to 78% in 1992. On average, programs that convert their tree trimmings into mulch or compost dispose of 66% of their waste wood in this way.

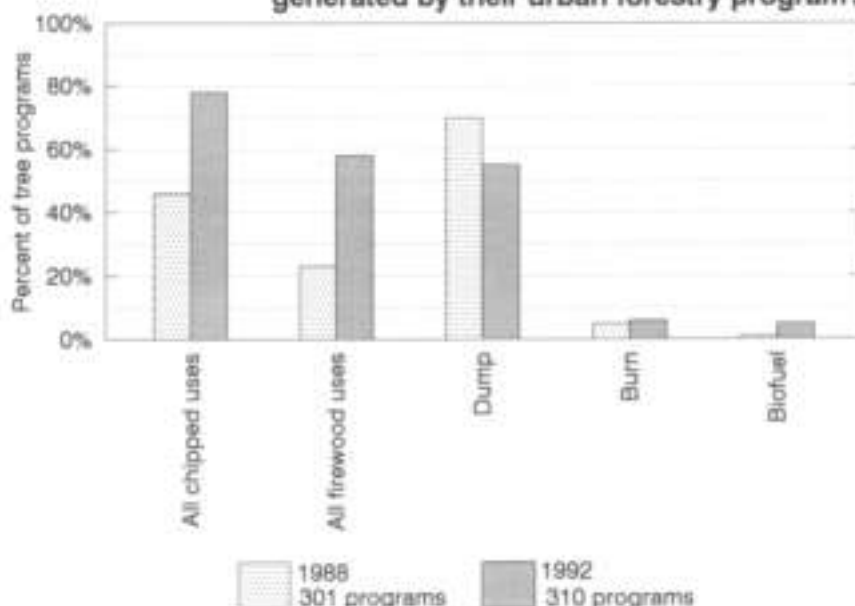
Almost 60% of programs sell or give away some of their waste wood as firewood (graph below). The amount of waste wood that is disposed of as firewood is relatively low. On average, programs that convert waste wood to firewood dispose of 26% of their pruning waste by this method. County programs are much more likely to sell firewood than city programs, which more commonly give the wood away.

Relatively few programs still burn their waste wood, and those that do are primarily located in rural areas. A similarly low number of programs sell or give their wood to companies that use the waste as biofuel for energy production. However, those programs that can use this latter option are able to dispose of an average of 64% of their waste wood in this way.

From the City of Corona: *Instead of taking chips and wood to the county dump, we leave wood on the parkway for citizens' firewood, and take chips to future park sites to be used as mulch or soil conditioner, or for weed control in open space areas. Stump grindings are left for homeowners to use as mulch and soil amendment.*

From the City of Hayward: *During the 1992-93 fiscal year we reduced costs associated with wood waste from the street tree division by \$75,000 by recycling the wood waste. The division recycled over 551 tons of wood chips and wood back into the city's landscaped areas, park district lands, bulking with sewer sludge to cap a dump site, and taking some material to the Waste Fibre Co. (an urban wood waste recycler). This is also consistent with the state's goal of reducing the solid waste stream (i.e., AB939) by 25% by 1995 and 25% more by 2000.*

How do cities and counties dispose of wood generated by their urban forestry program?



PRUNING STANDARDS

In recent years, a number of organizations have published updated pruning standards that are based on modern concepts about tree structure and natural defense barriers. These modern pruning standards are designed to reduce wood decay and hazardous conditions that frequently develop when outdated techniques such as topping are used.

Nearly 70% of the cities and about half of the counties with tree programs require their own tree workers to follow established pruning standards (graph below). Similar percentages of city and county programs require that their contractors also follow pruning standards. Less than a third of the cities and counties have pruning standards for utility companies. Even

fewer cities and counties have attempted to regulate pruning of trees on private property, although some jurisdictions do require that individuals follow pruning standards when working on private trees.

The pruning standards most frequently used by California cities and counties are those issued by the Western Chapter of the International Society of Arboriculture. Other standards in use, in decreasing order of frequency, are those of the National Arborist Association, the American National Standards Institute and the California Department of Parks and Recreation. A few programs use pruning standards that they have developed on their own.

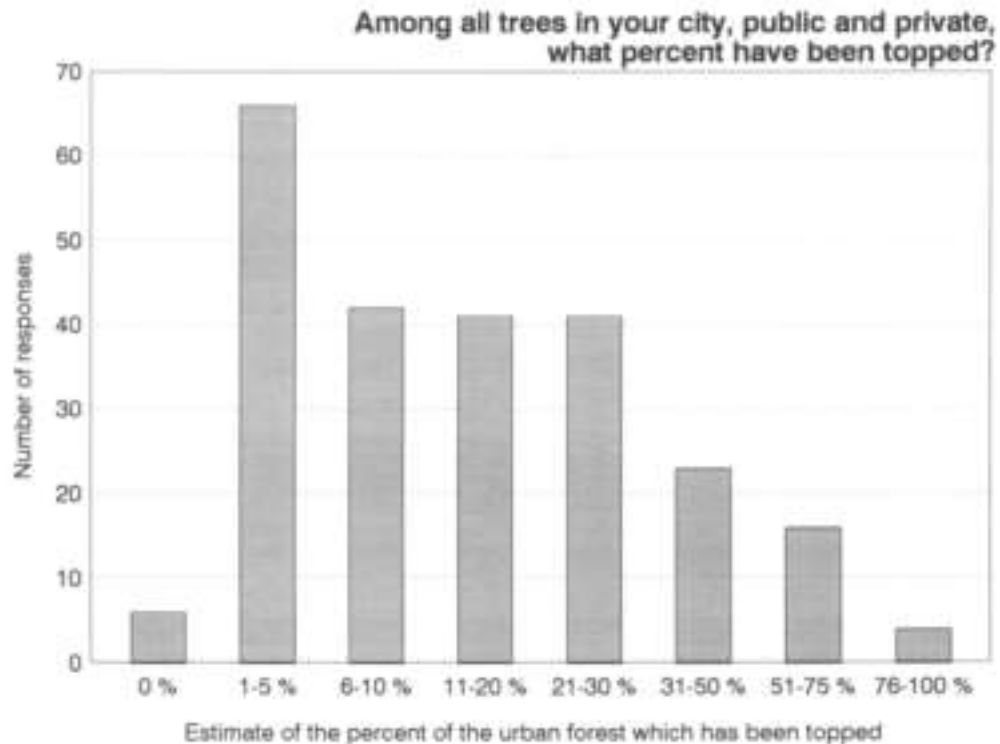


From the City of Irvine: *The City of Irvine made a commitment several years ago to use contract crews for routine pruning. At the same time, we made a commitment to use ISA pruning standards. The problem we were faced with was how to reconcile higher pruning standards with tree workers that may have been inadequately trained in the past, and over whom we had no direct control.*

First, we attached the pruning standards to the contract, giving our city supervisors (who were certified arborists) the leverage to insure compliance and high quality work. In succeeding years, we first required the contractor to provide a certified arborist on each contract site. Next we required a certified tree worker on each crew plus the arborist on site.

Finally, we will require all contract personnel to be certified. In addition, the contractor is required to attend (with his/her entire crew) a bilingual training session intended to point out common problems and how to avoid them, and to encourage the trimmers themselves to think about what they are doing. Results? More and more contractors are getting their crew personnel certified, storm damage is going down, costs are going down, and trees are healthier.

TOPPING



According to the survey responses, **topped trees are common in many California cities.** Survey respondents estimated that the percentage of all city trees (private and public) that have been topped ranged from 0.1% to 100% in their communities. On average, the 239 respondents that answered this question estimated that 21% of the trees in their community have been topped.

When trees are topped, main branches are cut to stubs without regard for their location or the natural growth habit of the tree. This undesirable practice causes a number of problems. To begin with, topping usually generates excessive amounts of waste wood. After topping, shoot regrowth from below the cuts is both excessively vigorous and poorly attached to the wood. These crowded and weakly attached shoots are prone to breakage. The cut stubs left after topping are highly susceptible to decay, further increasing the risk of subsequent branch failure. The excessive shoot removal associated with topping can weaken some trees to the point that they simply decline. Finally, severe topping usually ruins a

tree's natural branch structure to the point that it can't be restored.

Tree topping is all the more appalling because it is unnecessary. Alternative pruning methods can normally be used to provide clearance around utility lines or other obstructions. Furthermore, most urban trees require no more than occasional light pruning to remove dead or hazardous branches, particularly if good branch structure is established early on through proper training.

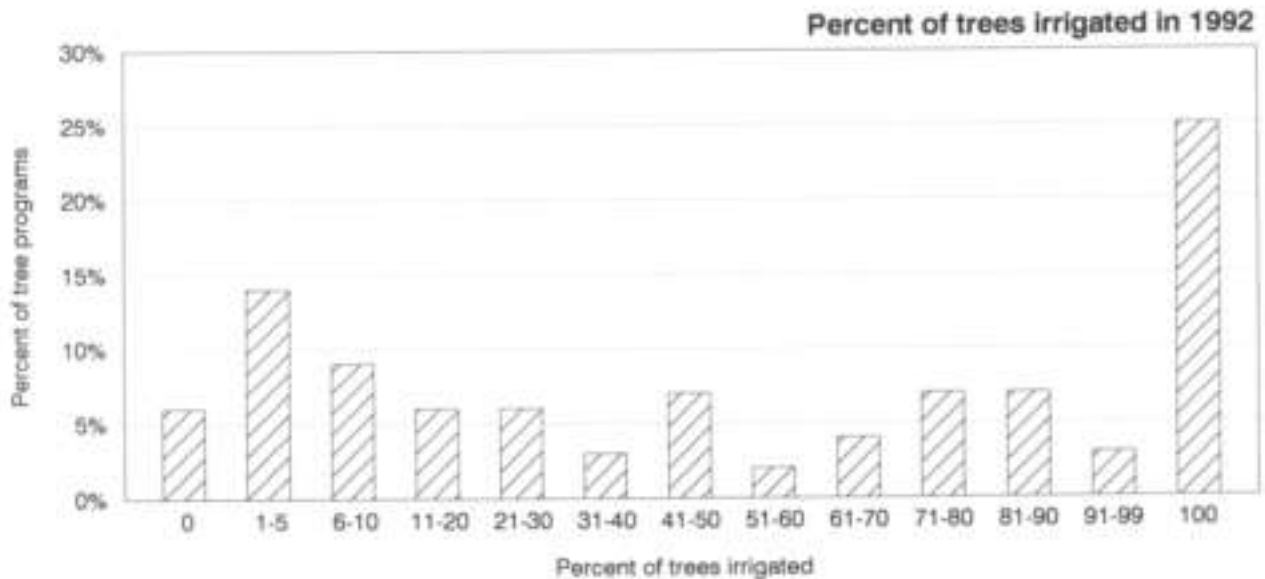
Decreasing the prevalence of topping is one of the challenges for urban forestry in the future. Cities and counties can help by ensuring that the tree programs' pruning practices follow the latest arboricultural standards (page 34). However, city tree programs are directly responsible for only a portion of the trees in the urban forest (page 39). Reducing topping of private trees may require a combination of tactics, such as educational efforts in the community, pruning standards for private tree pruning, and licensing and certification of commercial tree care firms.

IRRIGATION

Tree programs vary widely in how much supplemental irrigation they use, but **about 94% of the programs report irrigating at least some of their trees** (graph below). The two largest groups of programs are those that water all of their trees and those that water less than 10% of their trees. At least to some degree, the use of irrigation is related to climate. Programs located in the arid interior zones, particularly the semi-desert and desert climates of interior southern California and the San Joaquin Valley, irrigate a higher percentage of their trees than programs located in more moderate climates (table below).

From San Mateo County: Switching to bubbler irrigation (where possible) and using wood chips as ground cover has reduced water usage considerably while improving tree health and vigor.

From the City of Ojai: During the drought years, with the cooperation of the local water company, we developed a low-flow irrigation system that hooked up to fire hydrants to water old established Quercus agrifolia along the main highway. I truly believe this practice mitigated the drought until the miracle March rains and this year's rains.



Based on responses from 269 city programs and 25 county programs

Average percent of trees irrigated by city tree programs in 1992

Region*	Average percent of trees irrigated	Number of cities reporting
South Interior	77%	38
North Interior	71%	4
San Joaquin Valley	70%	26
North Coast	55%	4
Bay Area	49%	54
South Coast	48%	83
Sacramento Valley	43%	14
Central Coast	41%	30
Central Sierra	39%	6

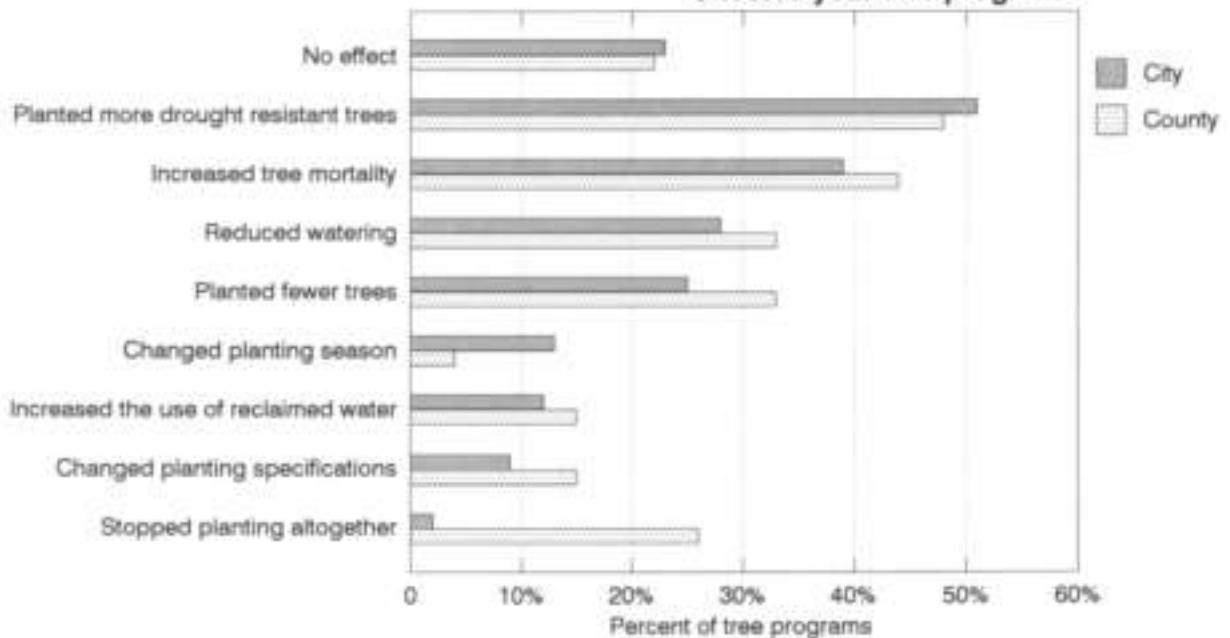
* Regional borders are shown in the map on page 3, and the list of counties in each region is listed in Appendix 3.

DROUGHT / FIRE

Seventy-seven percent of city and county tree programs indicated that they were affected by California's prolonged drought, which officially ended in 1993. About half of the affected cities and counties responded to the drought by planting more drought-tolerant tree species. Only 2% of city programs stopped

planting trees altogether, whereas 26% of county programs stopped planting trees during the drought. Although many of the affected programs reduced tree watering, 2% of programs increased irrigation to help trees through the drought.

How has California's extended drought affected your tree program?



FIRE AND THE URBAN FOREST

Development patterns in California have placed numerous communities in areas that are subject to periodic wildfires. In recent years, devastating fires have destroyed entire sections of communities in both northern and southern California. **Concerns about fire prevention have affected 14% of city tree programs and 25% of county tree programs.**

About 95% of the fire-related concerns expressed by tree managers focused on reducing potential fuel sources. Many of the affected programs are concerned about the management of highly flammable trees in high fire-risk areas. Many of these programs no longer plant tree species that are considered to be especially flammable, but only a few programs have gone so far as to remove such species. Instead, affected programs have made efforts to reduce fuel sources by more pruning

and faster removal of dead trees and downed material. In many situations, fire hazards posed by highly flammable species can be reduced by irrigation, removal of dead wood, and maintaining sufficient branch clearance from the ground.

Eucalyptus and pines were cited most frequently as being a source of concern in high fire areas. Palms were also mentioned as a source of concern by four cities in southern California. One community delayed adoption of a tree preservation ordinance and another removed Monterey pines from their list of protected trees.

To help communities reduce fire hazard, information and educational materials on fire-safe landscaping are available from the California Department of Forestry and Fire Protection.

THE COMMUNITY AND THE TREE PROGRAM

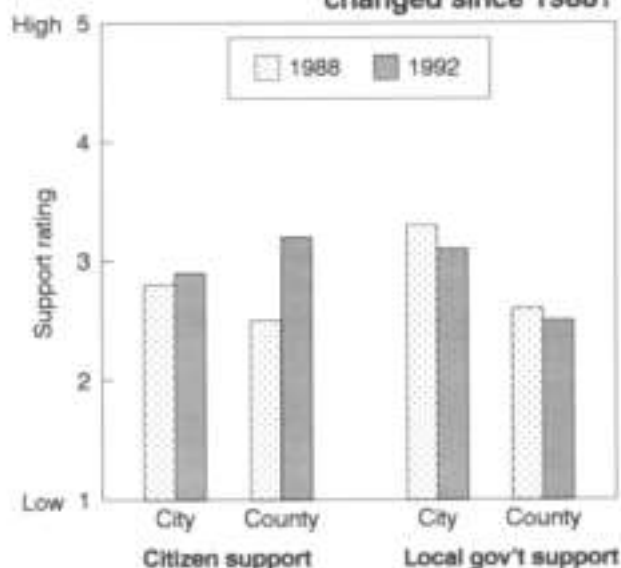
PUBLIC SUPPORT FOR THE TREE PROGRAM

In the 1988 and 1992 surveys, we asked tree program managers to rate the amount of support their programs had from local citizens and the local government. Among city respondents, the average rating of citizen support did not change significantly between 1988 and 1992 (graph right). In contrast, the average rating of local government support for city tree programs was lower in 1992 than in 1988. The average rating of citizen support for county tree programs increased between 1988 and 1992. However, county respondents rated local government support lower than city respondents in both years (graph right).

Another change was in the percentage of respondents that rated local government support higher than citizen support. In 1988, most respondents rated local government support as high as, or higher than, citizen support. Although this was still the case in 1992, a smaller percentage of respondents rated local government support higher than citizen support, and more felt that the reverse was true (graph below).

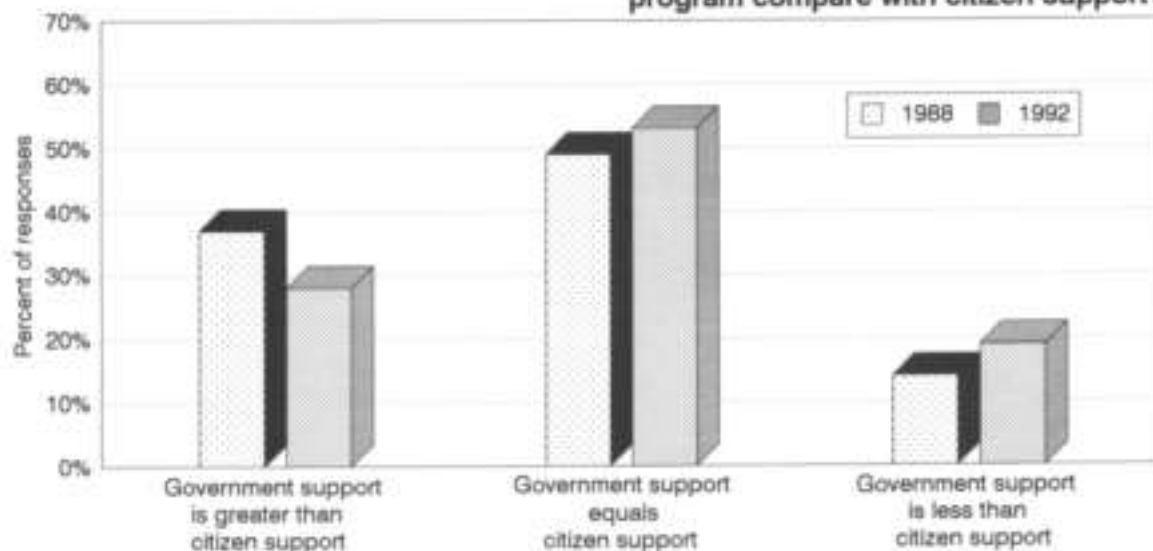
Respondents from cities which have been awarded Tree City USA status rated both citizen and local government support higher than respondents from other cities. However, even respondents from cities with Tree City USA status rated local government support lower in 1992 than in 1988.

Has support for tree programs changed since 1988?



The vast majority of tree programs derive most of their budgets from the city or county general fund (page 22), which is under the control of political decision makers. Tree programs stand a better chance of competing for scarce budget dollars if there is a visible constituency for urban forestry in the community. The erosion of financial support for tree programs (page 20) may in part be related to the low profile that many tree programs have in their communities.

How does local government support for the tree program compare with citizen support?



EDUCATION AND OUTREACH / PRIVATE TREES

About 75% of all responding city and county programs engage in some form of public education and outreach. Overall, city programs were more likely to use available outlets for public education than were county programs. Between 1988 and 1992, the number of programs that engaged in educational efforts increased. A greater percentage of tree programs reported Arbor Day celebrations in 1992 than in 1988 (graph below). Some respondents also mentioned that they use city newsletters for disseminating urban forestry information.

Public education and outreach are important components of an urban forestry program for several reasons. First and foremost, privately owned and managed trees make up the majority of the urban forest in most communities (table right). Public education is probably the most efficient and effective means by which the tree program can influence the selection and care of these private trees. A supportive and well-informed community can also assist the tree program in many ways: by providing volunteer assistance, notifying the program of potentially hazardous situations, complying voluntarily with tree ordinances, and even providing direct financial support through donations.

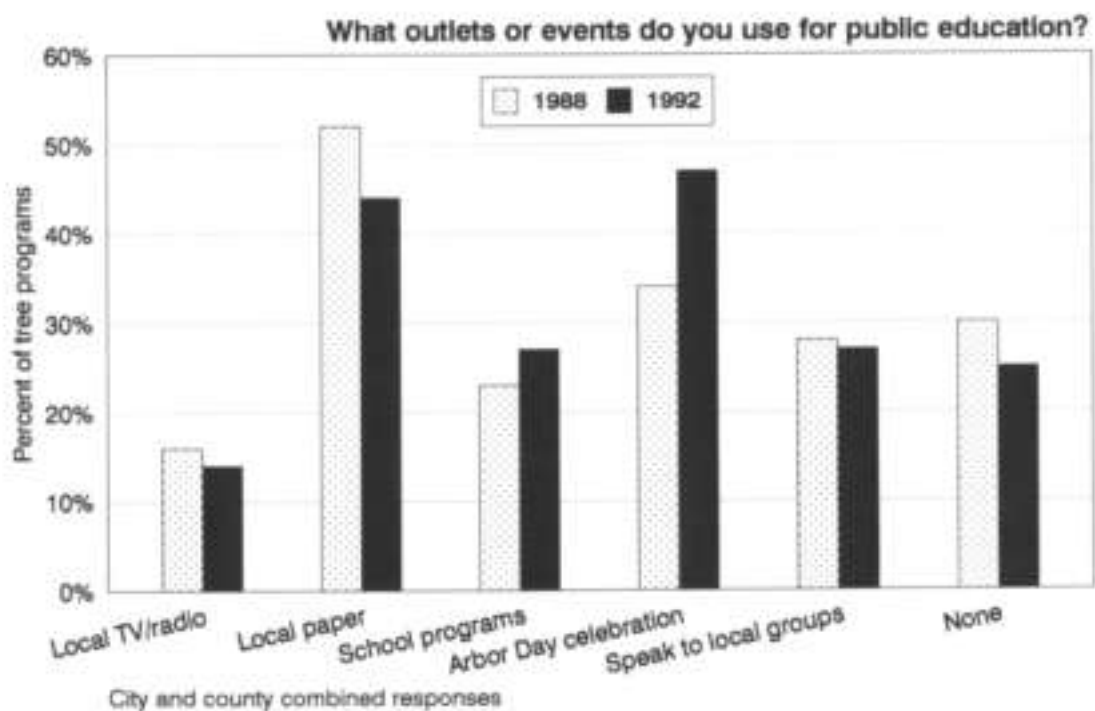
PRIVATE VERSUS PUBLIC TREES

We asked survey respondents to estimate the percent of all the trees in the urban forest that are cared for by the city. Respondents were also asked to provide individual estimates for different types of land use designations in their cities (table below).

Recent unpublished research by the U.S.D.A. Forest Service using aerial photography has shown that even in cities with active tree programs, privately maintained trees vastly outnumber publicly maintained trees. Estimates provided by survey respondents are generally higher than the numbers calculated by the Forest Service. However, most tree managers recognize that **public trees make up a minority of the trees in the urban forest** in most communities.

How much of the urban forest is under city care?

	Average estimate	Number of estimates
City-wide	30%	132
Land use:		
Residential	22%	157
Industrial	18%	142
Commercial	33%	159
Open space	43%	142

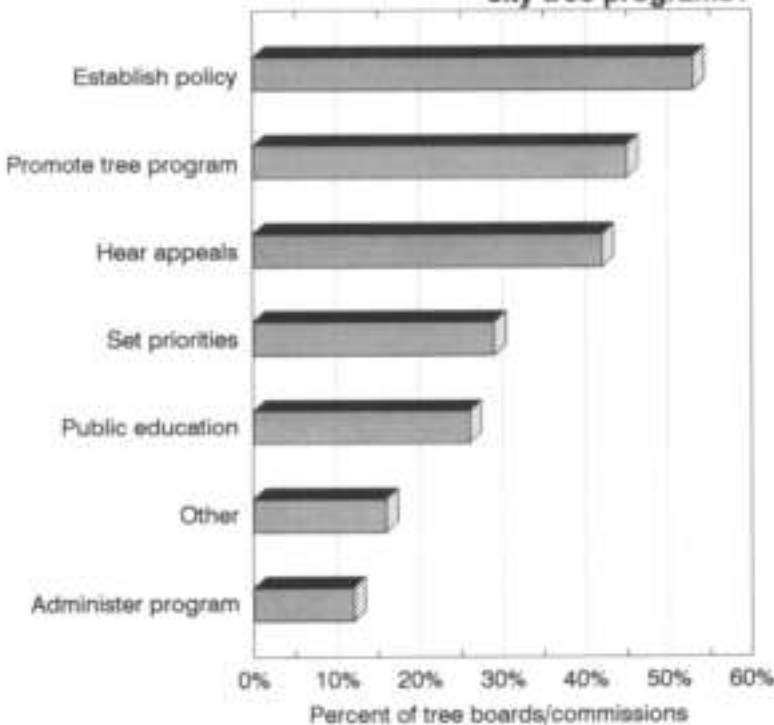


CITIZEN TREE BOARDS AND COMMISSIONS

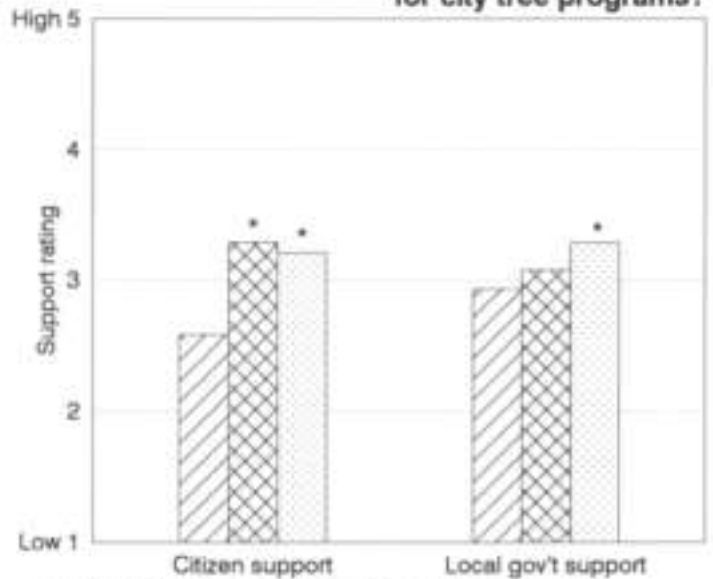
One way that citizens can become involved with the tree program is through local boards and commissions. **Citizen boards or commissions which interact with the tree program were reported by about 49% of the cities and 20% of the counties with tree programs.** Twenty percent of the boards and commissions have duties that are only related to the tree program. The remaining 80% of the boards and commissions have additional duties apart from the tree program.

The most common function of citizen boards and commissions is to establish policy (graph below). Over 40% of the commissions promote the tree program to the city council or hear appeals related to local tree ordinances. Other functions noted include involvement with Arbor Day and other special planting projects.

How do citizen boards and commissions interact with city tree programs?



Do citizen commissions increase support for city tree programs?



* indicates bar is significantly different from striped bar in same cluster (P=0.05)

- No boards or commissions interact with tree program
- Board or commission interacts with tree program only
- Board or commission with some tree program responsibilities

Most respondents felt that citizen commissions and boards had a beneficial effect on the tree program (facing page, upper graph). However, one-third of the respondents indicated that their interaction with the local citizen commission or board had either no effect or a detrimental effect on the tree program.

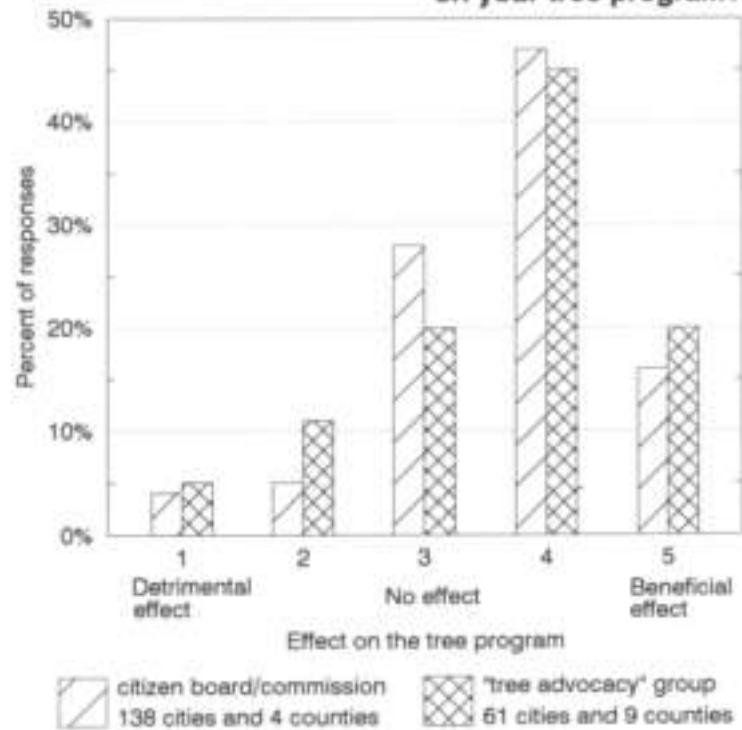
Citizen and local government support of the tree program was rated higher in cities with citizen boards or commissions which interact with the tree program than in cities with no such commissions (graph above). With respect to perceived support, tree boards and commissions with duties related to the tree program exclusively provided no clear benefit over other types of commissions (graph above).

LOCAL TREE GROUPS

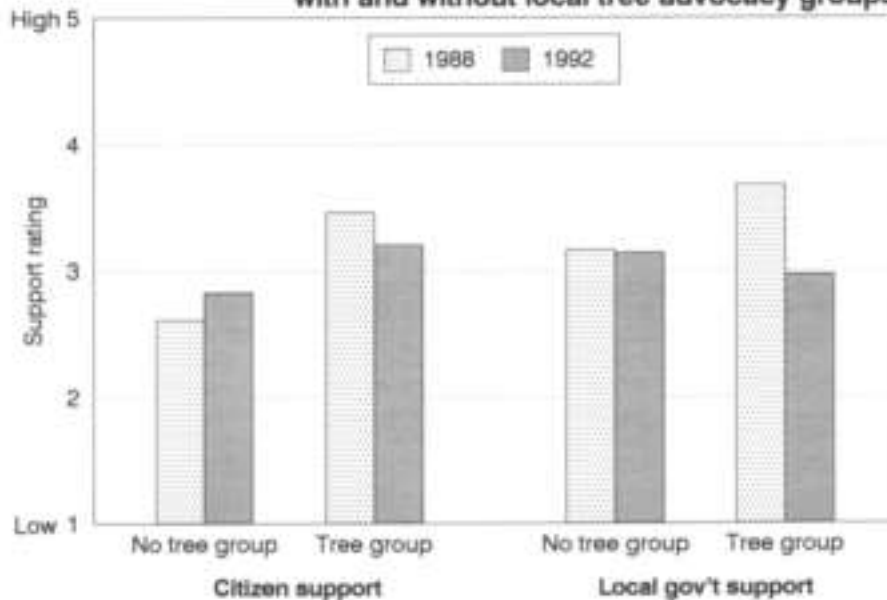
Another means by which citizens may interact with the tree program is through independent citizen groups. Such groups are not linked to local government as are boards and commissions. 'Tree advocacy' groups were reported by 61 cities and 9 counties. **The majority of respondents felt that the local tree advocacy group had a beneficial effect on their tree program**, although some negative interactions were also reported (graph right).

Respondents from cities with tree advocacy groups rated citizen support higher than did respondents from communities without such groups. However, the difference in support ratings between cities with and without such groups is smaller than in 1988. Although respondents from cities with tree advocacy groups rated local government support higher than other cities in 1988, there was no such positive effect perceived in 1992 (graph below). This suggests that even a tree advocacy group may not be able to dissuade local governments from cutting tree budgets in times of austerity.

What effect does the citizen commission or "tree advocacy" group have on your tree program?



Citizen and local government support in cities with and without local tree advocacy groups



ORDINANCES

Tree ordinances or city code pertaining to trees were reported by 76% of the 349 cities that returned the survey. Unfortunately, not all tree program managers are aware of tree ordinances in their jurisdictions. In some cases, respondents from different programs in the same city gave different answers, and a number of jurisdictions that reported having an ordinance in 1988 did not report having one in 1992. In some cases, confusion may arise because tree regulations are found in city or county policies and guidelines, but are not actually a part of city or county code. In other cases, the tree ordinance may be administered by another department, such as Planning, and the tree program may not have any direct role in its implementation.

Interest in local tree ordinances is high. Among cities and counties that have a tree ordinance or other tree-related code, **the majority of all respondents felt that their current ordinance or code needed revision** (table below). Similar percentages of respondents from cities and counties without tree ordinances thought that their city or county needed a tree ordinance (table below).

Opinions on tree ordinances

Does your current tree ordinance or code need revision?	Percent 'yes' responses
City	62%
County	50%
If your city or county has no tree ordinance, do you feel that it needs one?	Percent 'yes' responses
City	63%
County	47%

How well are tree ordinances enforced? Only a slim majority of the city survey respondents felt that tree ordinance enforcement in their community was adequate (table below). Opinions on ordinance enforcement for the eight counties with ordinances were divided almost equally between adequate, not sure, and inadequate enforcement. Clearly, the impact of a tree ordinance will be greatly reduced if enforcement is neglected.

Overall, are tree-related ordinances adequately enforced in your city?

	Percent of responses
Yes	52%
No	36%
Unsure	12%

From the City of Cotati: We have a very successful ordinance. This is probably reinforced by a strong commitment by staff and the City Council. A unique feature of the ordinance is that residents removing large trees from our copious supply of 'past poor planting choices' can either plant a 15 gallon tree from our 'approved' tree list on their property or donate a 15 gallon tree to a city park (from our park tree list). In this way, we maintain our tree stock but move away from pesky, dangerous trees.

ORDINANCES

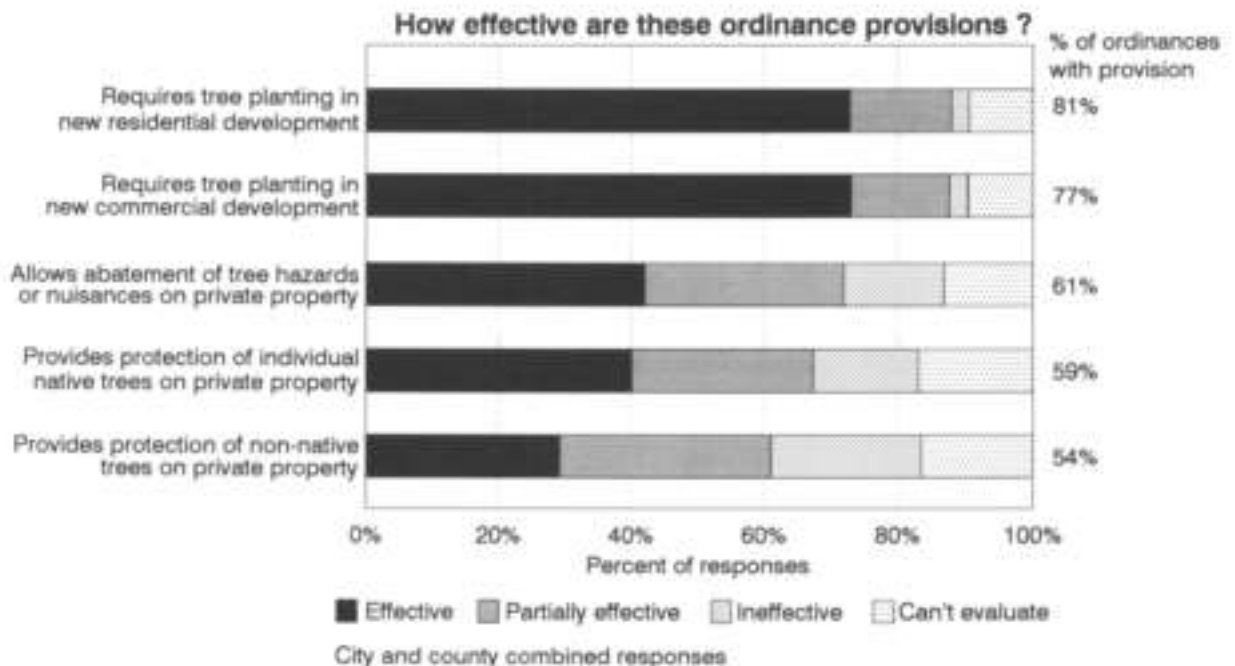
Respondents that were aware of their local tree ordinance provided information about a number of different ordinance provisions (graph below). **Provisions that require tree planting in new residential and commercial developments are included in about 80% of the ordinances.** A large majority of the respondents believed that these provisions are effective in accomplishing their intended purpose.

Tree protection and hazard tree abatement provisions are less common than planting requirements, but were still reported in a majority of city and county ordinances. A minority of respondents rated these provisions as effective (graph below).

A number of factors, including clearly-stated goals, performance standards, enforcement, and community support, contribute to the success of tree ordinances (Bernhardt and Swiecki 1991). Different communities have different goals and resources, so tree ordinance provisions need to be tailored to the unique environment of each city or county. Identical ordinance provisions may have widely different levels of success in different communities.

Tree planting requirements were generally perceived as effective. Planting requirements are usually fairly simple, easily understood, and apt to enjoy wide public support. It is also fairly easy to determine whether standards have been met, and standards are therefore relatively easy to enforce. Tree protection and hazard abatement provisions were perceived to be less effective than planting provisions. Tree protection and hazard abatement provisions tend to be complicated, and often require tree evaluations by experts. Tree protection provisions, in particular, are also more likely to be controversial and can be difficult to enforce. These differences may help explain why tree planting requirements are generally considered to be effective, whereas tree protection provisions are considered effective in certain communities but ineffective in others.

Guidelines for Developing and Evaluating Tree Ordinances (Bernhardt and Swiecki 1991) is published and distributed by the CDF Urban Forestry Program as a resource for writing or revising tree ordinances. About half of the survey respondents were aware of this publication, and of those, 56% had used it in some way. Copies of this document may be obtained by contacting the Urban Forestry Program.



BENEFITS PROVIDED BY THE TREE PROGRAM

Much has been written about the benefits that the urban forest provides to communities. Recently, research has been undertaken to document and quantify the environmental and economic benefits that urban trees provide. Urban forestry advocates have long believed that if these benefits were better understood and documented, cities would be more likely to take the steps necessary to protect their investment in the urban forest.

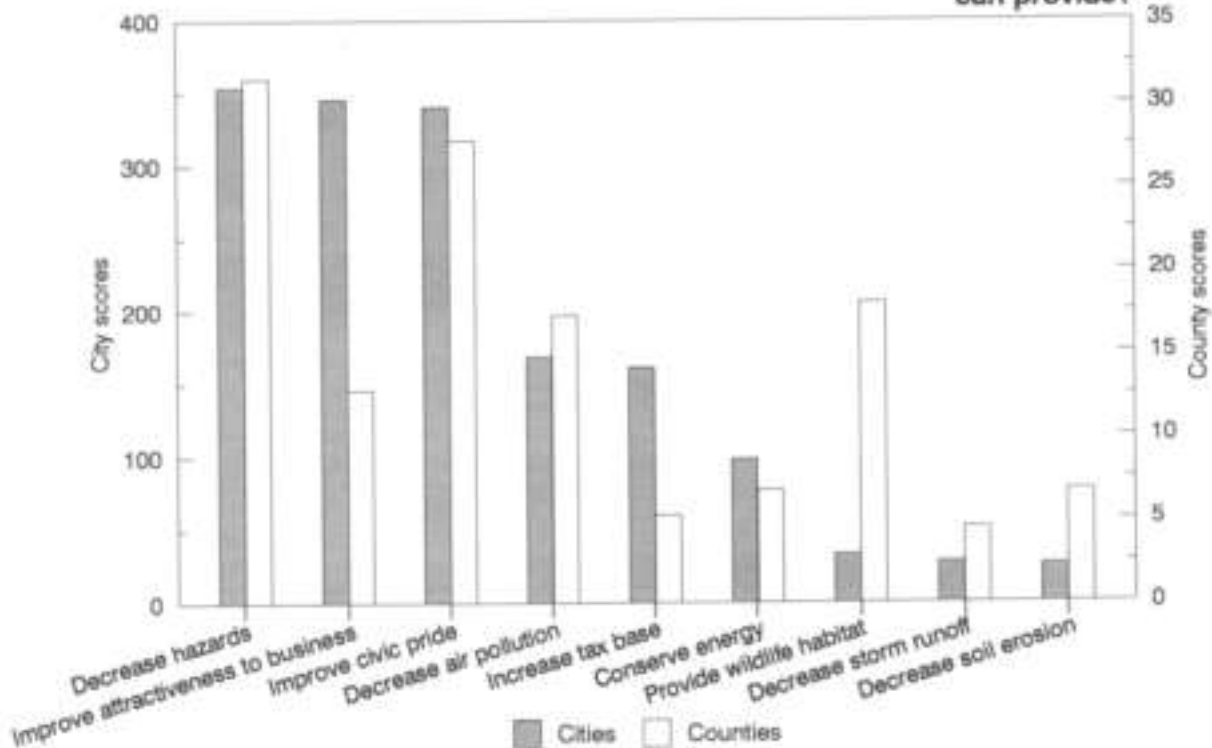
Based on survey results, it appears that most tree managers are unlikely to emphasize the environmental and economic benefits of the urban forest to justify their programs. Most city respondents did not rank environmental benefits among the three most important benefits that their tree programs provide to their city (graph below). Certain economic benefits, such as increasing real estate values and providing energy conservation, did not rate highly among either city or county respondents.

Instead, the more traditional justifications for urban forestry were ranked as the most important benefits provided by the tree

program. **The top-ranked benefit of the tree program was decreasing the prevalence of hazards associated with trees.** This is primarily a public safety issue, but has an economic impact with respect to liability. Improving civic pride was also rated highly by city and county respondents, a benefit that is related to the aesthetic qualities which trees provide. Both of these benefits are easily understood, but are difficult to quantify in a cost-benefit analysis. Economic constraints in cities and counties may require tree programs to focus on benefits whose economic consequences can be calculated more easily (facing page, box).

City and county rankings of benefits differed in several details. For instance, providing wildlife habitat ranked third on the list of benefits for county programs but seventh on the list for city programs. Improving the attractiveness of the city/county to business development was ranked second by city programs but fifth by county programs. These different priorities reflect the different functions of city and county tree programs.

What is the greatest benefit the tree program can provide?



TREE PROGRAM BENEFITS / NEEDS

Bailey Hudson, City of Santa Maria, has developed an economic analysis to compare the cost of maintaining his city's trees with the benefit the public receives from the trees' removal of atmospheric pollution. A number of factors are considered in calculating the total cost of maintaining public trees. These include the city tree budget, liability-related expenses, and the costs of irrigation water, gutter sweeping, and sidewalk and curb repair.

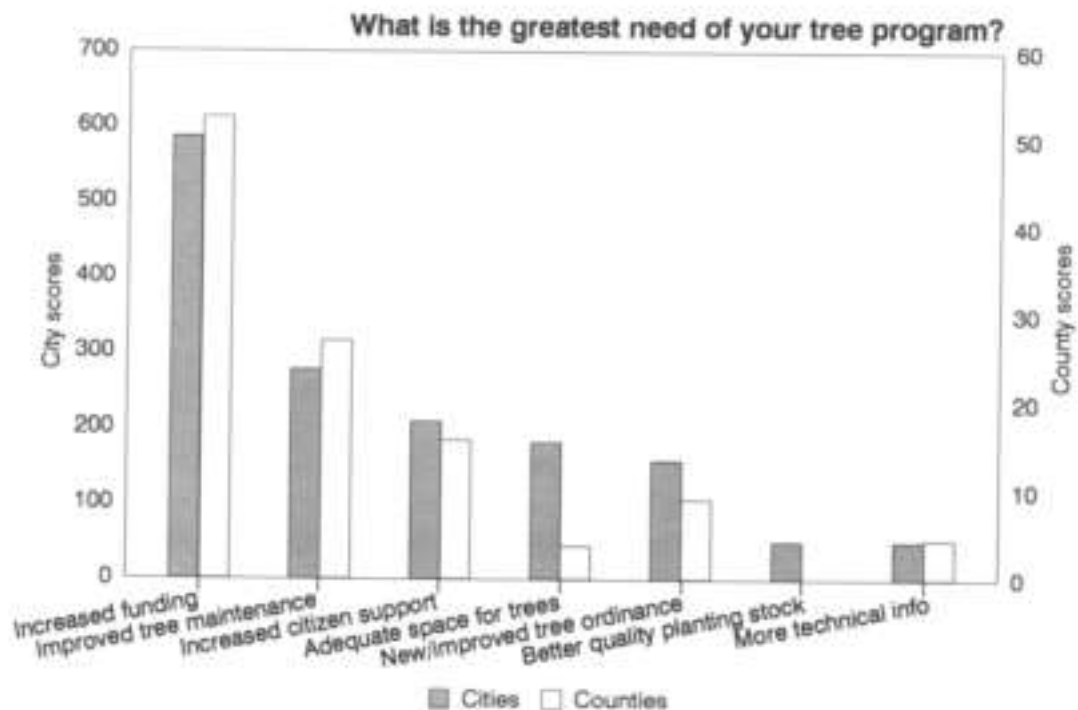
One major benefit that urban trees provide is a reduction in local air pollution. To calculate the economic value of this benefit, the model first calculates the amount of particulate and gaseous pollutants that are intercepted each day, based on the number of acres covered by public trees in the city. The economic value of the reduction in pollutants due to trees is then calculated using the 1990 Highest Going Rates for pollutants from the California Air Resources Board Office of Air Quality and Planning.

Using this model, Mr. Hudson finds that in Santa Maria, the cost per day to maintain a tree (4.8 cents), is virtually equal to the societal value of pollutant removal by the tree (4.5 cents).

TREE PROGRAM NEEDS

The most pressing need identified by survey respondents is increased funding for their tree programs. Increased funding received 48% of the first place votes when survey respondents ranked the three most important needs of their tree program from a list of seven choices. The results are expressed as weighted scores (graph below), where a higher number indicates a higher priority need.

Other high priority needs identified were improved tree maintenance, increased citizen support, more space for trees, and an improved tree ordinance. County and city programs ranked most needs similarly, with the exception of the need for adequate space for trees. Since many county programs operate primarily in non-urban, rural, and parkland settings, space constraints are much less common than they are in cities.



APPENDIX 1. Technical notes and references

Page 1, Introduction

The results of the 1988 survey are presented in the following report:

Bernhardt, E. and Swiecki, T. J. 1989. *The state of urban forestry in California*. Vacaville, CA: Phytosphere Research. Prepared for: Urban Forestry Program, California Department of Forestry and Fire Protection, Sacramento, CA.

Page 2, Survey returns

The mail survey methodology was adapted from the techniques of:

Dillman, D. A. 1978. *Mail and telephone surveys, the total design method*. New York: John Wiley & Sons.

Mailing of the survey was preceded by a presurvey announcement that included a return postcard for address corrections and additions. The survey was sent to at least one person in each incorporated city and county. In order to maximize the overall survey return rate, we remailed the survey up to two times to cities and counties that did not respond to the initial mailing.

For purposes of calculating the survey return rate and in subsequent data analysis, the City and County of San Francisco is included only as a city.

Page 4, Tree numbers

Statewide tree estimates are based on the sum of reported trees and estimated tree numbers for non-reporting cities. For street trees, the estimates are based on regional regressions of street tree numbers against city population. Statewide park tree totals were estimated from the street tree estimate using the overall ratio of street to park trees among reporting cities. The lower estimate for both totals was calculated assuming that street tree totals in nonresponding cities were 50% of the regression estimate.

City and county population estimates are from the following document:

Anonymous. May 1993. *Population estimates for California cities and counties*. Report 93 E-1. Sacramento, CA: California Department of Finance, Demographic Research Unit.

City street mile estimates are from Table 2-1-8 in:

Anonymous. November 1992. *Assembly of statistical reports 1991*. Sacramento, CA: California Department of Transportation, Division of Highways, Office of Federal Reporting and Analysis.

The averages for the number of street trees per street mile and street trees per person were calculated as averages of individual values calculated for each city. This averaging method treats all cities equally, regardless of size.

Some cities reported a combined street and park tree total only, and were not included in either the street tree or park tree totals.

APPENDIX 1. Technical notes and references

Page 8, Tree planting

Data from Orange County include large numbers of trees planted by developers as required by the county, but the number of trees planted by the tree program itself is not separated out in both survey years. Orange County reported the following planting totals: 53,000 street trees, 2,700 park trees, and 101,000 open space trees in 1988; 15,100 street trees, 10,000 park trees, and 8,500 open space trees in 1992.

Page 11, Tree planting

Information in the box was provided by survey respondents in response to a request for 'success stories' (survey question H11). Other success stories appear throughout the report.

Page 12, Nursery planting stock

Specifications for acceptance of nursery trees are presented in Appendix 5 of:

Harris, R. W. 1992. *Arboriculture: Integrated management of landscape trees, shrubs, and vines*, 2nd ed. Englewood Cliffs, NJ: Prentice-Hall.

Page 14, Mature size of planted trees

Data from the 1980 survey cited are based on an extract of California data from a nationwide survey conducted in 1979 by Dr. J. J. Kielbaso and others of Michigan State University. These data were previously reported in the 1989 *The State of Urban Forestry in California*. Results of Kielbaso's 1980 survey (based on 1979 data) are reported in:

Giedraitis, J., and Kielbaso, J. 1982. Municipal tree management. *Urban Data Service Reports*, 14(1): 1-14.

Pages 20 and 21, Budgets

Budgets were adjusted to account for inflation by using the consumer price index from the following two reports:

Anonymous. 1992. *Statistical Abstract of the United States: The national data book*. Washington, D.C.: U.S. Department of Commerce.

Survey of Current Business. Washington, D.C.: U.S. Department of Commerce.

Values used for total operating expenditures of cities and counties were from data supplied by the California State Controller's Office, Division of Local Government Fiscal Affairs, Sacramento, CA. Total operating budgets for cities do not include debt service. For counties, total operating expenditures do include debt service.

The State Controller's Office provided data for 467 cities. Total operating expenses per capita for the cities of Irwindale, Industry, Vernon, and San Francisco were far higher than all other cities and were not used for calculating averages. San Francisco operates as both a city and a county, and its overall budget is not directly comparable to other cities. Irwindale, Industry, and Vernon all have small populations but large total operating expenses.

San Francisco and Los Angeles were omitted from the matched comparison of average operating expenses and tree budgets in 1988 and 1992 because their operating budgets (about \$2.7 and \$5 billion, respectively) are significantly higher than all other cities in the state.

APPENDIX 1. Technical notes and references

Pages 20 and 21, Budgets

For calculating average dollars spent per resident by cities, we excluded several outliers reporting above \$25 per resident. For county data, we excluded outliers reporting above \$8 per person. For calculating average dollars spent per tree, we excluded outliers above \$100 per tree. Budget figures and tree numbers from different departments within each city were combined to calculate city-wide averages.

Page 25, Personnel

Cities were included in the calculations for the number of trees per full-time employee only if they met all three of the following criteria:

- reported employee numbers
- reported number of street and park trees maintained
- reported spending less than 10% of tree program budget on private contractors

The third criterion was used to restrict the calculations to tree programs that use their own staff to perform most of their tree maintenance. Programs that contract out a large percentage of their tree work would show a high ratio of trees per employee.

The number of certified arborists was determined from reviewing an October, 1993, listing of all certified arborists in California, provided by the International Society of Arboriculture.

Pages 38, 40, and 41, Public support for the tree program / Citizen tree boards and commissions / Local tree groups

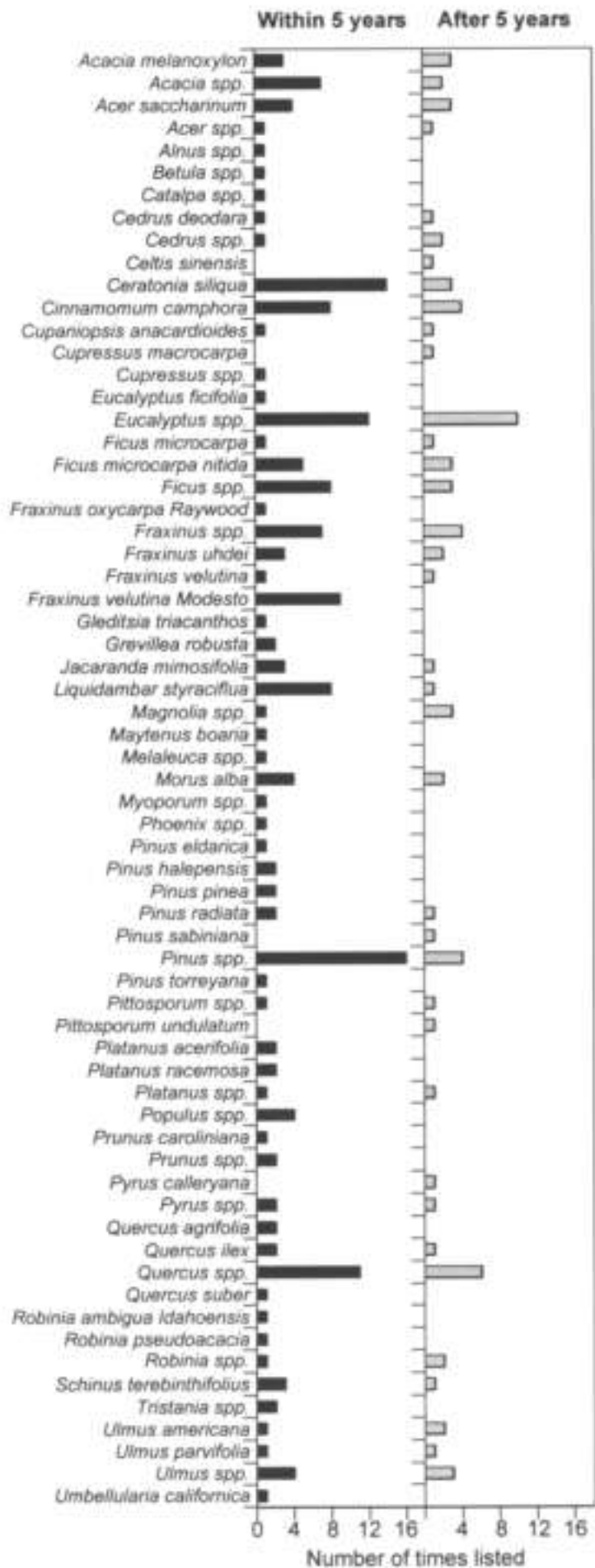
Ratings of local government and citizen support were subjected to analysis of variance to determine which of the observed changes between the two survey years and different subgroups were statistically significant. Differences are reported as significant if they are statistically different at the 95% confidence level.

Page 43, Ordinances

Bernhardt, E. A. and Swiecki, T. J. 1991. *Guidelines for developing and evaluating tree ordinances*. Vacaville, CA: Phytosphere Research. Prepared for: Urban Forestry Program, California Department of Forestry and Fire Protection, Sacramento, CA.

Pages 44 and 45, Tree program benefits / needs

The results for the rankings of the three most important needs and benefits are presented as weighted total scores. These scores were calculated by assigning four points for each first place ranking, two points for each second place ranking, and one point for each third place ranking. These points were summed to give the overall scores for each need or benefit. City scores are much higher overall than the county scores because of the higher number of city responses.



APPENDIX 2. Tree species reported to become hazardous or prone to failure after root pruning

We asked survey respondents to list trees which, in their experience, become hazardous or are prone to failure after root pruning. We also asked respondents to indicate how quickly these problems tend to develop after root pruning. The graph at left shows a compilation of the results.

Several respondents noted that the most critical factor is the number of roots pruned and how close to the trunk the cuts are made. Further information on factors related to tree failures is contained in a database of reported failures maintained by the Department of Environmental Horticulture, University of California, Davis, and U.C. Cooperative Extension.

APPENDIX 3. Counties in each geographic region

North Coast

Del Norte County
Humboldt County
Mendocino County

North Interior

Lassen County
Modoc County
Plumas County
Shasta County
Sierra County
Siskiyou County
Trinity County

Sacramento Valley

Butte County
Colusa County
Glenn County
Lake County
Sacramento County
Sutter County
Tehama County
Yolo County
Yuba County

Central Sierra

Alpine County
Amador County
Calaveras County
El Dorado County
Mariposa County
Nevada County
Placer County
Tuolumne County

Bay Area

Alameda County
Contra Costa County
Marin County
Napa County
San Francisco County
San Mateo County
Santa Clara County
Solano County
Sonoma County

Central Coast

Monterey County
San Benito County
San Luis Obispo County
Santa Barbara County
Santa Cruz County
Ventura County

San Joaquin Valley

Fresno County
Kern County
Kings County
Madera County
Merced County
San Joaquin County
Stanislaus County
Tulare County

Southern Interior

Imperial County
Inyo County
Mono County
Riverside County
San Bernardino County

South Coast

Los Angeles County
Orange County
San Diego County

APPENDIX 4. Jurisdictions returning the survey

Cities returning the survey	Department	Public funds spent on trees	Cities returning the survey	Department	Public funds spent on trees
Adelanto		No	Costa Mesa		Yes
Agoura Hills	Public Works	Yes	Cotati	Planning	Yes
Albany	Public Works	Yes	Covina	Engineering Services	Yes
Alturas	Public Works	No	Cudahy	Community Services	Yes
Amador		No	Culver City	Tree Maintenance	Yes
Anaheim	Parks Dept	Yes	Cupertino	Grounds Dept	Yes
Anderson	Public Works	Yes	Cypress	Public Works Maintenance Division	Yes
Arcadia		Yes			
Arcata	Environmental Services	Yes	Daly City	Parks Division	Yes
Arroyo Grande	Parks & Recreation	Yes	Dana Point		Yes
Artesia	Recreation	No	Danville	Parks & Recreation	Yes
Arvin		No	Davis	Parks	Yes
Atascadero	Community Services	Yes	Del Mar	Public Works	Yes
Atascadero	Community Services Parks	Yes	Del Rey Oaks	Parks & Recreation	No
Atherton	Building Dept	Yes	Delano	Community Services	No
Atwater	Parks & Recreation	Yes	Desert Hot Springs	Public Works	No
Auburn	Community Development	No	Diamond Bar	Community Services	Yes
Avenal	Public Works	Yes	Dimuba	Parks & Community Services	Yes
Bakersfield	Parks Dept	Yes	Dixon	Community Development Dept	No
Banning	Community Services	No			
Barstow	Engineering	Yes	Dos Palos		Yes
Bell	Public Works	Yes	Downey	Public Works	Yes
Bell Gardens	Maintenance	Yes	Duarte	Streets	Yes
Bellflower	Public Works	Yes	Dublin	Streets/Parks	Yes
Belvedere		Yes	Dunsmuir		No
Beverly Hills	Recreation & Parks	Yes	East Palo Alto	Community Development Planning	Yes
Big Bear Lake	Community Development	Yes			
Biggs		No	El Cajon		Yes
Bishop	Community Services	Yes	Emeryville	Public Works	Yes
Blue Lake		No	Encinitas	Public Works Streets	No
Brea	Maintenance Services	Yes	Escalon	Public Works	No
Brentwood	Brentwood Recreation & Park District	Yes	Escondido	Parks & Recreation	Yes
			Eureka	Parks & Recreation Dept	Yes
Brisbane	City Manager's Office	Yes	Exeter	Parks & Recreation	No
Buellton	Public Works	No	Fairfax	Tree Committee	No
Buena Park	Public Works	Yes	Farmersville	Public Works	No
Burbank	Park & Recreation	Yes	Ferndale	Public Works	Yes
Burlingame	Park Dept	Yes	Fillmore	City Tree Program	Yes
Calabasas	Public Works Dept	No	Folsom	Park & Recreation Dept	Yes
Callexico	Parks & Recreation	Yes	Fontana	Community Services Parks Maintenance Division	Yes
California City	California City Fire Dept	Yes			
Calimesa	Community Development Planning	Yes	Fort Bragg	Public Works	Yes
			Fort Jones		Yes
Calistoga	Public Works	No	Foster City	Parks & Recreation	Yes
Camarillo	Community Services	Yes	Fountain Valley	Field Services	Yes
Canyon Lake		No	Fowler		Yes
Capitola	Public Works	Yes	Fremont	Public Works	Yes
Carlsbad	Parks	Yes	Fresno	Parks Division	Yes
Carmel	Forest & Beach	Yes	Fullerton	Maintenance Services	Yes
Carpinteria	Public Works Dept	Yes	Galt	Parks & Recreation	No
Ceres	Public Works	Yes	Garden Grove	Public Services	Yes
Cerritos	Public Services Parks Division	Yes	Gardena	Public Works	Yes
			Gilroy	Parks & Recreation	Yes
Chico	Park Dept	Yes	Glendora	Community Services	Yes
Chino	Public Works Services	Yes	Gonzales	Public Works Dept	No
Claremont		Yes	Grass Valley	Public Works	No
Clearlake		No	Gridley	Public Works/Planning	Yes
Clovis	Parks	Yes	Guadalupe		Yes
Coalinga	Building	No	Gustine	Parks & Recreation	Yes
Colfax		No	Half Moon Bay	Public Works	Yes
Colma		Yes	Hanford	Public Works	Yes
Colton	Dept of Parks, Recreation, & Human Services	No	Hawthorne	Parks & Recreation	Yes
			Hayward	Public Works Dept	Yes
Colusa	Parks & Community Services	Yes	Healdsburg	Parks & Recreation	Yes
Commerce	Public Services	Yes	Hercules	Public Works	Yes
Compton		Yes	Hermosa Beach	Public Works Parks Division	Yes
Coming	Public Works	Yes	Hesperia	Hesperia Recreation & Park District	Yes
Corona	Parks & Recreation	Yes			
Coronado	Public Services	Yes	Highland	Public Works	Yes
Corte Madera	Parks	Yes	Hillsborough	Community Services	No

APPENDIX 4. Jurisdictions returning the survey

Cities returning the survey	Department	Public funds spent on trees	Cities returning the survey	Department	Public funds spent on trees
Hollister	Community Services	Yes	Morgan Hill	Planning Division	Yes
Hughson		Yes	Morro Bay	Public Works	Yes
Huntington Beach	Public Works	Yes	MT Shasta	Planning Dept	No
Imperial Beach	Public Works Dept	Yes	Napa	Parks & Recreation	Yes
Indian Wells		Yes	National City	Parks & Recreation Dept	Yes
Ione		No	Newark	Development Services	Yes
Irvine	Public Works Dept	Yes	Newman	Public Works	Yes
Jackson	Planning	Yes	Newport Beach	PB & R	Yes
Kerman	Public Works	Yes	Norco	Parks & Recreation	Yes
King City	Public Works	Yes	Norwalk		Yes
Kingsburg	Public Works	Yes	Novato	Community Development	Yes
La Canada Flintridge	Public Works	Yes	Novato	Community Development	Yes
La Habra	Community Services Tree Maintenance Division	Yes	Novato	Community Development	Yes
La Habra Heights		Yes	Oakdale	Public Works	Yes
La Mirada	Environmental Services Dept	Yes	Oakland	Office of Parks & Recreation	Yes
La Palma	Public Works	Yes	Oceanside	Parks	Yes
La Verne	Parks & Community Services	Yes	Ojai	Parks & Trees	Yes
Lafayette	Planning	Yes	Ontario	Public Services Agency	Yes
Laguna Beach	Municipal Services	Yes	Orange	C S Street Tree Division	Yes
Laguna Hills	Parks & Recreation	Yes	Orange Cove		No
Laguna Niguel	Public Works Dept	Yes	Orangeville	Parks & Trees	Yes
Lake Elsinore	Public Works	Yes	Oxnard	Public Works Parks Div	Yes
Lake Forest	Public Works	Yes	Pacific Grove	Public Works	Yes
Lakewood	Trees/Public Works	Yes	Pacifica	Environmental Services	Yes
Lancaster	Public Works	Yes	Palm Desert	City Manager	Yes
Lathrop	Parks & Recreation	Yes	Palm Springs		Yes
Lemoore	Public Works	Yes	Palo Alto	Public Works Operations	Yes
Lincoln	Community Development	Yes	Palos Verdes Estates		Yes
Live Oak	Public Works	No	Paradise	Community Development	Yes
Livermore	Public Works Dept	Yes	Pasadena	Dept Public Works	
Livingston	Parks & Recreation Dept	Yes	Pasadena	Water & Power	Yes
Lodi	Public Works	Yes		Public Works & Transportation	Yes
Loma Linda	Public Works Dept	Yes		Public Works Streets	Yes
Lompoc	Public Works Urban Forestry	Yes	Patterson		Yes
Long Beach	Public Works Street Trees	Yes	Petaluma		Yes
Loomis	Public Works	No	Pico Rivera	Public Works	Yes
Los Angeles	Bureau of Street Maint Street Tree Division	Yes	Piedmont	Public Works	Yes
Los Angeles	Dept of Water & Power	Yes	Pinole	Public Works	Yes
Los Angeles	Recreation & Parks	Yes	Pismo Beach	Community Development	Yes
Los Banos	Park & Recreation Dept	Yes		Dept	
Los Gatos	Parks, Forestry & Maintenance	Yes	Pittsburg	Public Service Dept	Yes
Madera	Parks & Community Services	Yes	Placentia	Public Works	Yes
Malibu	TLRVD	No	Placerville	Parks & Recreation Division	No
Mammoth Lakes	Planning	No		DOT	
Manhattan Beach	Public Services	No	Pleasanton	Parks	Yes
Marteca	Parks & Recreation	Yes	Plymouth		No
Maricopa	Parks	No	Point Arena		No
Marina	Public Works	Yes	Port Hueneme	Public Works	Yes
Martinez	Leisure & Community Services	Yes	Porterville	Parks & Leisure Services	Yes
Maywood	Administration	Yes	Portola	Administration	No
McFarland	Planning	No	Portola Valley		No
Mendota	Administration	Yes	Poway	Planning Services	Yes
Merced	Community Services	Yes	Rancho Cucamonga	Maintenance Dept	Yes
Mill Valley		Yes	Rancho Palos Verdes	Public Works	Yes
Millbrae	Parks & Recreation	Yes	Red Bluff	Public Works	Yes
Mission Viejo	Parks & Community Services	Yes	Redding	Dept of Parks & Recreation	Yes
Modesto	Parks & Recreation	Yes	Redlands	Community Services	Yes
Monrovia	Public Works Dept	Yes	Redondo Beach	Public Works	Yes
Montague		No	Redwood City	Parks, Recreation & Community Services	Yes
Monte Sereno		No		Community Services	
Montebello	Parks & Recreation	Yes	Reedley	Community Services	Yes
Monterey	Parks	Yes	Rialto	Public Works	Yes
Monterey Park	Parks Dept	Yes	Richmond	Public Works Parks & Landscaping	Yes
Moorpark	Community Services	Yes		Park & Recreation	No
Moraga		No	Ridgecrest		No
Moreno Valley	Public Works	Yes	Rio Dell		No
			Riverbank		Yes
			Riverside	Parks & Recreation	Yes
			Rocklin	Public Works	Yes
			Rolling Hills Estates		Yes

APPENDIX 4. Jurisdictions returning the survey

Cities returning the survey	Department	Public funds spent on trees	Cities returning the survey	Department	Public funds spent on trees
Rosemead	Parks & Recreation	Yes	Vacaville	Community Services Dept	Yes
Roseville	Parks & Recreation	Yes	Vallejo	Public Works Engineering	Yes
Ross	Dept of Public Works	Yes	Vallejo	Public Works Maintenance	Yes
Sacramento	Parks & Community Services	Yes	Ventura	Parks & Recreation	Yes
	Tree Services		Victorville	Parks	Yes
Salinas	Forestry & Grounds	Yes	Visalia	General Services	Yes
	Supervisor		Vista	Parks & Community Services	Yes
San Anselmo	Public Works	No	Walnut	Parks & Maintenance	Yes
San Bernardino	Park Dept	Yes	Walnut Creek	Public Services Dept.	Yes
San Bernardino	Street Tree Division	Yes	Wasco		Yes
San Clemente	Parks Maintenance Division	Yes	Weed		Yes
San Diego	Park & Recreation	Yes	West Covina	Parks Dept	Yes
San Dimas		Yes	West Hollywood	Human Services Dept	Yes
San Francisco	SF Water Dept	Yes	West Sacramento	Public Works	Yes
San Francisco	Recreation & Park	Yes	West Sacramento	Parks & Community Services	Yes
San Francisco	Dept of Public Works	Yes	Westminster	Public Works Parks	Yes
San Gabriel	Public Works	Yes	Westmorland		No
San Jacinto	Planning	No	Wheatland		No
San Joaquin	Building Dept	No	Whittier	Parks	Yes
San Jose		Yes	Willows	Parks & Public Works	Yes
San Juan Capistrano	Public Lands & Facilities	Yes	Windsor		No
San Leandro	Public Works Services	Yes	Winters		No
San Luis Obispo	City Tree Program	Yes	Woodlake	City Administration	Yes
San Marcos	Public Works	Yes	Woodland	Street Dept	Yes
San Marino	Parks	Yes	Woodside	Planning	No
San Rafael	Public Works	Yes	Yorba Linda	Public Works	Yes
San Ramon	Public Services	Yes	Yountville	Administration	Yes
Sanger	Recreation & Community Services	Yes	Yuba City	Parks & Recreation	Yes
			Yucaipa	Parks & Recreation	No
Santa Barbara	Parks & Recreation	Yes	Unknown1		Yes
Santa Clara	Street Dept	Yes	Unknown2		Yes
Santa Clarita	Parks	Yes	Unknown3		Yes
Santa Cruz	Parks	Yes	Unknown4		Yes
Santa Maria	Recreation & Parks Dept	Yes			
Santa Monica	Parks Tree Division	No			
Santa Paula	Public Works	Yes			
Santa Rosa	Parks Dept Tree Division	Yes			
Santee	Public Works	Yes			
Saratoga	Park Maintenance	Yes			
Sausalito		Yes			
Scotts Valley	Planning	No			
Seal Beach	Public Works Dept	Yes			
Seaside	Community Services Dept	Yes			
Sebastopol		Yes			
Signal Hill	Public Works	Yes			
Simi Valley	Public Works Maintenance	Yes			
Soledad	Planning	Yes			
Sonora		Yes			
South El Monte	Parks & Recreation	Yes			
South Lake Tahoe		Yes			
South San Francisco	Parks & Recreation Dept	Yes			
Stanton	Public Works	No			
Stockton	Parks & Recreation	Yes			
Suisun City	Public Works	No			
Susanville	Community Services	No			
Sutter Creek		No			
Taft	Public Works	Yes			
Tehachapi	Planning	Yes			
Tehama		Yes			
Temecula	Community Services	Yes			
Temecula	Public Works	Yes			
Tiburon	Community Development	Yes			
Torrance	Street Service	Yes			
Tracy	Public Works	Yes			
Tulare	Parks & Community Services	Yes			
Tulelake		No			
Turlock	Parks & Trees	Yes			
Tustin	Landscape Maintenance Trees	No			
Twentynine Palms	Parks & Recreation District	Yes			
Upland	Public Works	Yes			

APPENDIX 4. Jurisdictions returning the survey

Counties returning the survey	Department	Public funds spent on trees
Alameda County	Public Works Environment Services	Yes
Alpine County	Public Works Planning	No
Amador County	Land Use Agency	No
Butte County	Public Works	No
Calaveras County	Planning Dept	No
Colusa County		No
Contra Costa County	Community Development Dept	No
Del Norte County	Parks Dept	No
Glenn County	Buildings & Grounds Depts	No
Kern County	Parks & Recreation	Yes
Kings County	Public Works	Yes
Lake County	Parks	Yes
Lassen County	Public Works	No
Los Angeles County	Parks & Recreation	Yes
Los Angeles County	Fire Dept Forestry Division	Yes
Madera County		No
Marin County	Parks, Open Space, & Cultural Services	Yes
Mariposa County	Housing, Community Devl Parks & Rec	Yes
Merced County	Public Works Parks Division	Yes
Modoc County	Building Dept Public Works	No
Mono County	Building	No
Monterey County	Public Works	Yes
Napa County	Public Works	Yes
Nevada County	Planning Dept	No
Orange County	Environmental Management Agency	Yes
Orange County	EMA Public Works	Yes
Placer County	Planning Dept	No
Plumas County	Public Works	Yes
Sacramento County	Public Works Transportation Division	Yes
San Benito County	Parks	No
San Bernardino County	Transportation & Flood Control	Yes
San Diego County	Parks & Recreation	Yes
San Joaquin County	Dept of Parks & Recreation	Yes
San Luis Obispo County	County Government Center	Yes
San Mateo County	Parks Dept	Yes
Santa Barbara County	Parks	Yes
Santa Cruz County	Redevelopment	Yes
Shasta County	Public Works	No
Siskiyou County	County Planning	No
Solano County	General Services	Yes
Sonoma County	Regional Parks	Yes
Stanislaus County	Public Works Roads Division	Yes
Sutter County	Buildings & Facility Management	No
Tulare County	Buildings & Services	Yes
Tuolumne County	UC Cooperative Extension	No
Ventura County	Public Works Agency	Yes
Yolo County	Public Works	No
Yuba County	Public Works	No
Unknown5		No

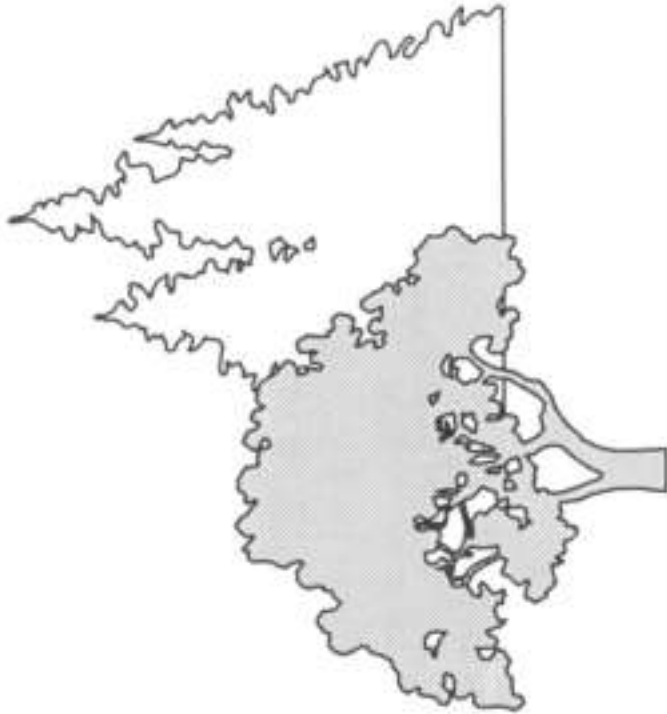
APPENDIX 5. The 1992 California Community and Urban Forestry Survey

The questionnaire used in the 1992 California Community and Urban Forestry Survey is reproduced in this appendix. The questionnaire was produced in two versions, one for cities and another for counties. The city version is shown here. In the county version, wording was changed so that questions referred to counties rather than cities, and questions D6 and D7 were omitted because they do not apply to county programs.



THE 1992 CALIFORNIA COMMUNITY AND URBAN FORESTRY SURVEY

The California Department of Forestry and Fire Protection Urban Forestry Program first surveyed urban and community tree programs of California cities and counties in 1988. The survey results were presented in a report which helped local tree managers develop and maintain programs to care for trees. The past several years have brought many changes to our state. This follow-up survey, covering 1992, will allow us to document trends in urban forest management that have occurred since the last survey. The results of the new survey will be presented in a report that will be sent to all survey participants. The report will aid you in planning for and maintaining your community's trees.



If you have any questions or comments about the survey please contact Elizabeth Bernhardt or Ted Swiecki at Phytosphere Research (707) 452-8735. Phytosphere Research is administering the survey for the state (California Department of Forestry and Fire Protection Contract 8CA17199).

Please return this questionnaire by **March 9, 1993** to: Phytosphere Research, 1027 Davis Street, Vacaville, CA 95687-5495.

1 Does your community currently use any public funds to carry out tree planting or tree care activities within its boundary?

- ___ YES
___ NO (if NO, please skip to question 11, page 11).

2 If yes, please complete the survey, answering all of the questions which are applicable to your community. Some of the questions will ask for information from 1992. Please indicate whether your responses will be based on a fiscal year identical to the calendar year 1992 or to a fiscal year covering parts of 1991 and 1992.

- ___ FISCAL YEAR SAME AS CALENDAR YEAR 1992
___ FISCAL YEAR STARTING _____ 1991

_____ A. TREE PROGRAM BUDGETS _____

A1 Do you feel your tree planting and maintenance budget is adequately funded?

- ___ YES
___ NO

A2 Compared to 1991, did your tree budget in 1992 (choose one):

- ___ INCREASE (Please estimate percent increase) _____ %
___ DECREASE (Please estimate percent decrease) _____ %
___ STAY THE SAME

A3 What was your tree program's total budget in 1992? (Please estimate if not known exactly. Write "UE" if unable to estimate.)

\$ _____ %

A4 What percent of your tree budget is spent on private contractors? (Please estimate if not known exactly. Write "UE" if unable to estimate.)

_____ %

A5 What percent of the tree budget comes from the following sources? (Please estimate if not known exactly. Write "UE" if unable to estimate.)

- ___ % GENERAL FUND
___ % ASSESSMENT DISTRICTS
___ % PERMIT FEES
___ % GRANTS
___ % GAS TAX MONEY
___ % REDEVELOPMENT FUNDIS
___ % FINES
___ % OTHER (PLEASE SPECIFY) _____
100%

A6 In your community, do you think that assessment fees could be used to fund most or all city tree care activities in new developments?

- ___ YES
___ NO
___ NOT SURE

A7 In your community, do you think that assessment fees could be used to fund most or all city tree care activities in existing developments that do not now have such assessment districts?
 ___ YES
 ___ NO
 ___ NOT SURE

_____ B. PERSONNEL _____

B1 Compared to the previous year, did staffing levels for the tree program in 1992 (choose one):
 ___ INCREASE (Please estimate percent increase) ___ %
 ___ DECREASE (Please estimate percent decrease) ___ %
 ___ STAY THE SAME

B2 How many people did your tree program employ in 1992?
 _____ NUMBER FULL TIME
 _____ NUMBER SEASONAL/PART TIME For seasonal/part time please estimate the total number of full time equivalents _____ FTE

B3 For what purposes do you use private contractors, and how satisfied are you with the results?

Private contractors used for: (Please check all categories that apply)	Satisfaction	
	Unsatisfied	Partially Satisfied / Satisfied
___ Specialized equipment we lack	0	1 2
___ Pest control	0	1 2
___ Routine pruning	0	1 2
___ Planting	0	1 2
___ Emergency work	0	1 2
___ Arborist/tree reports	0	1 2
___ Other (please specify) _____	0	1 2

_____ C. TREE PLANTING AND NURSERY STOCK _____

C1 Please rank from 1 to 4 within each column (1 = most important) the following for their importance to you in choosing trees for street and park plantings.

	STREETS	PARKS
AMOUNT OF SHADE TREE WILL CAST	_____	_____
AESTHETICS OF TREE	_____	_____
COST OF FUTURE MAINTENANCE	_____	_____
SPACE AVAILABLE FOR GROWTH	_____	_____

C2 How many trees did your program plant in 1992? (Please estimate if not known exactly. Write "UE" if unable to estimate.)
 _____ STREET TREES (include trees along streets and in parking lots)
 _____ PARK TREES (include trees in cemeteries, golf courses, and so on, but not wetland or open space trees)
 _____ OPEN SPACE/WILDLAND TREES

C3 How many new city trees were planted by people outside your program in 1992? (Include only trees that your program will care for in the future. Write "UE" if unable to estimate.)
 _____ TREES

C4 Please list the 5 tree species most commonly planted by your program along streets in 1992.

STREET TREE SPECIES OR COMMON NAME	% OF TOTAL PLANTED
1. _____	_____ %
2. _____	_____ %
3. _____	_____ %
4. _____	_____ %
5. _____	_____ %

C5 Please list the 5 tree species most commonly planted by your program in parks in 1992.

PARK TREE SPECIES OR COMMON NAME	% OF TOTAL PLANTED
1. _____	_____ %
2. _____	_____ %
3. _____	_____ %
4. _____	_____ %
5. _____	_____ %

C6 Please estimate the percent of street trees your program planted in 1992 that will be:
 LESS THAN 30 FT TALL AT MATURITY _____ %
 30-60 FT TALL AT MATURITY _____ %
 60 FT OR TALLER AT MATURITY _____ %

C7 Please estimate the percent of park trees your program planted in 1992 that will be:
 LESS THAN 30 FT TALL AT MATURITY _____ %
 30-60 FT TALL AT MATURITY _____ %
 60 FT OR TALLER AT MATURITY _____ %

C8 Please rank from 1 to 4 within each column (1 = most common) the sizes of tree nursery stock your program uses in street and park plantings. (Please write 0 for any size class not used.)

	STREETS	PARKS
1 GAL OR SMALLER	_____	_____
5 GAL	_____	_____
15 GAL	_____	_____
24 INCH BOX OR LARGER	_____	_____

C9 In the past year, which of the following nursery stock factors have affected your tree planting program? (Please check all that apply.)

- ___ DESIRED TREES AVAILABLE BUT TOO EXPENSIVE
- ___ DESIRED TREE SPECIES OR CULTIVARS NOT AVAILABLE
- ___ DESIRED SIZES OF TREE NURSERY STOCK NOT AVAILABLE
- ___ TREE NURSERY STOCK OF ACCEPTABLE QUALITY NOT AVAILABLE

C10 How often have you encountered the following quality problems in tree planting stock?

	Never	(Please circle your answer)			Always
Poor root structure (for example, girdling roots)	0	1	2	3	4
Poor stem taper	0	1	2	3	4
Poor top structure (for example, leader headed)	0	1	2	3	4
Presence of insects or diseases	0	1	2	3	4
Other (please specify) _____	0	1	2	3	4

C11 When tree planting is required in new residential subdivisions, who is required to: (Please circle all that apply.)

- PAY FOR TREES: DEVELOPER CITY HOMEOWNER OTHER
 PLANT TREES: DEVELOPER CITY HOMEOWNER OTHER
 MAINTAIN TREES: DEVELOPER CITY HOMEOWNER OTHER

D. TREE CARE

D1 Please indicate which local government departments or offices have responsibility for tree care or community tree management in your city:

- ___ PARKS AND RECREATION
- ___ PUBLIC WORKS
- ___ PLANNING
- ___ COMMUNITY SERVICES
- ___ ADMINISTRATION
- ___ OTHER (PLEASE SPECIFY) _____

D2 How has California's extended drought affected your tree program? (Please check all that apply.)

- ___ NO EFFECT
- ___ WE'VE REDUCED WATERING OF TREES
- ___ WE'VE INCREASED USE OF RECLAIMED WASTEWATER FOR IRRIGATION
- ___ WE'RE PLANTING MORE DROUGHT RESISTANT TREES
- ___ WE'VE STOPPED PLANTING TREES ALTOGETHER
- ___ WE'RE STILL PLANTING TREES, BUT WE'RE PLANTING FEWER TREES
- ___ WE'VE CHANGED SEASON OF PLANTING
- ___ WE'VE CHANGED PLANTING SPECIFICATIONS
- ___ WE'VE HAD INCREASED TREE MORTALITY
- ___ OTHER (PLEASE SPECIFY) _____

D3 What percentage of the trees your program cares for were irrigated in 1992? _____%

D4 Have concerns about fire prevention affected the tree program in any way?

- ___ YES (Please specify how) _____
- ___ NO _____

D5 How many trees is your program responsible for?

- ___ STREET TREES (include trees that you care for along streets and in parking lots)
- ___ PARK TREES (include trees that you care for in cemeteries, golf courses, and so on, but not wetland or open space trees)
- ___ OPEN SPACE/WILDLAND TREES _____

D6 Considering all trees in the city (including all of the trees in private yards, school yards, cemeteries, and so on), what percent does the city care for in each of the following areas? (Please enter NA for land uses your city does not have. Write UE if unable to estimate.)

The city cares for approximately:

- ___ % OF ALL TREES IN RESIDENTIAL AREAS
- ___ % OF ALL TREES IN INDUSTRIAL AREAS
- ___ % OF ALL TREES IN COMMERCIAL AREAS
- ___ % OF ALL TREES IN OPEN SPACE AREAS

D7 Considering all trees in the city, what percent does your city care for overall? (Write UE if unable to estimate.)

The city cares for approximately:

- ___ % OF ALL TREES, CITY-WIDE

D8 For the tree maintenance that your program performs, please indicate the percentage that falls into each of the following categories:

- ___ % IS PERFORMED ON A SYSTEMATIC, REGULARLY SCHEDULED CYCLE
- ___ % IS PERFORMED ON DEMAND, IN RESPONSE TO UNANTICIPATED PROBLEMS

D9 What is the longest planning interval for your tree program? _____ YEAR(S)

D10 Do you think your program would be more cost-efficient if you could increase your planning interval?

- ___ YES
- ___ NO
- ___ NOT SURE

___ E. PRUNING AND REMOVAL _____

E1 How many trees does your program prune per year? (Please estimate if not known exactly. Write "UE" if unable to estimate.)

- ___ JUVENILE TREES BEING TRAINED _____
- ___ ESTABLISHED TREES _____

E2 Including all public and private trees in your community, what percent would you estimate have been topped? _____ %

E3 How does your program dispose of trimmings and removals? (Please estimate the percent in each category.)

_____ % BURNED
_____ % CHIPPED
_____ % CHIPPED FOR MULCH AND USED BY THE CITY
_____ % CUT FOR FIREWOOD AND SOLD
_____ % CUT FOR FIREWOOD AND GIVEN AWAY
_____ % OTHER (PLEASE SPECIFY) _____

Several different organizations have developed pruning standards. Please use the abbreviations shown below to answer the next two questions.

NAA (National Arborist Association) ISA (International Society of Arboriculture)
ANSI (American National Standards Institute) CDPR (California Department of Parks and Recreation)

E4 Please list any pruning standards that city tree workers follow. (Please specify the type if other than the standards listed above. Write "NONE" if no pruning standards are followed.) _____

E5 Does your city require any of the groups listed below to follow any pruning standards? (Please specify the type if other than the standards listed above. Write "NONE" if no pruning standards are required.)

Pruning work done by:	Pruning standards required:
CONTRACTORS DOING WORK FOR CITY	_____
UTILITY COMPANIES	_____
COMPANIES DOING WORK ON PRIVATE TREES	_____
INDIVIDUALS DOING WORK ON PRIVATE TREES	_____

E6 How many trees did your program remove in 1992? _____ TREES

_____ F. TREE INVENTORIES _____

F1 Does your city have a tree inventory?

_____ YES
_____ NO (Please skip to question G1)

F2 How often is the tree inventory used as a tool for decision making? (Please circle the appropriate number.)

_____ RARELY _____ 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ FREQUENTLY

F3 Is the tree inventory computerized?

_____ YES
_____ NO

G. LIABILITY AND HARDSHIP DAMAGE

G1 Which of the following methods does your community use to find tree-related liability claims? (Please check all that apply.)

_____ PROGRAM TO IDENTIFY AND ABATE HAZARDOUS TREES AND BRANCHES
_____ PROGRAM TO IDENTIFY AND REPLACE SIDEWALKS DISPLACED BY TREE ROOTS
_____ ALL FILED CLAIMS ARE STRONGLY CONTESTED BY CITY
_____ TRANSFER RESPONSIBILITY FOR CITY TREES TO PRIVATE LANDOWNERS
_____ OTHER (PLEASE SPECIFY) _____

G2 Please check any of the following types of root barriers your city uses to reduce damage caused by tree roots to sidewalks and curbs. Also, for barriers in place at least 5 years, please rate the overall effectiveness in preventing damage.

Methods used	Ineffective	Partially Effective	Effective	Not Sure
_____ Linear barriers	0	1	2	NS
_____ Encircling barriers	0	1	2	NS
_____ (for example, root boxes)	0	1	2	NS
_____ Chemical impregnated barriers	0	1	2	NS

G3 Which of the following additional methods has your city used to reduce damage caused by tree roots to sidewalks and curbs? Also, for methods used at least 5 years, please rate overall effectiveness in preventing damage.

Methods used	Ineffective	Partially Effective	Effective	Not Sure
_____ Planting tree species less likely to cause damage	0	1	2	NS
_____ Realigning sidewalks around existing trees	0	1	2	NS
_____ Eliminating tree limbs between sidewalk and curb	0	1	2	NS
_____ Re-engineering sidewalks to avoid damage by roots	0	1	2	NS
_____ Pruning roots of trees that are damaging sidewalks	0	1	2	NS
_____ Other _____	0	1	2	NS

G4 Please list any species which in your experience become hazardous or are prone to failure after root pruning. Please list by the time frames shown below.

WITHIN 5 YEARS OR ROOT PRUNING _____
MORE THAN 5 YEARS AFTER ROOT PRUNING _____

_____ H. COMMUNITY INVOLVEMENT WITH THE TREE PROGRAM _____

H1 Do people from any of the following groups plant or care for city street, park, or open space trees? (Please check all that apply.)

- ___ CORRECTIONAL INSTITUTIONS OR PROGRAMS
- ___ ADULT VOLUNTEERS OR CIVIC ORGANIZATIONS
- ___ YOUTH ORGANIZATIONS OR PROGRAMS
- ___ OTHER (please specify) _____

H2 What outlets or events do you use for public education? (Please check all that apply.)

- ___ LOCAL TV/RADIO
- ___ LOCAL PAPER
- ___ SCHOOL PROGRAMS
- ___ ARBOR DAY CELEBRATION
- ___ SPEAK TO LOCAL GROUPS
- ___ NONE

H3 Please rate the level of support you believe your program has in each category listed below. (Please circle your answer.)

	Low	1	2	3	4	5	High
LOCAL GOVERNMENT SUPPORT							
LOCAL CITIZEN SUPPORT							

H4 What type of relationship is there between the tree program and citizen boards or commissions in your city? (Please check one choice.)

- ___ WE HAVE A CITIZEN TREE BOARD/TREE COMMISSION WITH DUTIES RELATED ONLY TO THE TREE PROGRAM
- ___ WE HAVE A CITIZEN BOARD/COMMISSION WITH SOME DUTIES RELATED TO THE TREE PROGRAM
- ___ NO CITY CITIZEN BOARDS/COMMISSIONS INTERACT WITH THE TREE PROGRAM (Please skip to H7, page 10)

H5 What functions does the citizen board or commission perform related to the tree program? (Please check all that apply.)

- ___ PUBLIC EDUCATION ABOUT THE TREE PROGRAM
- ___ PROMOTING TREE PROGRAM TO CITY COUNCIL
- ___ SETTING PRIORITIES FOR THE TREE PROGRAM
- ___ ESTABLISHING POLICY RELATED TO TREES
- ___ HEARING APPEALS RELATED TO THE TREE ORDINANCE
- ___ ADMINISTERING THE TREE PROGRAM
- ___ OTHER (Please specify) _____

H6 Please rate the effect the citizen board or commission has on the tree program. (Please circle your answer.)

DETRIMENTAL EFFECT	1	2	3	4	5	BENEFICIAL EFFECT

H7 Do you have a citizen "tree advocacy" group in your city? (Do not include city boards or commissions.)

- ___ YES
- ___ NO

H8 If yes, please rate the effect the citizen "tree advocacy" group has on the tree program. (Please circle your answer.)

DETRIMENTAL EFFECT	1	2	3	4	5	BENEFICIAL EFFECT

H9 In your opinion, what are the three greatest needs of your city's tree program? (Rank from 1 to 3, where 1=most important.)

- ___ Increased funding
- ___ Better quality planting stock
- ___ Improved tree maintenance
- ___ Increased citizen support
- ___ More technical information about trees and tree care
- ___ Adequate space for trees
- ___ New or improved tree ordinance
- ___ Other (Please specify) _____

H10 In your opinion, what are the three most important benefits the tree program can provide to your city? (Rank from 1 to 3, where 1=most important.)

- ___ Decrease the prevalence of hazards associated with trees.
- ___ Improve the attractiveness of our community to business development.
- ___ Improve civic pride and sense of community among city residents.
- ___ Help the community conserve energy.
- ___ Provide wildlife habitat.
- ___ Decrease soil erosion.
- ___ Decrease runoff during storms.
- ___ Decrease local air pollution.
- ___ Increase real estate values and hence the tax base of our community.
- ___ Other (please specify) _____

H11 Many tree managers are interested in how other communities are approaching problems in urban forest management. Do you have a "success story", an example of an innovative solution to a community forest management problem which you would be willing to share with other tree programs? If so, please describe briefly below or on the back of the survey. We would like to feature a number of these "success stories" in the report that describes the findings of this survey.

I. ORDINANCES

11 Are you aware of the 1991 California Department of Forestry and Fire Protection publication Guidelines for Developing and Evaluating Tree Ordinances?

- YES
- NO (if NO skip to question 12)

12 Has this publication been used in your community in any of the following ways? (Please check all that apply.)

- USED TO HELP WRITE NEW ORDINANCE
- USED TO HELP REVISE EXISTING ORDINANCE
- USED EVALUATION METHODS TO EVALUATE EXISTING ORDINANCE EFFECTIVENESS
- USED TO HELP ESTABLISH AN OVERALL COMMUNITY FOREST MANAGEMENT STRATEGY
- OTHER (PLEASE SPECIFY) _____

13 Does your community have a tree ordinance and/or sections of municipal code pertaining to trees?

- YES
- NO

14a If yes, do you feel that your current tree ordinance or code needs to be revised?

- YES
- NO

14b If no, do you feel that your community needs a tree ordinance?

- YES (please skip to 17, page 12)
- NO (please skip to 17, page 12)

15 Please check which of the following points are included in your tree ordinance, and indicate how effective each is in accomplishing the purpose for which it was intended.

Ordinance provisions (Please check all that apply)	Effectiveness			Can't Evaluate
	Ineffective	Partially Effective	Effective	
<input type="checkbox"/> Provides for protection of individual native trees on private property	0	1	2	CE
<input type="checkbox"/> Provides for protection of other existing trees on private property	0	1	2	CE
<input type="checkbox"/> Provides for conserving integrity of forests or woodlands during development	0	1	2	CE
<input type="checkbox"/> Requires tree planting in new residential development	0	1	2	CE
<input type="checkbox"/> Requires tree planting in new commercial development	0	1	2	CE
<input type="checkbox"/> Allows the city to abate tree hazards and nuisances on private property	0	1	2	CE

16 Overall, are tree-related ordinances adequately enforced in your city?

- YES
- NO
- NOT SURE

17 Please indicate the following:

YOUR NAME _____
 JOB TITLE OR POSITION _____
 DEPARTMENT _____
 MAILING ADDRESS _____
 CITY _____ ZIP _____
 PHONE NUMBER _____

We would appreciate any other comments you have related to community tree programs.

THANK YOU FOR YOUR PARTICIPATION