The Impact of the Presence of Trees on the Viability of Shopping Centers and Small Downtowns in the San Jose, CA Primary Metropolitan Statistical Area (PMSA)

by

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Abstract

A team of urban geographers from San José State University undertook to study the relationship of the presence of trees, the urban forest, in retail commercial areas in the San José Primary Metropolitan Statistical Area, or PMSA (comprising the built-up area within Santa Clara County) as set against indications of high land values, with the goal of being able to infer that the presence of trees, the planting of trees, resulted in higher land values and all the accompanying attributes that would result, such as improved urban ambiance, a more livable community, and, in short an improved life for all, both merchants and customers. A total of thirty shopping centers, with representatives from the three classes of: (1) Regional and Super Regional Centers; (2) Community Centers; and (3) Neighborhood Centers were randomly selected. Also chosen were six older small downtowns lying within the PMSA. These were: (1) Palo Alto; (2) Los Gatos; (3) Mountain View; (4) Los Altos; (5) Willow Glen (within corporate San José); and (6) Campbell.

A common procedure was involved with all. Vertical aerial photographs, taken in 1971 and in 1996, were obtained and digitally scanned for ready use in the computer. Trees were counted for both dates, and the area of canopy they formed calculated; in many cases, increase was significant, especially in the six downtowns. To account for land values, the types of business establishments were classified for both 1971 and the present. A profound change was indicated with many of the shopping centers and all of the downtowns converting from local market neighborhood centers to broad area market providers of high-end goods and services. While much of this change can be attributed to increases in size of the total market, increased disposable income, and change in lifestyle to that for which Silicon Valley is well regarded, the positive association with tree cover, other landscaping, and architectural improvement is a contributing factor.

Results of the study are encouraging and support the interest to plant more trees in commercial areas. This should not be thought of in a simplistic fashion, however, as the broad totality of the causes of change, as exposed in the study, need to be taken into account. A major suggestion: the findings of the study should be brought into discussion with urban planning and development agencies to see and understand tree planting in its broadest context in order to reach maximum cost-benefits.

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The Impact of the Presence of Trees on the Viability of Shopping Centers and Small Downtowns in the San Jose, CA Primary Metropolitan Statistical Area (PMSA)

Researchers in the Geography Department at San José State University undertook, at the request of Our City Forest, to examine the relationship of the presence of trees planted: (1) in planned, designated shopping centers; (2) parking lots and along city streets in a group of major San Jose's PMSA old downtowns: Palo Alto, Los Gatos, Mountain View, Los Altos, Willow Glen, and Campbell. Intuition and casual observation suggest that the presence of trees found in these two types of retail centers creates a more attractive physical environment and accordingly results in higher land values, higher rents, and greater prosperity in general for the providers of goods and services in addition to the esthetic enhancement of the area's urbanscape benefiting the community at large, to say nothing of the obvious side benefits the urban forest has in its mitigation of urban heat-islands.

A simplistic assumption could be made that for every' tree planted in a retail commercial area a predicted gain in sales and prosperity would result. Measurements to support such an assumption would appear to be straightforward: just measure trees and their canopy and relate these measurements to land values, or rents. In an aggregate, comprehensive way, prosperous retail centers will very often have trees, thus leading to the declaration of an association of trees and high values. Simple measurements, however, are insufficient as variations on the theme are quite varied. For instance, a prosperous Super Regional Shopping Center with its large, open expanses of nearly treeless parking lots would have an "unfavorable" ratio between trees and dollar value while a small, low real estate value shopping center, but with many trees in its parking lot would yield a "favorable" ratio. The situation also has been observed, during the conducting of the study, that some shopping centers added trees and landscaping after they became prosperous because they had more money to put into their landscaping budget. In others, a total remodeling, along with the addition of more trees and more landscaping, accompanied a change of ownership, a general architectural improvement, and the creation of a new tenant mix through the use of incentives (both positive and negative).

A more comprehensive assumption is that the presence of trees is but one of several variables affecting shopping center/downtowns viability. A major variability is location, relative to customer base, arterial streets, freeway interchanges, etc. Others are such things as market demographics, architectural style of the shopping center, quality of landscaping, quality of the retail outlets, availability of easy, safe parking, and age of the center considering that customers are attracted to the latest and greatest and happily abandon the old. In short, many variables affect a commercial area's viability. Further, the balance between customers and these retail areas is in constant flux over time. Even the planned shopping centers, originally laid out in newly built residential areas to serve anticipated requirements, have themselves evolved and changed since construction. A common situation is where a neighborhood shopping center, which once had most of its stores serving the needs of young families finds itself, in later years, surrounded by "empty nesters" interested in dining out and recreation rather than diaper services and variety stores.

Possible approaches to the problem

Direct measurement of land values — selling price, rents, and leases — to find a number for one side of the tree-monetary value equation — was considered. In addition, to the many variables that contribute to a retail area's success or failure, as described above, dollar values for property are, thanks to their inherent proprietary nature, nearly impossible to obtain, especially as uniform, reliable, and authenticated data. Such data are not reported anywhere, at least for the small areas visited in this study; they do exist as aggregated data in census format and elsewhere for whole corporate cities but disclosure rules prevent them, appropriately, from being public information. Several possible solutions were investigated by the study team: property tax records; commercial real estate estimates; and taxable sales. Use of property tax figures, at least on an historical basis, was ruled out because of the major change in the tax law resulting from the passage of Proposition 13. Commercial real estate estimates are not uniform. Use of taxable sales was attempted (results are included in the text) but full use was prohibited, in part, because of the invoking of disclosure rules for commercial areas with fewer than ten establishments, and in part because although tax data can be acquired from the State Franchise Tax Board for samplings (with all firm names omitted), costs are prohibitively high if enough businesses are included to provide a viable data base.

The Procedure

Trading on the notion that the public has a perception of the physical appearance of retail centers (both shopping centers and downtowns), the researchers chose to quantify that urbanscape and to compare these data with measurements of number of trees and the canopy covers they collectively provide. This approach is wholly compatible with the classic geographic approach of observing closely the nature of the landscape, recording it, and analyzing it. Support for the approach is the realization that the nature of the landscape, the pattern of retail establishments in this case, manifests a whole suite of application of socio-economic-geographic principles and actions consciously taken by individuals. As a simple example, the decision to open a high-end shop is based, by the developer of the business, on an awareness of market potential, competition, and all other factors that make a firm successful. A body of theory supports this; a good example is the principle of equilibrium, established by August Losch in the 1930s in which he states that "location must be as advantageous as possible, that the market will be fully occupied by competitors, that abnormal profits disappear, and that market areas will be as small as possible." In application here, the San José PSMA has as many regional shopping malls as can be supported and each has a definable market area. Another binding principle is that of threshold and range. This states, simply, that higher-end goods and services require a large market to support businesses and that customers will come from great distances to shop in these markets. Thus, a regional shopping center will have "high-end" goods, and will be located at a highly accessible spot (a freeway interchange, for instance). Accordingly, these locations are much sought after and land values (rents) are high, much higher than those of a neighborhood center with its local customers and local market offerings.

The second major element in the procedure was the decision to make comparisons between an earlier time and the present following the notion that the introduction and growth of trees from the date selected, 1971, and present would correlate with a change in the urbanscape. Specifically, an association — though not necessarily causal — would be manifested between an increased sylvan character and a move toward the dominating offering of "high-end" goods and services.

The procedure followed then was one of first observing and recording the number and size of trees in each of 30 shopping centers and 6 downtowns in 1971 (from interpretation of historical photographs) and then again in 1997, from aerial photographs and specific measurements made in the field. Second, for each observed case, the types of businesses would be recorded, classified, and analyzed both in 1971 and in 1997. Comparisons would then be made on a center by center, downtown by downtown basis, and related to the change (usually a significant increase) of the number of trees and the area of their canopies. These retail classes were grouped into: (1) Broad area customer base, high-end goods and services; and (2) Local area customer base, convenience goods and services.

With some interesting (and explainable) exceptions, strong, positive associations were seen. All the downtowns went from a position of being largely local service centers to regional or mini-regional centers with a majority of their businesses offering high-end goods and services. Following all accepted principles, this has to mean that land values increased thus leading to the claim that at least the existence of a greater number of trees in these areas must be a contributing factor to their success. This is offered with the full realization that during the last twenty-five years, Silicon Valley has been the scene of unprecedented growth in population numbers, great increase in disposable income, and has produced a significant change in life style where expectations to participate in the "good life" are perhaps, higher than almost anywhere at anytime in history.

Details of the study begin with a section on the planned shopping centers and concludes with the six downtowns. Specifics on method and findings appear under each heading.

Shopping Centers

Introduction

This portion of the study is focused on inquiring into the possible relationship between trees/landscaping and the profitability of shopping centers. Thirty shopping centers, all falling within the San Jose PMSA, were randomly selected for the study. Each is examined on both an individual, and aggregate basis, illuminating the role trees play in the evolution and viability of the centers. Unlike downtowns, which have evolved on a lot-by-lot, store-by-store basis over a period of years, the shopping center is a geographically integrated collection of businesses, designed on the drawing board, built, and managed as a complete unit, and capable of furnishing the daily needs of goods and services on a one-stop basis for their respective customers.

Shopping Center Profitability

According to J. Dennis Lord (1985), a shopping center has a distinct life cycle, graphically depicted as a normal bell-shaped curve. At the apex of the curve the center experiences maximum revenue generation. A wide range of economic and geographical variables influence a shopping center's traverse along the curve. These can range from new centers influencing other shopping centers, new transportation corridors affecting accessibility to the centers, changes in the demographics of the surrounding residential population, to the relative strength of local and national economies.

Shopping center industry analysts point to a suite of options that are often utilized by the shopping center owner in response to a changing retail landscape. These options may be employed either singularly or in conjunction with others:

1. Invest no money in the center and keep leases low to insure full occupancy.
2. Remodel the exterior of the center, giving the buildings a more contemporary look; landscape changes and the planting of trees consistently accompany these efforts.
3. Completely rebuild the center or significantly increase the Gross Leasable Area (GLA); here too, landscape changes and the planting of trees consistently accompany these efforts.
4. Change the tenant mix, allowing the center to draw on a more profitable customer base. Some tenants need to be replaced if their sales volumes are too low, while others will outgrow their original spaces, and some may need to downsize. Changes in tenant mix are designed to strengthen the overall operation of a shopping center.

All of the shopping centers in this study exercised one, if not several of the above mentioned options. In all cases, managers have been concerned with melding the components of the center — the tenants, the structure of the buildings, and the appearance of the site — in order to create the proper ambiance for the consumer, allowing the shopping center to compete for the almost $1 trillion of annual US retail sales. It cannot be over emphasized that any modification of existing structures, alterations in landscaping and/or increased tree planting, or changes in the center's tenant mix is a response by the shopping center owner or real estate development firm to changes in the market, and an attempt to continue the economic viability of the shopping center in the face of market variability.

Method

Since tree canopies take many years to fully develop, it proved necessary to begin our study in 1971, comparing historical tree canopy coverage with the contemporary (1997) tree canopy coverage. Sale and leasing figures of business properties are difficult to use as indicators of how trees affect economic viability; these types of records generally are not public, most often not historically archived, and tend to vary greatly from one commercial area to the next. Property appraisals, lease rates, sales prices, sales marketing time and leasing marketing time are volatile in nature and are driven by direct market influences such as a business's location, current state of both the local and national economies, type and size of business, and the individual whims of business property owners and managers. Our efforts are directed at examining the long term relationship between trees and commercial viability.

Site Selection

Using a map of Santa Clara county, and a 1971 shopping center business listing published by the San Jose Mercury News, most of the county's shopping centers were identified, located, and plotted on the map. Subsequently, a random stratified sample of the shopping centers was taken yielding four regional, twelve community, and fourteen neighborhood shopping centers.

Classification

Each shopping center included in the study falls into one of three categories: regional, community, and neighborhood. The amount of Gross Leaseable Area (GLA) determines the category into which a center falls. The 1971 categories are as follows:

Regional Centers	>30,000	square meters
Community Centers	6,000 – 30,000	square meters
Neighborhood Centers	2,000 – 6,000	square meters

From 1971 to the present, the GLA for each class has increased in response to the dramatic rise in disposable income and the resultant broadening of the market, warranting an upward adjustment.

1997 classification is as follows:

Regional Centers	30,000 to 150,000+	square meters
Community Centers	10,000 – 30,000	square meters
Neighborhood Centers	3,000 – 10,000	square meters

Data Acquisition

Initial efforts at data acquisition were fourfold: first, the assessed property value of each shopping center (1971 and 1997) was to be obtained; second, the sales tax data of each center (1971 and 1997) was to be acquired from the California Board of Equalization, third, aerial photos of each site (1971 and 1997) were to be gathered and subsequently interpreted, and fourth, current field observations and measurements were to be taken, concentrating on ground based measurements of tree counts and canopy coverage as well as identification and classification of business types within each shopping center. Historical (1971) property values, sales tax data, tree count and canopy coverage, and business classifications were to be compared to the current data (1997). The thrust of this comparison was to determine the long term effect trees and landscaping changes may have on the continued viability of these shopping centers, both on an individual basis as well as an aggregate basis. Simple regression analysis on pairs of variables were to be employed, i.e., percent change in property values from 1971 to 1997 and percent change in tree canopy coverage from 1971 and 1997, in order to determine whether a relationship existed between trees and commercial viability.

Difficulties in data acquisition arose in two key areas. Proposition 13 precluded the use of assessed property values, while monetary constraints and disclosure laws prevented gathering sales tax data. Our research indicates that assessed valuation of property (based on county tax assessor records) would be unsuitable for this study due to the passage of California's Proposition 13 in the late 1970s. This measure virtually froze all property assessments at 1976 levels, allowing no more than a 2% increase of assessed value per year unless a property was sold. If sold, the property would be reassessed at the current fair market price, remaining at the new assessed level plus the maximum 2% increase per year until the property was sold again. Accordingly, 1997 property values of the sampled shopping centers (as well as the downtown businesses) in this study would be based on market values of the last year in which they were sold (any one of the last 20 years), or 1976 if they have remained under the same ownership, plus the annual 2% increase. Considering the variability in assessed values, created by Prop 13, it would have been necessary to have each property reassessed by an outside agency at considerable cost.

Regarding sales tax data, California state law prohibits the dissemination of these data on an individual business basis. Businesses must be aggregated into groups of at least ten before the data will be released. This caveat made acquiring 1971 data for four of the neighborhood centers (Fair Oaks, Wolfe-Reed, University, and Foothill Plaza) impossible since they contained fewer than ten businesses. Further, a fee of six dollars per business is charged by the State Board of Equalization. A count of businesses from 1971 and 1997 yields a total of 1,889 businesses, requiring an outlay of $11,334 to acquire the sales tax data, clearly outside the budgetary limitations of this study.

It should be noted that the role trees play in influencing commercial viability is much more subtle than the more direct market and geographical forces at work in determining commercial viability, i.e. new centers influencing the market structure, new transportation corridors affecting accessibility to the centers, changes in the demographics of the surrounding residential population, local tax structures, and the relative strength of local and national economies. As such it is difficult to say whether the use of sales tax data would have yielded any correlation between sales and tree canopy coverage.

Aerial photos of each shopping center were purchased from Air Flight Services for both 1971 and 1997. Each photo was scanned and written to compact disc for ease of transport and the inherent flexibility of digitized data. Historical data concerning business listings and GLA were obtained from the Shopping Center Guide published by the San Jose Mercury News, while current data was gathered through field observation.

Mensuration

Tree numbers and canopy area were obtained for both 1971 and 1997 through photo interpretation. Trees were counted and canopy was measured by noting tree diameter on the photographs and calculating area. Further, current field observations were performed at each site recording tree counts, canopy coverage, and relative location of trees. Businesses located in each of the 1971 shopping centers were listed and classified using historical data included in the Shopping Center Guide published by the San Jose Mercury News. Current business listings and classifications were obtained through field observations. Gross Leaseable Area for each shopping center in 1971 was provided by the Shopping Center Guide, while current (1997) GLA was obtained through the Shopping Center Directory 1996-1997.

Data Classification

All data was classified and recorded in tabular fashion. Data classification for trees consisted of:

1. Tree canopy in square meters — 1971 and 1997.
2. Tree canopy as percentage of total shopping center area in square meters — 1971 and 1997.
3. Tree canopy as percentage of shopping center parking area in square meters — 1971 and 1997.
4. Tree canopy as percentage of total shopping center footprint, or GLA in square meters — 1971 and 1997.

Data classification for the shopping centers consisted of:

1. Complete retail business listings for each shopping center — 1971 and 1997.
2. Detailed listing of all businesses types in each shopping center.
3. Detailed listing of all eating and drinking establishments — 1971 and 1997.
4. Frontage in meters, depth in meters, and area in square meters of all eating and drinking establishments.
5. Total footprint or GLA of each shopping center in square meters.
6. Total shopping center area in square meters.
7. Total parking area for each shopping center in square meters.

All retail establishments in each of the shopping centers were placed into two broad classes, each containing a number of discrete store types, as indicated below.

Types of retail goods and service establishments

Broad Customer Base- High End

1. Rating and drinking (defined as all those offering seating).

2. Home furnishings (including boutiques, gift shops, collectibles).

3. Specialty clothing (mainly women's clothing).

4. Art galleries and framing.

5. Books and music.

6. Jewelry

7. Specialized sporting goods

8. "Yellow Pages" items, those highly specialized offerings that often select string street locations but can prosper in old downtowns, largely because of a known address.

9. Movie theaters.

Local Area Customer Base - Convenience

1. Local services (comprising shoe repair, cleaners, laundries, etc.).
2. Hair salons, nails, barber shops, beauty supplies.
3. Banks and financial institutions.
4. Printing and copying.
5. Optical (glasses and optometrists).
6. Florists.
7. Drugs and pharmacies.
8. Cameras, one-hour developing, film, etc.
9. Stationary.
10. Portrait photographers.

Findings for the shopping centers

Because of the aforementioned problems associated with acquiring assessed property values, and sales tax data, it was necessary to employ observed land use data to measure the relative financial strength of shopping centers and the possible relationship to urban forest coverage. Shopping center classification inherently follows central place theory, meaning that the region has a few regional shopping centers, more community shopping centers, and a host of neighborhood shopping centers. The regional shopping centers require a broad market and offer high-end goods, the community shopping centers mid-range goods, and the neighborhood shopping centers offer mainly convenience goods and services to their immediate markets.

In recent years all of the shopping centers have experienced an upgrading of their retail character, in response to changing demographics and lifestyles, adding many specialized restaurants and other high-end retail activities. In the following graphics, figures 1 through 3, these higher end activities fall under the rubric of regional store types. Looking at the shopping centers on an aggregate basis some patterns begin to emerge. In 1971 the regional shopping centers had a fairly equal mix of both regional and local store types, with local types being more dominate in Eastridge and Stanford and regional types more dominate in Valley Fair and Westgate. By 1997, regional store types clearly dominated in these shopping centers. Simultaneously, a corresponding rise in both total tree canopy per square meter and in tree canopy as a percent of GLA, figures 4 and 5, was experienced in the regional shopping centers. Community shopping centers in 1971 were almost evenly split between local and regional types, however in 1997 seven of the twelve shopping centers were dominated by regional business types with a concomitant rise in tree canopy coverage. Local shopping centers show a rather marked change in store mix. They were completely dominated by local business types in 1971, in accordance with their design. However, by 1997, about half had come to be dominated by regional store types. While one might expect tree canopy to have increased proportionally this does not appear to be the case.

Simple regression analysis was performed on several variables: (1) percent regional store type and percent tree canopy per GLA for 1971 and 1997, (2) percent local store type and percent tree canopy per GLA for 1971 and 1997, and (3) percent change in regional store type from 1971 to 1997 and percent change in tree canopy coverage per GLA from 1971 to 1997 (for the increase in tree canopy coverage, and broad area businesses from 1971 to 1997 see figure 5.1). No correlation was found to exist between any of these variables. This does not preclude an association between retail activity and tree coverage, merely that the effect trees have on commercial viability is subtle and most probably masked by other factors. Our research found it necessary to examine each shopping center on an individual, rather than an aggregate basis, in order to provide a more comprehensive view of the relationship between trees and commercial viability. Each shopping center is examined individually on pages 33 through 92.

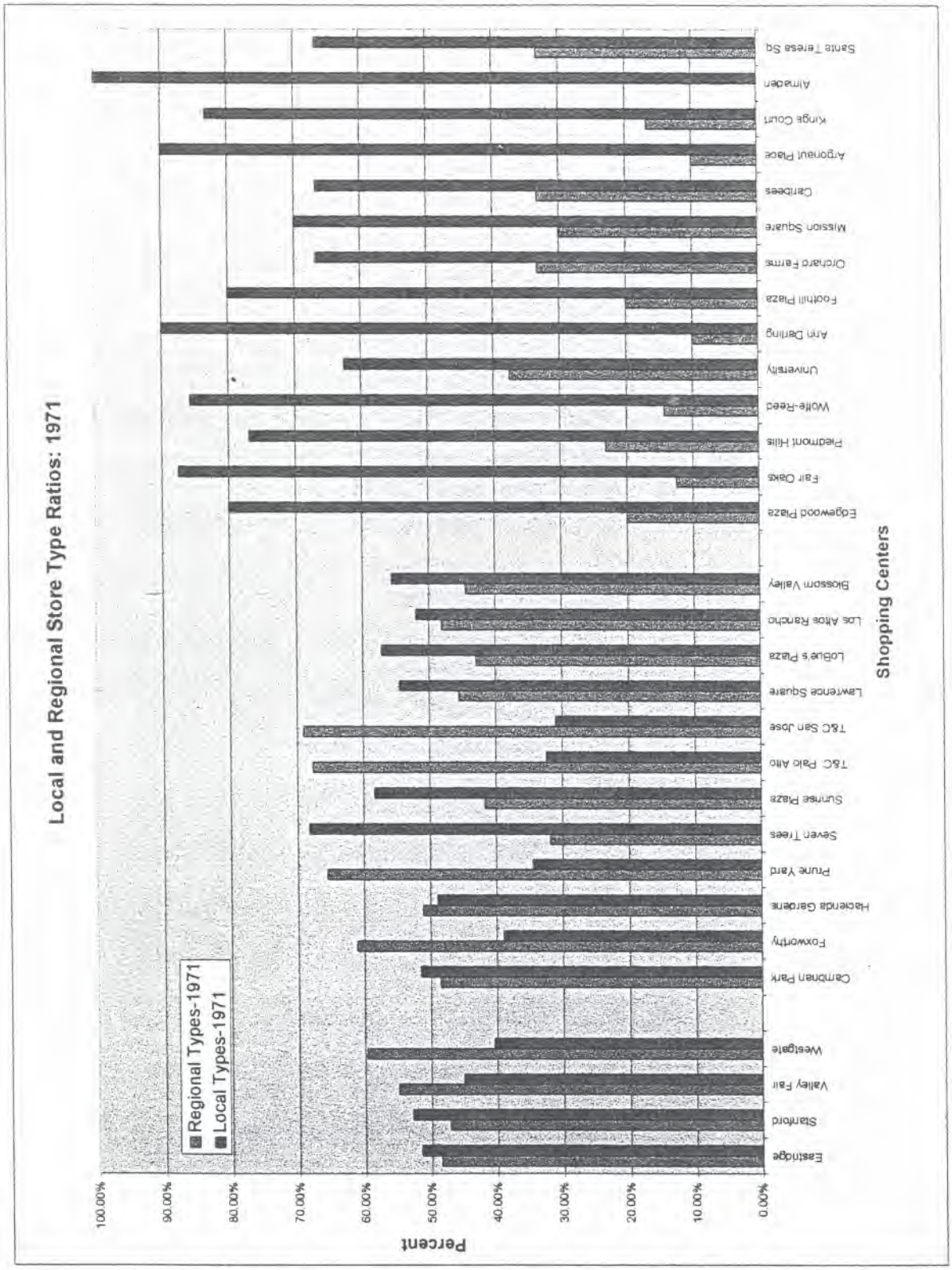

Local and Regional Store Type Ratios: 1971
Regional Types-1971
Local Types-1971
Percent
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Shopping Centers
Eastridge
Stanford
Valley Fair
Westgate
Camhean Park
Foxworthy
Hacienda Gardene
Prune Yard
Seven Trees
Sunnee Plaza
T&C Palo Alto
T&C San Jose
Lawrence Square
LoBlue's Plaza
Los Altos Rancho
Blossom Valley
Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms
Mission Square
Cantbees
Argonaut Place
Kinge Court
Almaden
Santa Teresa Sq

Figure 1

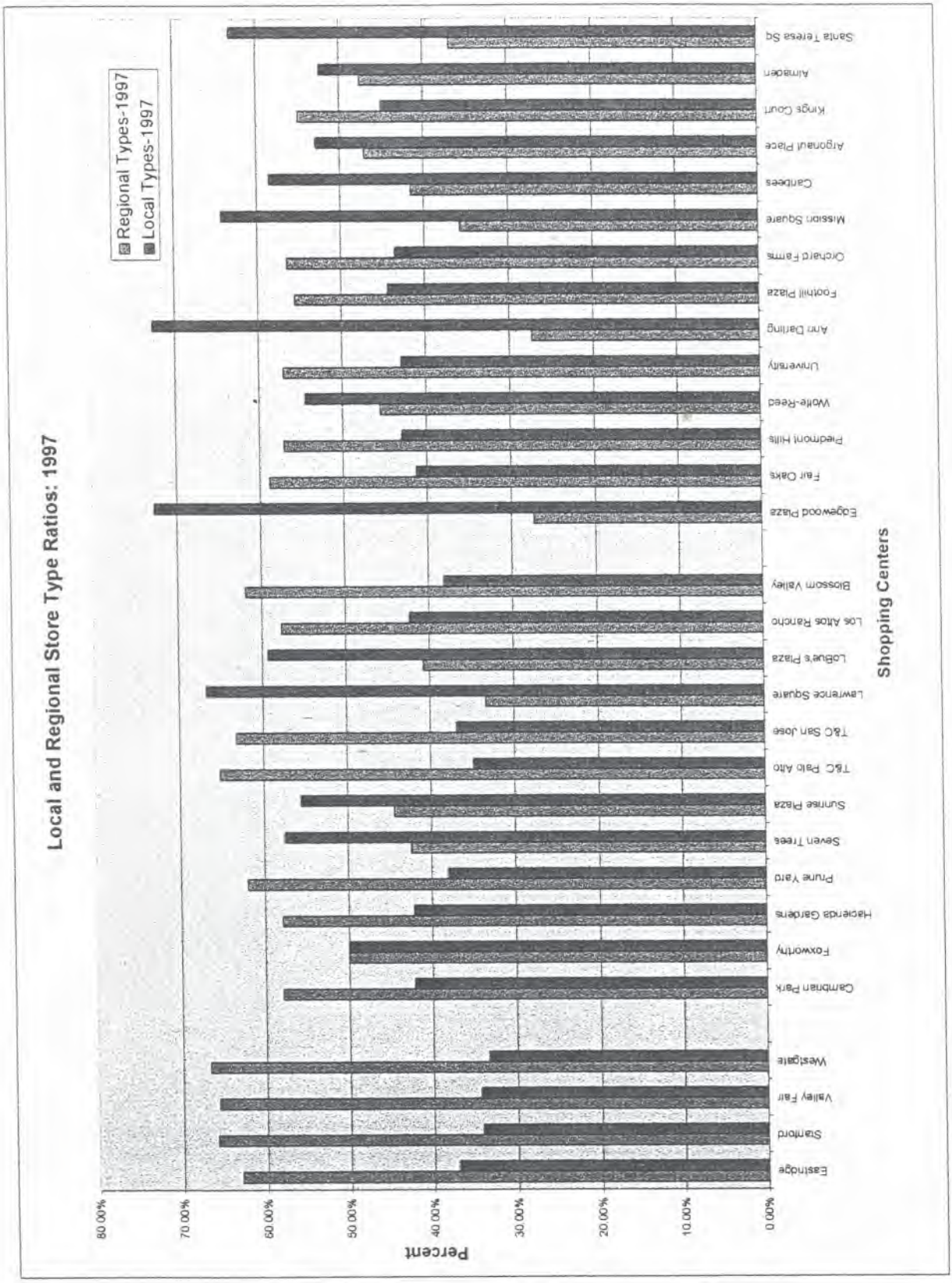

Local and Regional Store Type Ratios: 1997
Regional Types-1997
Local Types-1997
Percent
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Shopping Centers
Eastridge
Stanford
Valley Fair
Westgate
Cambrian Park
Foxworthy
Hacienda Gardens
Prune Yard
Seven Trees
Sunrise Plaza
T&C Palo Alto
T&C San Jose
Lawrence Square
LoBue's Plaza
Los Altos Rancho
Blossom Valley
Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms
Mission Square
Cantbees
Argonaut Place
Kings Court
Almaden
Santa Teresa Sq

Figure 2

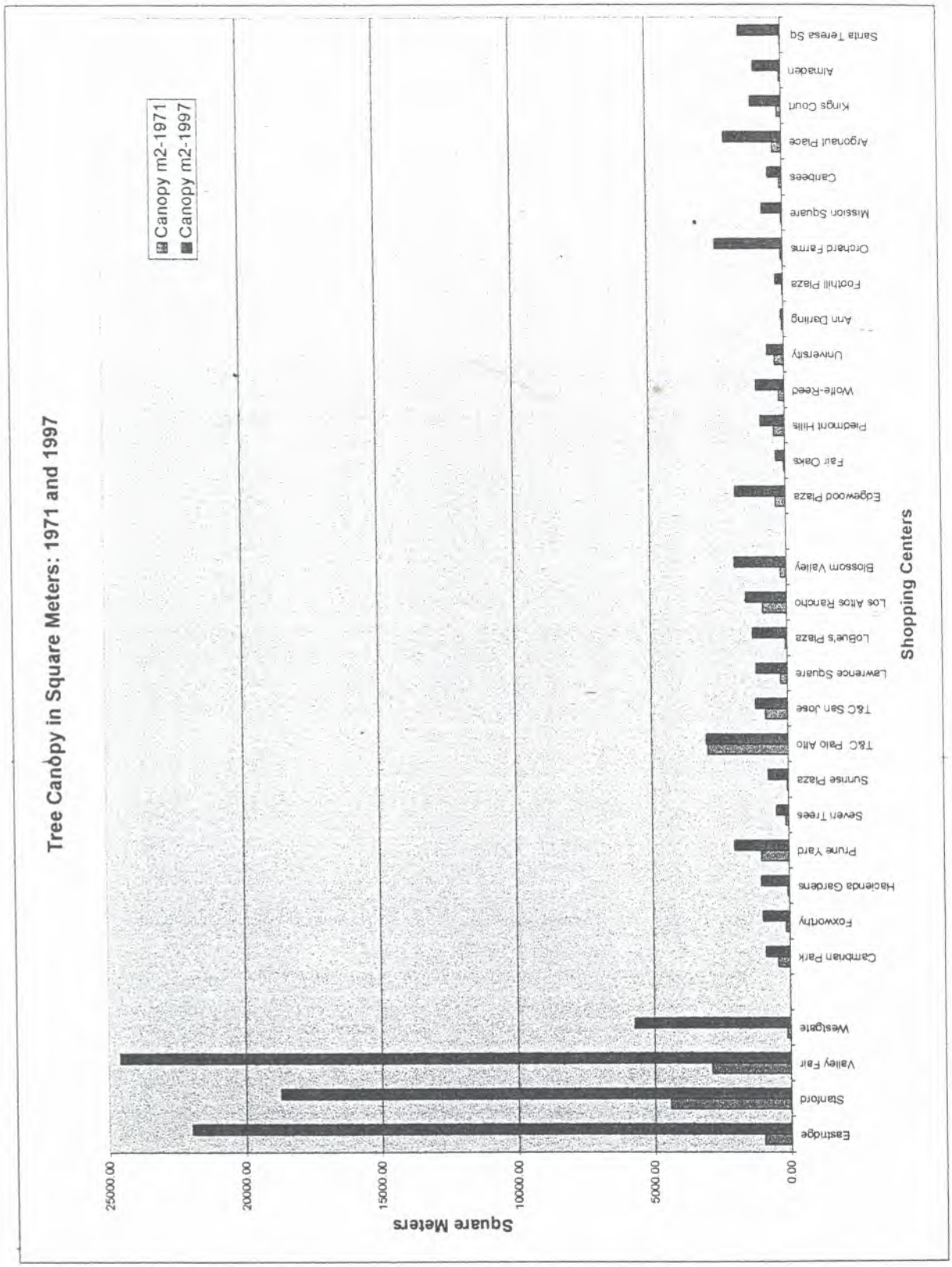

Tree Canopy in Square Meters: 1971 and 1997
Canopy m2-1971
Canopy m2-1997
Square Meters
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
Shopping Centers
Eastridge
Stanford
Valley Fair
Westgate
Cambrian Park
Foxworthy
Hacienda Gardens
Prune Yard
Seven Trees
Sunnse Plaza
T&C Palo Alto
T&C San Jose
Lawrence Square
LoBue's Plaza
Los Altos Rancho
Blossom Valley
Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms
Mission Square
Carbees
Argonaut Place
Kings Court
Almaden
Santa Teresa Sq

Figure 3

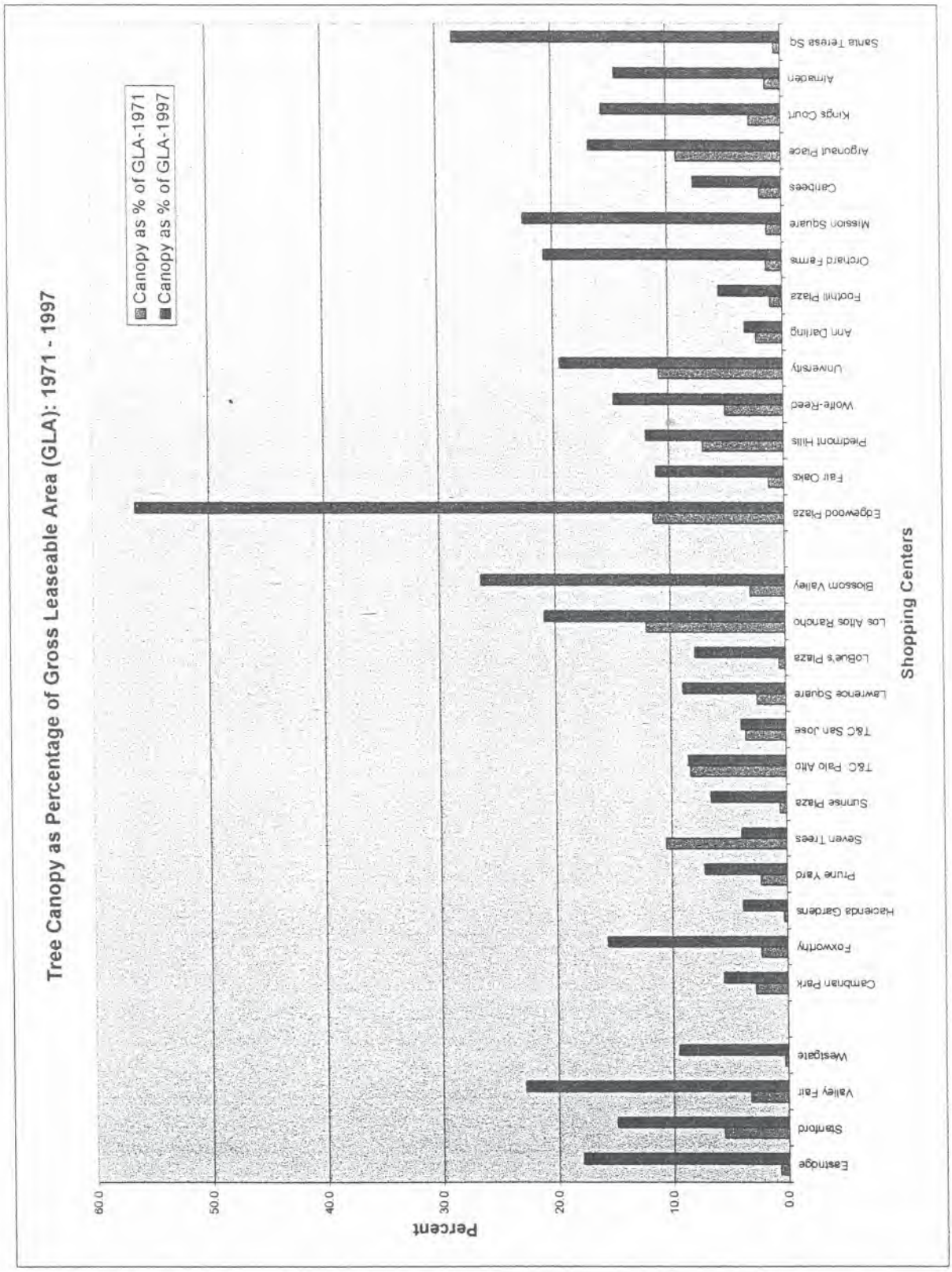

Tree Canopy as Percentage of Gross Leaseable Area (GLA): 1971 - 1997
Canopy as % of GLA-1971
Canopy as % of GLA-1997
Percent
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Shopping Centers
Santa Teresa Sq
Almaden
Kings Court
Argonaut Place
Caribees
Mission Square
Orchard Farms
Foothill Plaza
Ann Darling
University
Wolfe-Reed
Piedmont Hills
Fair Oaks
Edgewood Plaza
Blossom Valley
Los Altos Rancho
LoBue's Plaza
Lawrence Square
T&C San Jose
T&C Palo Alto
Sunnse Plaza
Seven Trees
Prune Yard
Hacienda Gardens
Foxworthy
Cambrian Park
Westgate
Valley Fair
Stanford
Eastridge

Figure 4

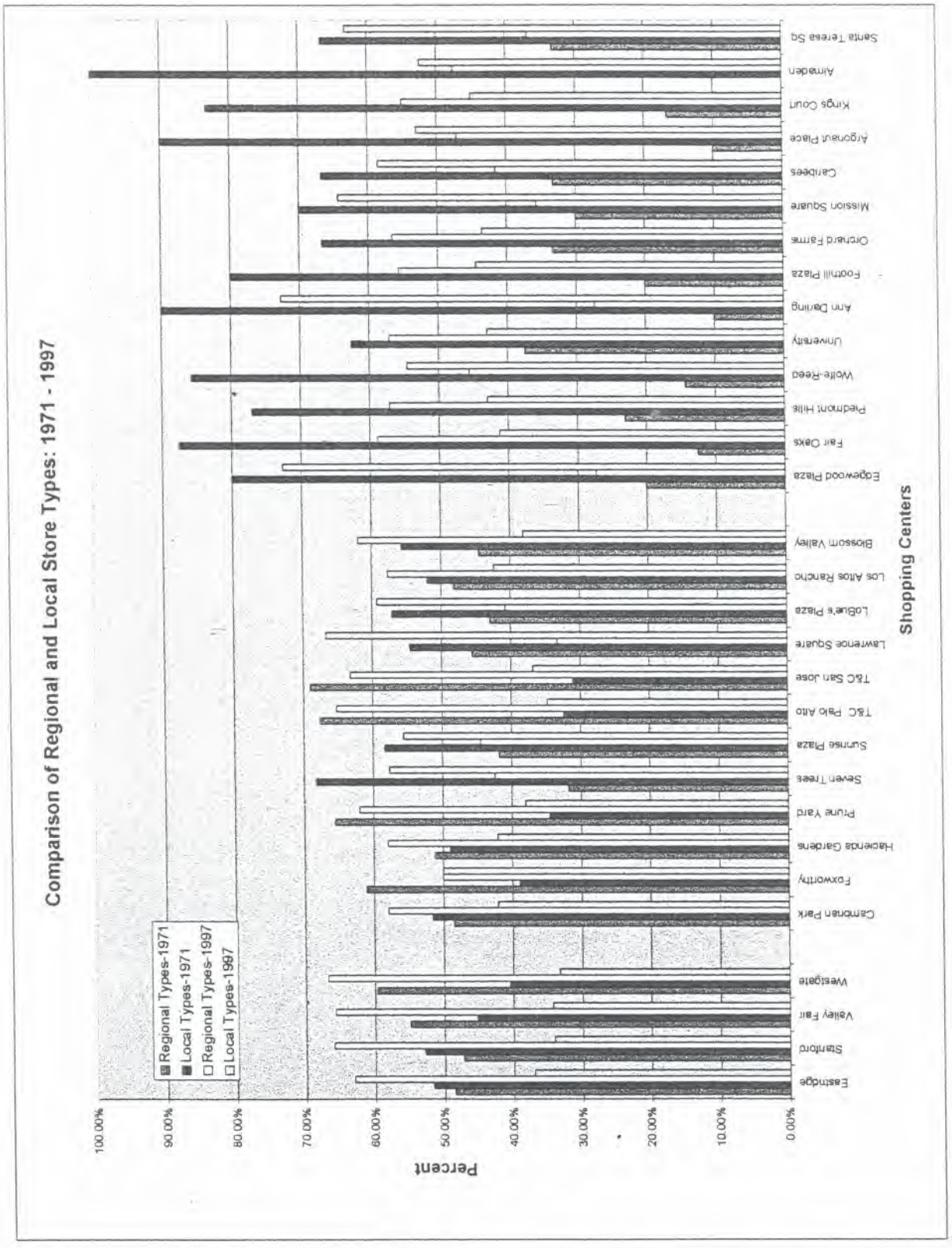
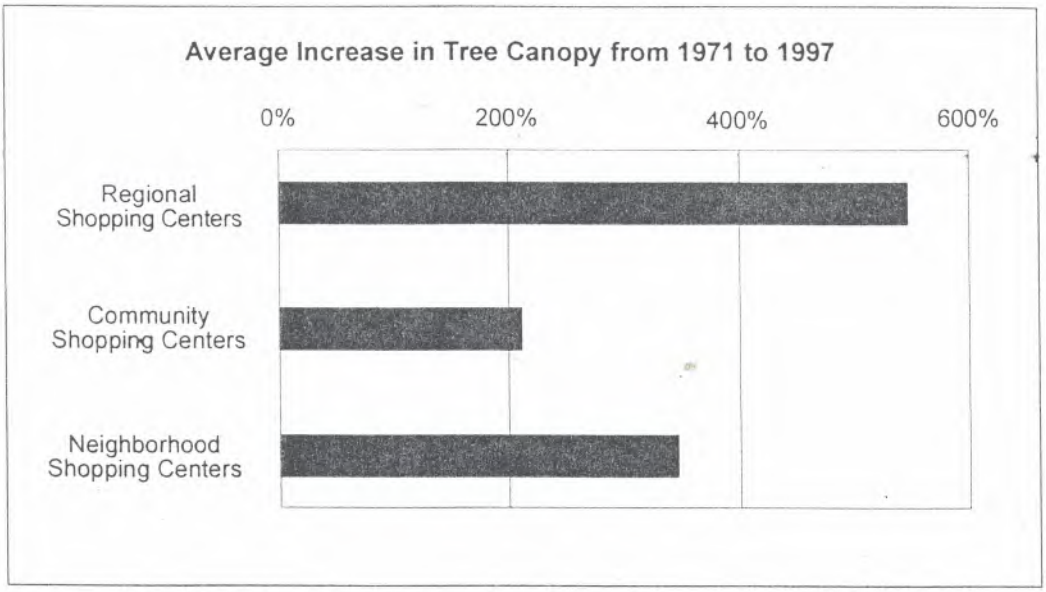
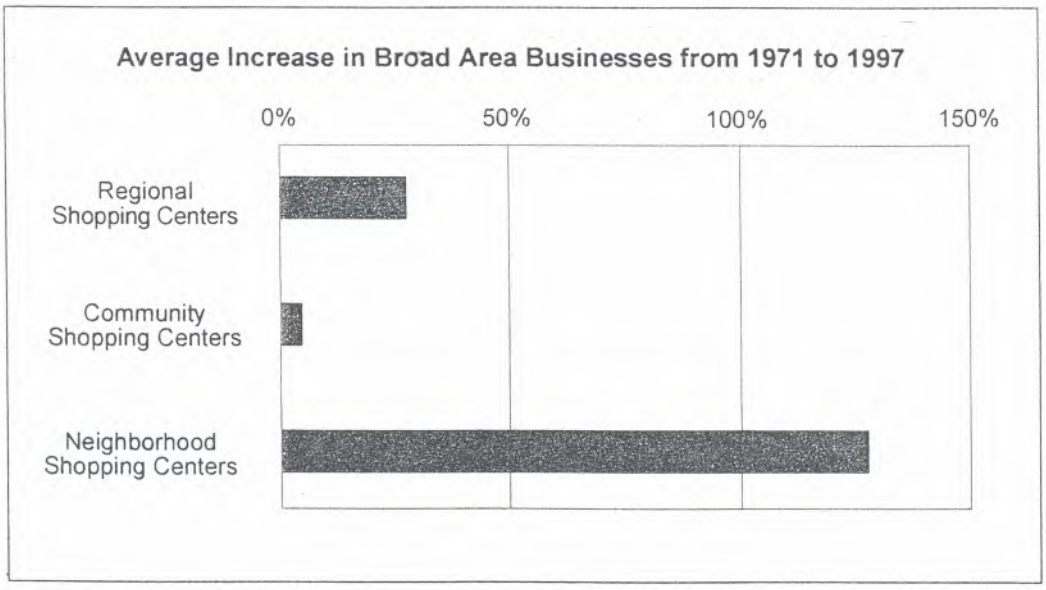

Comparison of Regional and Local Store Types: 1971 - 1997
Regional Types-1971
Local Types-1971
Regional Types-1997
Local Types-1997
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Percent
Eastridge
Stanford
Valley Fair
Westgate
Cambrian Park
Foxworthy
Hacienda Gardens
Prune Yard
Seven Trees
Sunrise Plaza
T&C Palo Alto
T&C San Jose
Lawrence Square
LoBue's Plaza
Los Altos Rancho
Blossom Valley
Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms
Mission Square
Caribees
Argonaut Place
Kings Court
Almaden
Santa Teresa Sq
Shopping Centers

Figure 5

Figure 5.1


Average Increase in Tree Canopy from 1971 to 1997
0%
200%
400%
600%
Regional Shopping Centers
Community Shopping Centers
Neighborhood Shopping Centers


Average Increase in Broad Area Businesses from 1971 to 1997
0%
50%
100%
150%
Regional Shopping Centers
Community Shopping Centers
Neighborhood Shopping Centers

The Nature of Eating & Drinking Establishments and Their Relationship to Tree Canopy in Shopping Centers

In the course of studying shopping centers, both historically in 1971 and currently by field work, the observation was made that many centers had added eating and drinking establishments that clearly catered to a broad market, one beyond local neighborhoods. Two reasons may be cited. For one, today's society has more disposable income, often with two wage earners and a disincentive to cook at home. Another is the larger ethnic population, each of which has characteristic foods, and thus restaurants. While many new structures have been built to house these restaurants, many have simply moved into shopping center space vacated by retail establishments whose business was captured by larger centers or discount houses, for example, men's clothing stores or businesses catering to young families with children.

That these restaurants form a higher end type of market (undoubtedly with more trade than those establishments they replaced) translates to higher land values and higher rent. In association with these higher values, many shopping centers have upgraded landscaping, architecture and have planted trees, thus giving diners an enhanced ambiance. This phenomenon of change of the older shopping centers is formalized in the design and construction of many recently constructed centers. A prime example is Main Street (in the Blossom Valley section of San José, see photo below) where restaurants and coffee shops share the center with a major book store plus the usual convenience establishments, such as a video rental place.

In this example of the Main Street Shopping Center, trees and street furniture help create an inviting ambiance at the entrance of Starbucks. Note the trees shading the parking area, and the environmental excitement of the short lines of sight.

Beyond the obvious architectural differences, more attention today is being paid to such things as tenant mix, landscaping, visual aesthetics and ambiance. These methods and others are utilized with the intent not only to draw customers from beyond the local area but also to keep customers for a lengthier visit. For experience has shown, the longer a customer lingers the more chance there is that the customer will spend money.

The tenant mix for most of the shopping centers have changed dramatically since 1971. This change is especially evident in the percentage of GLA used for eating and drinking establishments. In some centers this increase has been several fold. Those shopping centers with the greatest change include Cambrian Park Plaza (3% to 19%), The Prune Yard (2 to 22), Seven Trees (3 to 22), Town & Country Palo Alto (6 to 46), Town & Country San Jose (1 to 18), Lawrence Square (4 to 28), Fair Oaks (7 to 54), Piedmont Hills (0 to 23), and Almaden (0 to 34). However, of these only a couple had an equally dramatic percentage of the shopping center covered with tree canopy: The Prune Yard, with 229 trees covering 5 % of the center with their canopy and Town & Country, Palo Alto, where 125 trees cover 9 % of the center.

Both of these centers are buzzing with activity. The Prune Yard has an extremely busy parking lot at all times of the day and evening. Besides having many eating and drinking establishments (most with outdoor seating), there is a Barnes and Noble Bookstore and a movie theater to attract customers and encourage them to linger. Town & Country Palo Alto is also an extremely healthy center, as it was in 1971, with an abundance of customers from the surrounding community, the high tech industrial parks, adjacent Palo Alto High School with its many affluent students, and Stanford University. With its plethora of eating and drinking establishments and many old and large spreading oaks, many people can be seen there even with their sack lunches.

Some shopping centers had dramatic increases in the percentage of tree canopy, but the total number of trees is small. One example of this is Seven Trees, which has only 1% of its center covered with trees, but it had nearly a 5 fold increase in the number of trees (15 to 73) and a 10 fold increase in the percentage of the center covered by trees (.02 to 1%). This is very misleading because among all the centers in this study, this is one of those most lacking in tree canopy, especially when taking into account the fact that most of the centers trees are in the landscaping around the Burger King and its parking area at the northwest corner . In fact, except for this fast food restaurant, there is little activity and few cars in the parking lot.

Data on regional, community and neighborhood shopping center data, eating and drinking establishment data and tree Canopy Data for 1971 and 1996-97 can be seen in Table 2.

Table 1

Correlation and Regression Analyses

	E & D % of Total Footprint (X)	Tree Canopy % of Shopping Center Area (m2) (Y)	Y hat (est. % Canopy.)	Y-Y hat (resid.)	$(Y-Y\ hat)^2$ SS Residual	$(Y\ hat-Y\ mean)^2$ SS Expected	$(Y-Y\ mean)^2$ SS Total
Cambrian Park	19.00%	1.00%	4%	-0.026093	0.0006809	3.65242E-09	0.0006840
Foxworthy	29.00%	4.00%	4%	0.002478	0.0000061	1.87152E-06	0.0000148
Hacienda Gardens	7.00%	1.00%	3%	-0.024379	0.0005943	3.1492E-06	0.0006840
Prune Yard	22.00%	5.00%	4%	0.013478	0.0001817	1.35502E-07	0.0001917
Seven Trees	22.00%	1.00%	4%	-0.026522	0.0007034	1.35502E-07	0.0006840
Sunrise Plaza	7.00%	1.00%	3%	-0.024379	0.0005943	3.1492E-06	0.0006840
T&C Palo Alto	46.00%	9.00%	4%	0.050050	0.0025050	1.44129E-05	0.0028994
T&C San Jose	18.00%	1.00%	4%	-0.025951	0.0006734	4.13236E-08	0.0006840
Lawrence Square	28.00%	3.00%	4%	-0.007379	0.0000545	1.50108E-06	0.0000379
LoBue's Plaza	6.00%	2.00%	3%	-0.014236	0.0002027	3.6766E-06	0.0002609
Los Altos Rancho	15.00%	5.00%	4%	0.014478	0.0002096	3.992E-07	0.0001917
Blossom Valley	14.00%	5.00%	4%	0.014621	0.0002138	6.00114E-07	0.0001917
Edgewood Plaza	13.00%	9.00%	4%	0.054764	0.0029991	8.41837E-07	0.0028994
Fair Oaks	54.00%	2.00%	4%	-0.021093	0.0004449	2.43958E-05	0.0002609
Piedmont Hills	23.00%	2.00%	4%	-0.016665	0.0002777	2.61072E-07	0.0002609
Wolfe-Reed	19.00%	4.00%	4%	0.003907	0.0000153	3.65242E-09	0.0000148
University	37.00%	4.00%	4%	0.001335	0.0000018	6.30417E-06	0.0000148
Ann Darling	15.00%	1.00%	4%	-0.025522	0.0006514	3.992E-07	0.0006840
Foothill Plaza	17.00%	1.00%	4%	-0.025808	0.0006660	1.19805E-07	0.0006840
Orchard Farms	6.00%	5.00%	3%	0.015764	0.0002485	3.6766E-06	0.0001917
Mission Square	10.00%	5.00%	3%	0.015192	0.0002308	1.81187E-06	0.0001917
Caribees	11.00%	2.00%	3%	-0.014951	0.0002235	1.44772E-06	0.0002609
Argonaut Place	4.00%	6.00%	3%	0.026049	0.0006786	4.85382E-06	0.0005686
Kings Court	13.00%	6.00%	4%	0.024764	0.0006132	8.41837E-07	0.0005686
Almaden	34.00%	3.00%	4%	-0.008236	0.0000678	4.33584E-06	0.0000379
Santa Teresa Sq.	16.00%	6.00%	4%	0.024335	0.0005922	2.39098E-07	0.0005686

H_0: There is no correlation between percentage of eating and drinking establishments and percentage of canopy coverage

H_1: There is a correlation between percentage of eating and drinking establishments and percentage of canopy coverage

Accept H_o: The F value of .1426 falls inside the acceptance zone of 4.22 based on a .05 significance level. We must, therefore, accept the null hypothesis and conclude that percent eating and drinking establishments and percent canopy coverage are not correlated .

			0.0143305	7.86081E-05	0.0144154
degrees of freedom	1, 25				
significance level	0.05	0.000220118			
critical value of F	4.24	0.015409385			
Mean	0.018135938	3.62%			
b (b_1)	0.014284694	19.42%			
a (b_0)	0.033379319				
$S_{Y \cdot X}$	0				
SS exp.	0.0000786				
SS resid.	0.0143305				
SS total	0.0144154				
r^2	0.005453068				
MS exp.	7.86081E-05				
MS resid.	0.000551173				
F value	0.142619712				

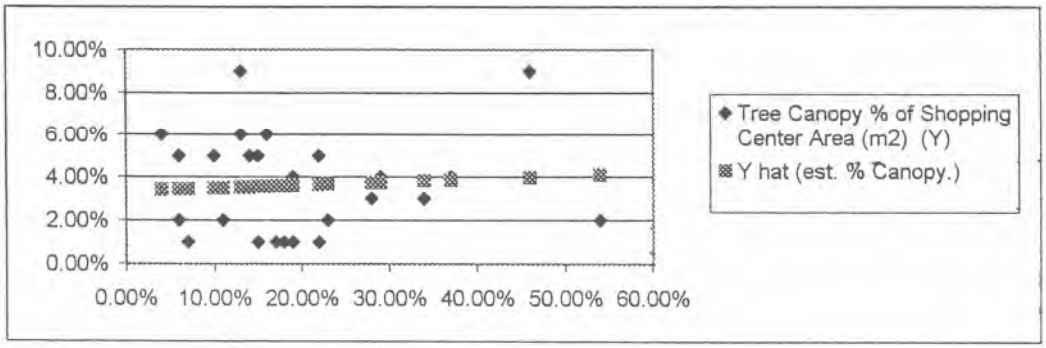
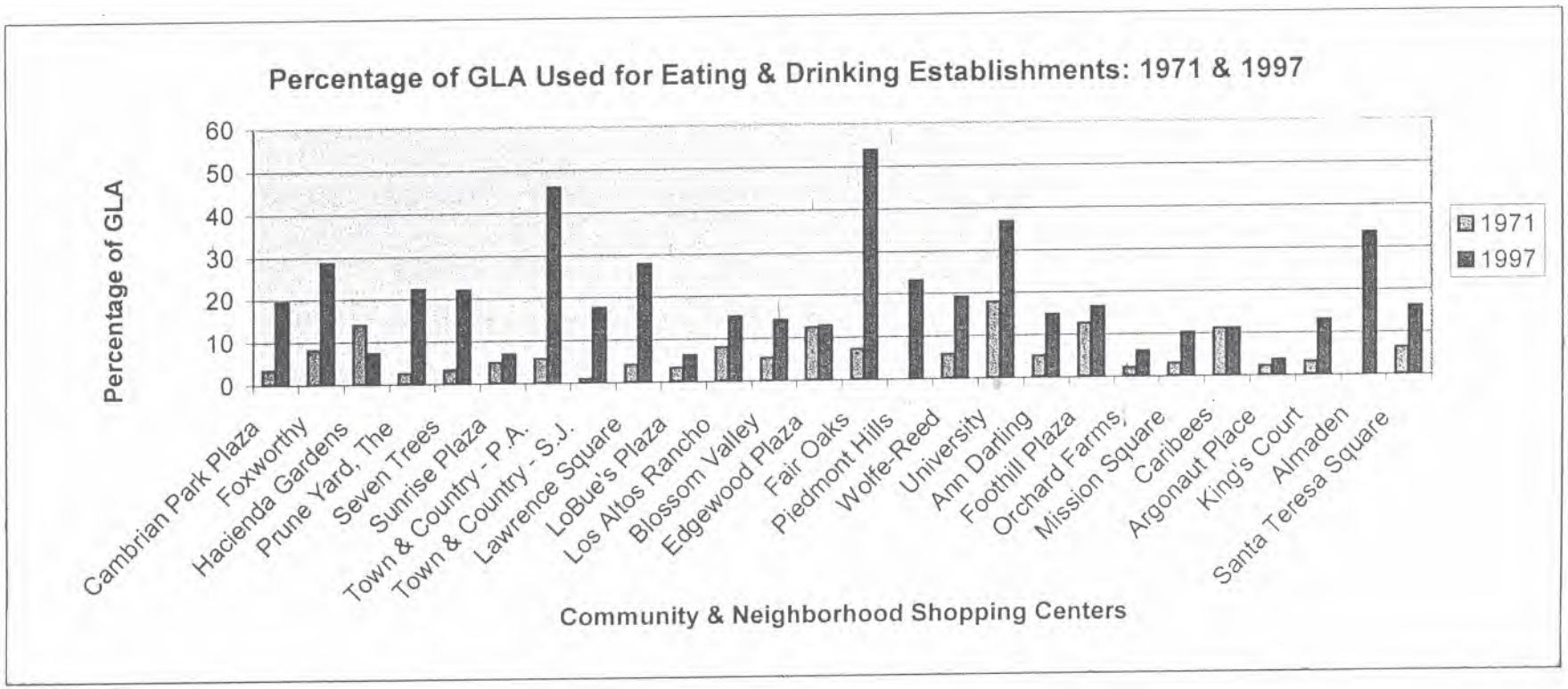


Figure 6


Percentage of GLA Used for Eating & Drinking Establishments: 1971 & 1997
Percentage of GLA
60
50
40
30
20
10
0
1971
1997
Cambrian Park Plaza
Foxworthy
Hacienda Gardens
Prune Yard, The
Seven Trees
Sunrise Plaza
Town & Country - P.A.
Town & Country - S.J.
Lawrence Square
LoBue's Plaza
Los Altos Rancho
Blossom Valley
Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms,
Mission Square
Caribees
Argonaut Place
King's Court
Almaden
Santa Teresa Square
Community & Neighborhood Shopping Centers

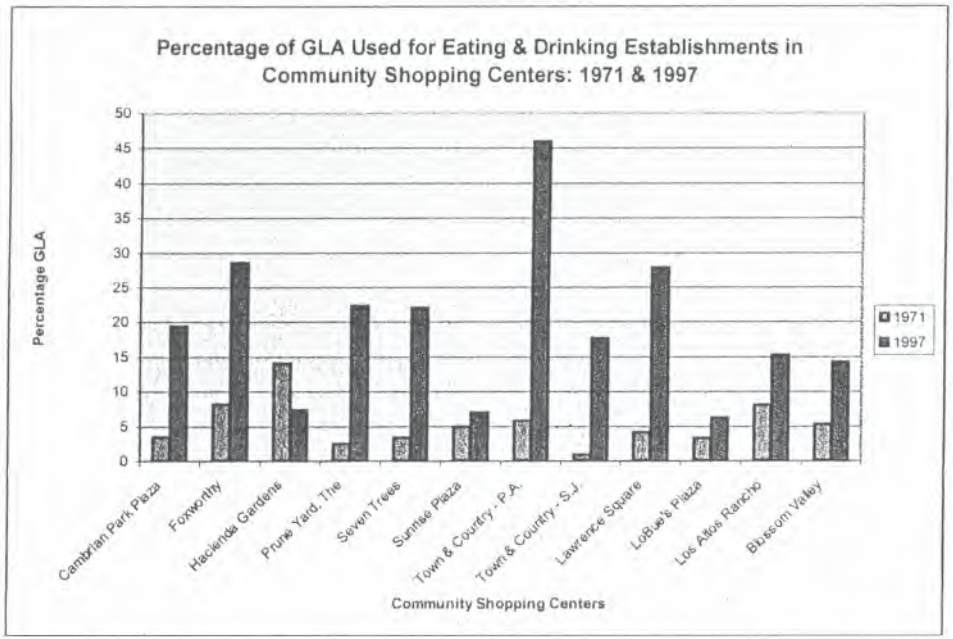

Percentage of GLA Used for Eating & Drinking Establishments in Community Shopping Centers: 1971 & 1997
Percentage GLA
50
45
40
35
30
25
20
15
10
5
0
1971
1997
Cambrian Park Plaza
Foxworthy
Hacienda Gardens
Prune Yard, The
Seven Trees
Sunrise Plaza
Town & Country - P.A.
Town & Country - S.J.
Lawrence Square
LoBue's Plaza
Los Altos Rancho
Blossom Valley
Community Shopping Centers

Figure 7

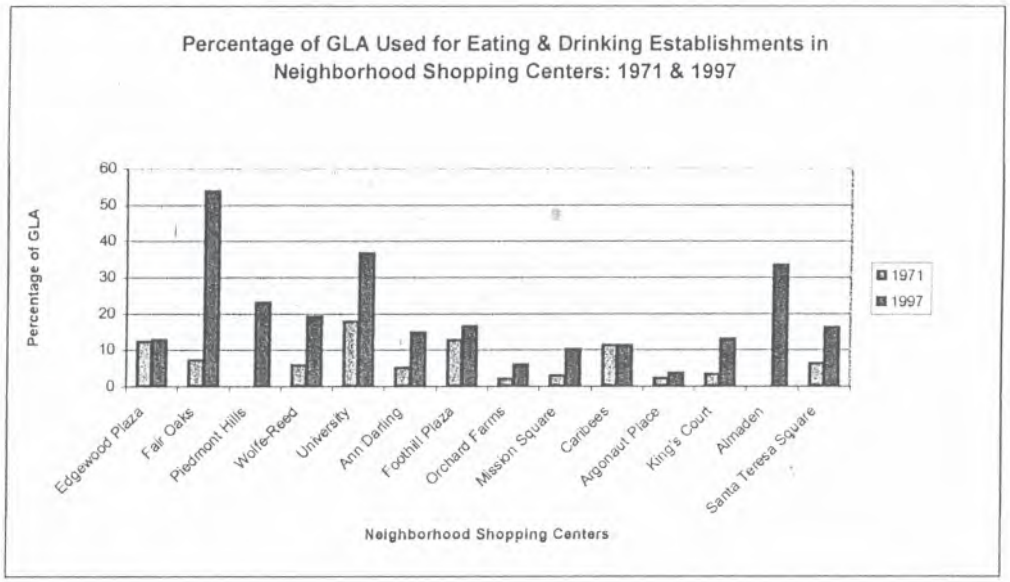
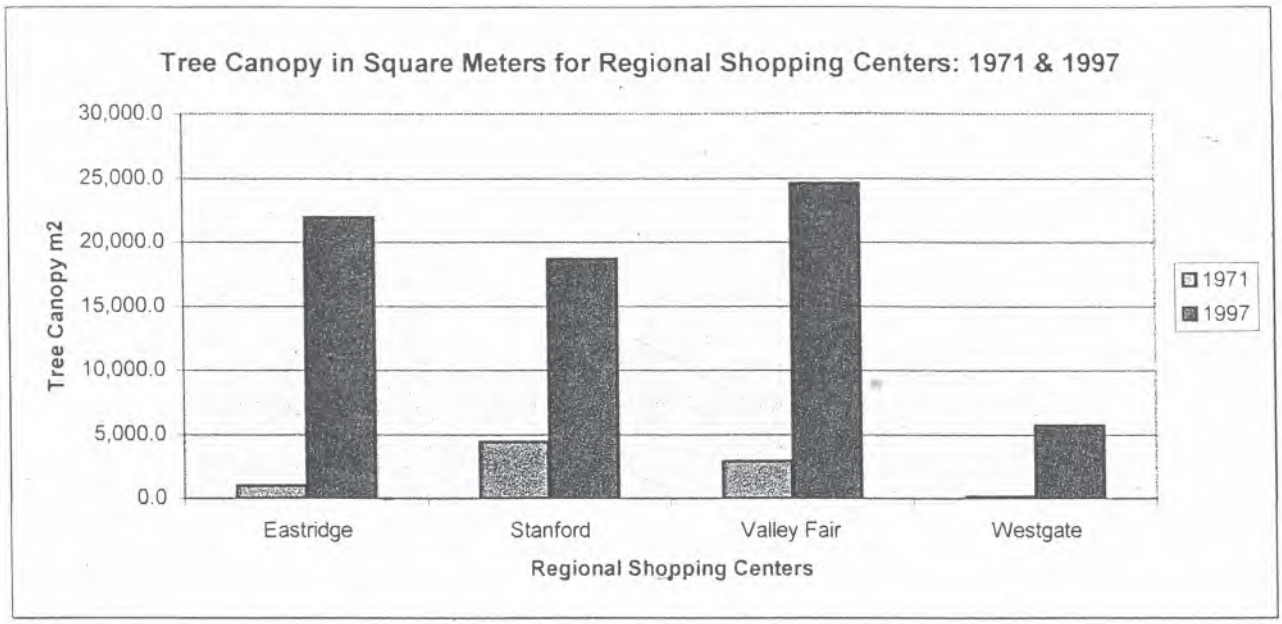

Percentage of GLA Used for Eating & Drinking Establishments in Neighborhood Shopping Centers: 1971 & 1997
Percentage of GLA
60
50
40
30
20
10
0
1971
1997
Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms
Mission Square
Caribees
Argonaut Place
King's Court
Almaden
Santa Teresa Square
Neighborhood Shopping Centers

Figure 8


Tree Canopy in Square Meters for Regional Shopping Centers: 1971 & 1997
Tree Canopy m2
30,000.0
25,000.0
20,000.0
15,000.0
10,000.0
5,000.0
0.0
Eastridge
Stanford
Valley Fair
Westgate
Regional Shopping Centers
1971
1997


Tree Canopy in Square Meters for Community Shopping Centers: 1971 & 1997
Tree Canopy m2
5,000.0
4,500.0
4,000.0
3,500.0
3,000.0
2,500.0
2,000.0
1,500.0
1,000.0
500.0
-
Cambrian Park Plaza
Foxworthy
Hacienda Gardens
Prune Yard, The
Seven Trees
Sunrise Plaza
Town & Country - Palo Alto
Town & Country - San Jose
Lawrence Square
LoBue's Plaza
Los Altos Rancho
Blossom Valley
Community Shopping Centers
1971
1997

Figure 9

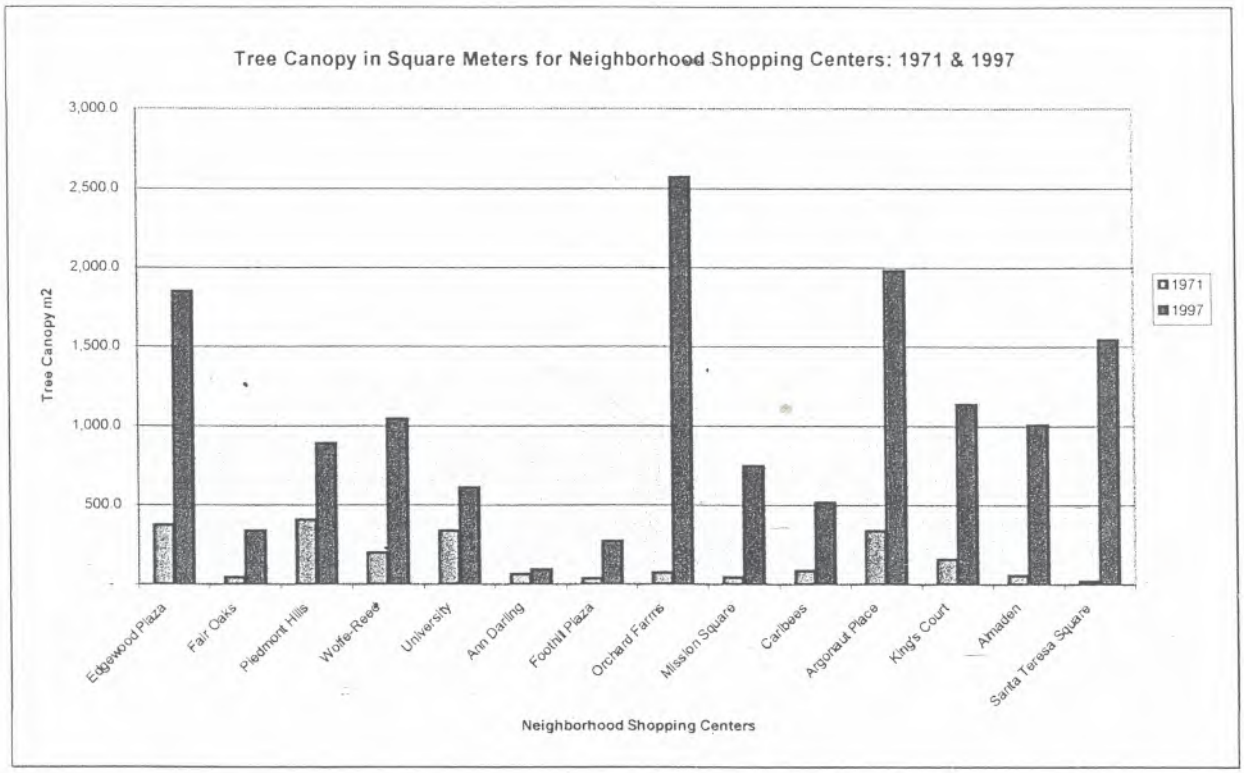

Tree Canopy in Square Meters for Neighborhood Shopping Centers: 1971 & 1997
3,000.0
2,500.0
2,000.0
1,500.0
1,000.0
500.0
-
Tree Canopy m2
1971
1997
Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms
Mission Square
Caribees
Argonaut Place
King's Court
Amaden
Santa Teresa Square
Neighborhood Shopping Centers

Table 2

Regional, Community and Neighborhood Shopping Center Data, Eating & Drinking Establishment Data and Tree Canopy Data for 1971 & 1996-97

1996-97 Data	Business Name '96	Type	Business Frontage (m)	Business Depth (m)	Business Area (m2)	Total Area of Eating & Drinking Establishments (m2)	Percent area (m2) change of E & D Establishments from 1971	Total Footprint (ft2)	Total Footprint (m2)	E & D % of Total Footprint	Tree Canopy (m2)	Percent Tree canopy (m2) change from 1971	Total Tree Count	Percent Change in Tree Count from 1971	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
Regional Shopping Centers																			
1 Eastridge									122,888		21,983 9	2,136 9	525 0	1844	300,252	177,364	7	12	18
2 Stanford									125,419		18,707	322 8	660 0	162	256,762	133,343	7	14	15
3 Valley Fair (Stevens Creek/Valley Fair)									107,768		24,604	749 2	1,097 0	433	284,189	176,421	9	14	23
4 Westgate									60,387		5,725 0	4,348 3	671 0	386	197,362	136,975	3	4	9
Community Shopping Centers																			
1 Cambrian Park Plaza						3,067	472 6	170,000	15,794	19	879 2	103 3	36	100	72,150	56,356	1	2	6
	Price Low Market	**Supermarket**	**38**	**53**	**2,014**														
	Alicia's Café	Restaurant	10	15	150														
	Heartbrest Café	Restaurant	9	19	171														
	Togo's	Restaurant	15	20	300														
	Round Table Pizza	Restaurant	24	18	432														
2 Foxworthy						1,775	247 4	66,820	6,208	29	971 8	591 6	86	439	24,760	18,552	4	5	16
	P W Market	**Supermarket**	**61**	**36.5**	**2,166**														
	Mexico Lindo	Restaurant	18	35 5	639														
	Great Chinese	Restaurant	12	35 5	426														
	Giorgio's	Restaurant	20	35 5	710														
3 Hacienda Gardens						1,944	-37 1	285,000	26,477	7	1018 1	1,584 4	68	580	91,650	65,173	1	2	4
	P W Market	**Supermarket**	**68**	**44**	**2,992**														
	Lucky's	**Supermarket**	**57**	**75**	**4,275**														
	Marie Callenders	Restaurant	27	25	675														
	MacDonalds	Restaurant	9	11	99														
	Hometown Buffet	Restaurant	24	40	960														
	Lung Wah kitchen	Take-out Rest	4 5	20	90														
	Hooz Donuts	Restaurant	6	20	120														
4 Prune Yard, The						6,213	457 3	300,000	27,871	22	3771 1	271 8	229	166	74,393	46,522	5	8	14
	Barnes & Noble	**Bookstore**	**43.5**	**68**	**2,958**														
	B&N Cafe	Restaurant	11	20	220														
	Pollo Rey	Restaurant	12	16	192														
	Swenson's Ice Cream	Restaurant	14 5	17	247														
	Wrap Works	Restaurant	16	11	176														
	Campbell Coffee Roasting Co	Restaurant	10 5	10 5	110														
	Boswell's	Bar	8	13	104														
	Guido's	Restaurant	21	15	315														
	Lisa's Tea Treasures	Restaurant	12 5	15	188														
	Mrs Fields	Bakery	8	11	88														
	El Burro	Restaurant	26	24	624														
	Kyoto Palace	Restaurant	14	21	294														
	Sweat Retreat	Restaurant	5	15	75														
	Left at Albuquerque	Restaurant	22 5	41	923														
	Outback Steakhouse	Restaurant	33	26	858														
	Rock Bottom Brewery & Rest	Restaurant	40	45	1,800														
5 Seven Trees						2,495	597 6	122,000	11,334	22	441 2	293 0	73	387	49,805	38,471	1	1	4
	Marina Foods	**Supermarket**	**66 (41x41)+(25**		**2,116**														
	Hung Vuong Tofu	Restaurant	8	31	248														
	Denise's Donuts	Restaurant	8	31	248														
	B's Pizza	Restaurant	15	22	330														
	Hoan My	Restaurant	24	31	744														
	Phuong Dung	Restaurant	9	31	279														
	Daily Delight	Restaurant	6	32	192														
	El Pollo Rico	Restaurant	8	32	256														
	Burger King	Restaurant	22	9	198														
6 Sunrise Plaza						775	111 1	119,156	11,070	7	727 7	1,585 5	138	666	57,385	46,315	1	2	7
	Comp USA	**Comp. Super Store**	**41.6**	**52**	**2,168**														
	Sports Mart	**Sport Super Store**	**67**	**66**	**4,366**														
	Juicy Burger	Restaurant	6	24	144														
	TCBY Yogurt	Restaurant	6	24	144														
	City Espresso	Restaurant	8	24	192														
	Shah Sushi	Restaurant	8	19	152														
	Sunrise Bakery	Bakery	7 5	19	143														

1996-97 Data	Business Name '96	Type	Business Frontage (m)	Business Depth (m)	Business Area (m2)	Total Area of Eating & Drinking Establishments (m2)	Perecent area (m2) change of E & D Establishments from 1971	Total Footprint (ft2)	Total Footprint (m2)	E & D % of Total Footprint	Tree Canopy (m2)	Perecent Tree canopy (m2) change from 1971	Total Tree Count	Percent Change in Tree Count from 1971	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
7 Town & Country Village - Palo Alto						4,271	110.9	100,000	9,290	46	4755.5	61.9	125	105	52,683	43,393	9	11	51
	John's Town & Country Ma	**Supermarket**	**23**	**62**	**1,196**														
	Hobees	Restaurant	9	29	261														
	Juice Club	Drinks	5.5	29	160														
	Stanford Ice Cream & Yogurt	Dessert	3	29	87														
	Petaluma's Rotisserie Chicke	Restaurant	9	29	261														
	Kingchuan Chinese	Restaurant	4.5	29	131														
	Pete's Coffee & Tea	Drinks	13.5	29	392														
	Stanford Ice Cream & Yogurt	Dessert	7	14	98														
	The Sushi House	Restaurant	8	15	120														
	The Cheese House	Deli	7	15	105														
	Red Boy's Pizza	Restaurant	5	18	90														
	Cookbook Restaurant	Restaurant	27	19	513														
	Dounce France	Bakery	9	15	135														
	Stickney's	Restaurant	30	17	510														
	Rojoz Gourmet Wraps	Restaurant	5	21	105														
	Some Kind of Place	Restaurant	9	12	108														
8 Town & Country Village - San Jose						5,326	2288.7	325,000	30,193	18	1178.3	45.0	58	7	136617	106,424	1	1	4
	AMC Theatre	**Movie Theatre**	**24**	**59**	**1,416**														
	Country Inn	Restaurant	19	27	513														
	Le Bon Café	Restaurant	10	15	150														
	Khanh's Garden Restaurant	Restaurant	24	24	576														
	Moulin Rogue Coffee Roastin	Drinks	8	5	40														
	Ocean Harbor Chinese	Restaurant	16	31	496														
	Chili's	Restaurant	22	26	572														
	Rock'N Tacos	Restaurant	15	19	285														
	Mr. Chau's	Restaurant	19	19	361														
	Togo's	Restaurant	19	10	190														
	Sweet Treat	Dessert	16	10	160														
	Hobee's Restaurant	Restaurant	21	27	567														
11 Lawrence Square						3,568	753.5	138,130	12,833	28	1146.1	362.0	56	51	40,950	28,117	3	4	9
	National Foods	**Supermarket**	**43**	**34**	**1,462**														
	Comp USA	Computers	74	35	2,590														
	New Tung Kee	Restaurant	12	17	204														
	Chili's	Restaurant	21	32	672														
	Ocean Seafood Restaurant	Restaurant	6	17	102														
12 LoBue's Plaza						993	157.6		15,859	6	1248.2	1,887.5	179	1392	63,635	47,776	2	3	8
	Lucky's	**Supermarket**	**71**	**24**	**1,704**														
	Subway	Restaurant	4	18	72														
	Dawn Donuts	Bakery	6	24	144														
	El Zochalo	Restaurant	6	24	144														
	Vito's Pizza	Restaurant	7	25	175														
	Rica Panaderia	Restaurant	6	25	150														
	Boston Market	Restaurant	22	14	308														
14 Los Altos Rancho						1,092	89.3	77,052	7,158	15	1511.9	74.8	36	157	31,131	23,973	5	6	21
	Andronico's Market	**Supermarket**	**51**	**30**	**1,530**														
	Papa Murphy's Pizza	Takeout	7	13	91														
	Starbuck's	Drinks	17	10	170														
	Lappert's	Dessert	14	9	126														
	Sonoma Valley Bagels	Bakery	15	11	165														
	Clark's Charcoal Broiler	Restaurant	15	21	315														
	Rancho Swiss Bakery	Bakery & del	9	25	225														
15 Blossom Valley						1,027	167.7	77,500	7,200	14	1903.6	772.3	81	212	39,384	32,184	5	6	26
	Safeway	**Supermarket**	**64**	**60**	**3,200**														
	Larbre de LaVie	Restaurant	12	28	336														
	Milan Pizza	Restaurant	12	25	300														
	Coffee Talk	Drinks	6	23	138														
	Fro-Yo	Dessert	4.5	22	99														
	House of Bagels	Bakery	7	22	154														

1996-97 Data	Business Name '96	Type	Business Frontage (m)	Business Depth (m)	Business Area (m2)	Total Area of Eating & Drinking Establishments (m2)	Percent area (m2) change of E & D Establishments from 1971	Total Footprint (ft2)	Total Footprint (m2)	E & D % of Total Footprint	Tree Canopy (m2)	Percent Tree canopy (m2) change from 1971	Total Tree Count	Percent Change in Tree Count from 1971	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
Neighborhood Shopping Centers																			
1 Edgewood Plaza						422	3.7	35,320	3,281	13	1849.5	395.0	58	93	21,221	17,940	9	10	56
	Lucky's	**Supermarket**	**29**	**56**	**1,624**														
	Formico's Pizza	Restaurant	16	15	240														
	Country Side Delicatessen	Deli	13	14	182														
2 Fair Oaks						1,645	574.3	32,894	3,056	54	336.8	652.6	22	175	14,927	11,871	2	3	11
	Center Food II Market	**Supermarket**	**46**	**43**	**1,978**														
	Tia Juana	Restaurant	13	16	208														
	Shoho Restaurant	Restaurant	6	16	96														
	Rene-Rose	Restaurant	6	20	120														
	Cake's N Stuff	Bakery	5	20	100														
	Royal Garden	Restaurant	8	20	160														
	Pizza Depot	Restaurant	17	33	561														
	Bam Thai	Restaurant	6	23.5	141														
	The Raven	Restaurant	11	23.5	259														
4 Piedmont Hills						1,714	Not computable	80,000	7,432	23	891.8	120.2	115	667	36,421	28,989	2	3	12
	VACANT	**Former supermarket**	**40**	**45**	**1,800**														
	Tim Hong	Restaurant	6	19	114														
	Nations	Restaurant	23	23	529														
	Subway	Restaurant	9	15	135														
	Day Break Donuts	Bakery	5	18	90														
	P & E Tee Time	Drinks	6	19	114														
	Bagel Basket	Bakery	7	30.5	214														
	Fortune House Restaurant	Restaurant	8	19	152														
	The Pepper Tree Pizza	Restaurant	12	30.5	366														
6 Wolfe-Reed						1,350	505.5	76,000	7,061	19	1044.1	427.8	65	629	28,914	21,853	4	5	15
	Safeway	**Supermarket**	**64**	**48**	**3,072**														
	Round Table Pizza	Restaurant	21	19	399														
	The Donut Kettle	Bakery	8	19	152														
	Windson Fish & Chip	Restaurant	9	19	171														
	Kim Lam	Restaurant	13	19	247														
	Taipei Food Chinese Restaur	Restaurant	9	19	171														
	Olive Pit Café	Restaurant	6	35	210														
7 University						1,155	106.0	33,810	3,141	37	809.2	79.6	28	-13	14,295	11,154	4	5	19
	Safeway	**Supermarket**	**52**	**41**	**2,132**														
	Round Table Pizza	Restaurant	17.5	36	630														
	Chuck U Chicken	Restaurant	7.5	23	173														
	Taco Bell	Restaurant	10	17	170														
	Xuan Mai Restaurant	Restaurant	5 & (8)	14	182														
8 Ann Darling						430	189.3	31,280	2,906	15	95.0	42.4	9	-25	11,964	9,058	1	1	3
	Food Bowl	**Supermarket**	**46**	**34**	**1,564**														
	Quan nhau	Restaurant	8	20	160														
	Diem Xua	Beverages	6	20	120														
	China Chef Restaurant	Restaurant	6	25	150														
9 Foothill Plaza						806	92.8	52,314	4,860	17	272.4	671.1	22	340	23,607	18,747	1	1	6
	Payless	**Drugstore**	**52**	**48**	**2,496**														
	Red Pepper	Restaurant	8	21	168														
	???	Restaurant	29	22	638														
10 Orchard Farms						725	550.3	129,665	12,046	6	2572.4	3,423.7	177	556	51,715	39,669	5	6	21
	Safeway	**Supermarket**	**77**	**50**	**3,860**														
	Round Table Pizza	Restaurant	12	21	252														
	Chef Woo's Chinese Restaur	Restaurant	11	23	253														
	Café Adria	Drinks	6	20	120														
	Hollywood Yogurt	Dessert	5	20	100														
11 Mission Square (Willow Glen)						342	234.7	35,800	3,326	10	749.7	1,605.4	50	43	15,422	12,096	5	6	23
	Lucky's	**Supermarket**	**48**	**49**	**2,352**														
	Great Wall	Restaurant	6	19	114														
	Merkley Donuts	Bakery	6	19	114														
	Gourmet Pup	Restaurant	6	19	114														

1996-97 Data	Business Name '96	Type	Business Frontage (m)	Business Depth (m)	Business Area (m2)	Total Area of Eating & Drinking Establishments (m2)	Percent area (m2) change of E & D Establishments from 1971	Total Footprint (ft2)	Total Footprint (m2)	E & D % of Total Footprint	Tree Canopy (m2)	Percent Tree canopy (m2) change from 1971	Total Tree Count	Percent Change in Tree Count from 1971	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
12 Caribees						754	50.3	72,000	6,689	11	515.7	508.3	55	293	21,877	15,188	2	3	8
	Senter Food	**Supermarket**	**49**	**42**	**2,058**														
	Ninh Kieu	Restaurant	23	13	299														
	No apparent name	Restaurant	7	13	91														
	Cafe Lan	Restaurant	12	13	156														
	Quenn Bakery	Bakery	10	13	130														
	Sea Food Hut	Restaurant	6	13	78														
13 Argonaut Place						469	460.9	136,500	12,681	4	1978.2	487.4	68	74	33,620	20,939	6	9	16
	Safeway	**Supermarket**	**68**	**60**	**2,900**														
	Olympic Pizza	Restaurant	7	32	224														
	Sun Sheng Restaurant	Restaurant	7	35	245														
14 King's Court						951	411.8	78,250	7,270	13	1138.3	621.4	91	122	20,040	12,770	6	9	16
	Lunardi's	**Supermarket**	**50**	**30**	**1,500**														
	Pet's Coffee	Drinks	12	14	168														
	Togo's	Restaurant	14	28	392														
	Sushi Oyshi	Restaurant	9.5	18	171														
	Shangri-La	Restaurant	11	20	220														
15 Almaden						1,653	Not computable		4,929	34	1008.7	1,684.7	93	417	37,110	32,181	3	3	20
	Safeway	**Supermarket**	**67.5**		**3,002**														
	Starbucks	Drinks	7	29	203														
	Posh Bagel	Bakery	5	29	145														
	Chinese Cuisine	Restaurant	5	29	145														
	Mt. Mike's Pizza	Restaurant	6	29	174														
	Maple Leaf Donuts	Bakery	6	37	222														
	Togo's	Restaurant	6	37	222														
	Tacos al Pastor	Restaurant	6	37	222														
	Baskin Robbins	Desserts	6	20	120														
	Burger King	Restaurant	8	25	200														
16 Santa Teresa Square						879	278.2	58,500	5,435	16	1544.1	7,766.0	63	294	27,930	21,595	6	7	28
	Nob Hill	**Supermarket**	**48**	**46**	**2208**														
	Round Table Pizza	Restaurant	9	17	153														
	Fat Wok	Restaurant	9	28	252														
	Sam Donuts	Bakery	9	18	162														
	Casa Teresa	Restaurant	6	18	108														
	Hong's Take Out	Restaurant	5	20	100														
	LA Yogurt & Ice Cream Co.	Desserts	4.5	23	103.5														

1971 Data	Business Name '71	Type	Business Area (ft^2)	Business Area (m^2)	Total Area of Eating & Drinking Establishments (m2)	Total Footprint (m2)	E & D % of Total Footprint	Tree Canopy (m2)	Total Tree Count	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
Regional Shopping Centers														
1 Eastridge						132,141		982 8	27	300,252	168,111	0 3	0 58	0 7
2 Stanford						79,154		4,424	252	206,271	127,117	2 1	3 48	5 6
3 Valley Fair (Stevens Creek/Valley Fair)						88,952		2,897 4	206	276,993	188,041	1 0	1 54	3 3
4 Westgate						46,971		128 7	138	197,362	150,391	0 1	0 09	0 3
Community Shopping Centers														
1 Cambrian Park Plaza					536	15,522	3	432 5	18	72,150	56,628	0 6	*0 76	2 8
	Crown Super	**Supermarket**	**24,000**	**2,230**										
	Ice Cream Parlour	Dessert	1,265	118										
	Swiss Pastry Chalet	Bakery	2,250	209										
	Cliff's Plaza Delicatessen	Deli	1,200	111										
	The Coffee Pot	Restaurant	1,050	98										
2 Foxworthy					511	6,226	8	140 5	16	24,760	18,534	0 6	0 76	2 3
	P W Market	**Supermarket**	**21,000**	**1,951**										
	Burger Bar	Restaurant	1,900	177										
	La Cabana	Restaurant	900	84										
	Giorgio's Pizz House	Restaurant	2,700	251										
3 Hacienda Gardens					3,092	22,042	14	60 4	10	91,650	69,608	0 1	0 09	0 3
	P W Market	**Supermarket**	**24,000**	**2,230**										
	Safeway	Supermarket	16,000	1,486										
	Marie Callenders	Restaurant	4,600	427										
	Mc Donald's	Restaurant	1,000	93										
	Winchell's	Bakery	1,000	93										
	Dino's Roto Chik	Restaurant	875	81										
	H. Salt Fish N' Chips	Restaurant	1,500	139										
	Lung Wah Chinese	Restaurant	750	70										
	Hacienda Bakery	Bakery	805	75										
	Red Coach Coffee Shop	Restaurant	6,000	557										
	Vince's Pizza	Restaurant	750	70										
4 Prune Yard, The					1,115	44,759	2	1,014 2	86	74,393	29,634	1 4	3 42	2 3
	Food Villa	**Supermarket**	**23,200**	**2,156**										
	Bumbleberry Pies	Bakery	3,700	344										
	La Parisian	Deli	3,300	307										
	El Burro Mexican	Restaurant	5,000	465										
5 Seven Trees					358	10,639	3	112 3	15	49,805	39,166	0 2	0 29	1 1
	Safeway	**Supermarket**	**26,000**	**2,323**										
	Hoeffer's	Bakery	1,250	116										
	Orange Julius	Restaurant	900	84										
	Caesar's Pizza	Restaurant	1,700	158										
6 Sunrise Plaza					367	7,411	5	43 2	14	57,385	49,974	0 1	0 09	0 6
	Dick's	**Supermarket**	**26,000**	**2,323**										
	Bob's Bakery	Bakery	1,550	144										
	Vince's Food to Go	Deli	600	56										
	The Sun Downer	Restaurant	1,800	167										

1971 Data	Business Name '71	Type	Business Area (ft^2)	Business Area (m^2)	Total Area of Eating & Drinking Establishments (m2)	Total Footprint (m2)	E & D % of Total Footprint	Tree Canopy (m2)	Total Tree Count	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
7 Town & Country Village - Palo Alto					2,025	35,209	6	2,936 7	61	52,683	17,474	5 6	16 81	8 3
	Town & Country Marker	**Supermarket**	**26,000**	**2,323**										
	Village Fine Pasteries	Bakery	12,000	1,115										
	Refesi's Foods	Deli	1,800	167										
	Yura's Roto Chik	Deli		0										
	Village Cheese House	Deli	8,000	743										
8 Town & Country Village - San Jose					223	23,225	1	812 5	54	136617	113,392	0 6	0 72	3 5
	Fry's Food Stores, Inc.	**Supermarket**	**24,600**	**2,286**										
	Meyberg's	Deli	2,400	223										
11 Lawrence Square					418	10,045	4	248 1	37	40,950	30,905	0 6	0 80	2 5
	Safeway	**Supermarket**	**21,220**	**1971**										
	Ingrid's Delicatessen	Deli	750	70										
	Gale's Coffee Shop	Restaurant	3,750	348										
12 LoBue's Plaza					386	11,527	3	62 8	12	63,635	52,108	0 1	0 12	0 5
	Lucky's	**Supermarket**	**12,760**	**1,186**										
	House of Cheese	Deli	1,750	163										
	Gene's	Restaurant	1,400	130										
	Italian Girl Spaghetti	Restaurant	1,000	93										
14 Los Altos Rancho					577	7,149	8	865 1	14	31,131	23,982	2 8	3 61	12 1
	Rancho Market	**Supermarket**	**12,298**	**1,143**										
	Larson's	Bakery	2,726	253										
	Rancho Inn	Restaurant	3,482	323										
15 Blossom Valley					384	7,202	5	216 2	26	39,384	32,182	0 6	0 68	3 0
	Mayfair Market	**Supermarket**	**20,000**	**1,858**										
	Ann's Cake Box	Bakery	1,820	169										
	Blossom Valley Delicates	Deli	1,260	117										
	The Coffee Pot	Restaurant	1,050	98										

1971 Data	Business Name '71	Type	Business Area (ft^2)	Business Area (m^2)	Total Area of Eating & Drinking Establishments (m2)	Total Footprint (m2)	E & D % of Total Footpsint	Tree Canopy (m2)	Total Tree Count	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
Neighborhood Shopping Centers														
1 Edgewood Plaza					407	3,281	12	373 7	30	21,221	17,940	1 8	2 08	11 4
	Lucky's Market	**Supermarket**	**16,000**	**1,486**										
	Alotto's #2	Deli	2,400	223										
	Jim's Coffee Shop	Restaurant	1,980	184										
2 Fair Oaks					244	3,411	7	44 7	8	14,927	11,516	0 3	0 39	1 3
	Littleman Market	**Supermarket**	**26,000**	**2,323**										
	The Raven	Restaurant	2,625	244										
4 Piedmont Hills					0	5,757	0	405 1	15	36,421	30,664	1 1	1 32	7 0
	Lucky Stores	**20,000**		**0**										
6 Wolfe-Reed					223	3,887	6	197 8	7	28,914	25,027	0 7	0 79	5 1
	Safeway	**Supermarket**	**22,383**	**2,079**										
	Round Table Pizza	Restaurant	2,400	223										
7 University					560	3,141	18	339 1	32	14,295	11,154	2 4	3 04	10 8
	Safeway	**Supermarket**	**23,000**	**2,137**										
	Round Table Pizza	Restaurant	2,832	263										
	H. Salt Fish N' Chips	Restaurant	1,400	130										
	Taco Bell	Restaurant	1,800	167										
8 Ann Darling					149	2,906	5	66 7	12	11,964	9,058	0 6	0 74	2 3
	Food Bowl	**Supermarket**	**16,700**	**1,661**										
	49er Steakburger	Restaurant	1,600	149										
9 Foothill Plaza					418	3,307	13	35 3	5	23,607	20,300	0 1	0 17	1 1
	Safeway	**Supermarket**	**26,000**	**2,323**										
	Denny's	Restaurant	4,500	418										
10 Orchard Farms					111	5,300	2	73 0	27	51,715	46,415	0 1	0 16	1 4
	Safeway	**Supermarket**	**28,000**	**2,601**										
	Winchell's Donuts	Bakery	1,200	111										
11 Mission Square (Willow Glen)					102	3,326	3	44 0	35	15,422	12,096	0 3	0 36	1 3
	Alpha Beta	**Supermarket**	**23,200**	**2,156**										
	Fish & Chips	Restaurant	1,100	102										

1971 Data	Business Name '71	Type	Business Area (ft^2)	Business Area (m^2)	Total Area of Eating & Drinking Establishments (m2)	Total Footprint (m2)	E & D % of Total Footprint	Tree Canopy (m2)	Total Tree Count	Shopping Center Area (m2)	Parking Area (m2)	Tree Canopy % of Shopping Center Area (m2)	Tree Canopy % of Parking Area (m2)	Tree Canopy % of Total Footprint (m2)
12 Caribees					502	4,448	11	84 8	14	21,877	17,429	0 4	0 49	1 9
	Crown Super	**Supermarket**	**23,680**	**2,200**										
	Senter Bakery	Bakery	800	74										
	Senter Donut Shop	Bakery	1,400	130										
	Del Monaco's	Restaurant	3,200	297										
13 Argonaut Place					84	3,677	2	336 8	39	33,620	29,943	1 0	1 12	9 2
	Safeway	**Supermarket**	**17,932**	**1,666**										
	Ox Inn	Restaurant	900	84										
14 King's Court					186	5,690	3	157 8	41	20,040	14,350	0 8	1 10	2 8
	Safeway	**Supermarket**	**22,000**	**2,044**										
	King's Court Bakery & Fo	Bakery	2,000	186										
15 Almaden					0	4,164	0	56 5	18	37,110	32,946	0 2	0 17	1 4
	Safeway	**Supermarket**	**22,500**	**2,090**										
16 Santa Teresa Square					232	3,623	6	19 8	16	27,030	23,407	0 1	0 08	0 5
	Alpha Beta	**Supermarket**	**23,200**	**2,155**										
	Round Table Pizza	Restaurant	1,500	139										
	Yankee Lunch	Restaurant	1,000	93										

Shopping Centers: Organization and Format

Aerial and ground photographs plus explanatory tables for all of the study's shopping centers are presented on pages 33 through 92. Photographs for each shopping center follow the same format: vertical aerial photographs for 1971 appear at the upper left with current (ranging from 1994 through 1997) photos at the upper right. Below these are ground photos (taken from the 1971 *San Jose Mercury-News Guide to Shopping Centers),* and 1997 photos taken in the field by team researchers.

The standard shopping center classification (as it appears in the shopping center guide) is used. It divides centers according to function and relationship to types of goods and services offered. Neighborhood shopping centers are the smallest, and offer mainly convenience goods and services to the nearby market. Community shopping centers are an order above, have a broader area market, and purvey higher threshold goods. Regional shopping centers are the largest, have the broadest area market, and goods and services of the highest order; the threshold is met for profitable support of department stores. Units in each of the classes are as follows:

Neighborhood Shopping Centers

Edgewood Plaza
Fair Oaks
Piedmont Hills
Wolfe-Reed
University
Ann Darling
Foothill Plaza
Orchard Farms
Mission Square
Caribbees
Argonaut Place
King's Court
Almaden
Santa Teresa Square

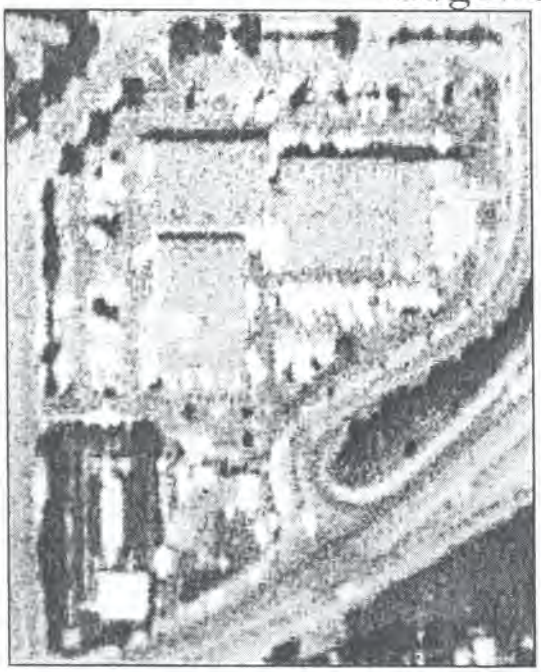
Community Shopping Centers

Cambrian Park Plaza
Foxworthy
Hacienda Gardens
Pruneyard
Seven Trees
Sunrise Plaza
Town & Country, Palo Alto
Town & Country, San Jose
Lawrence Square
Lo Bou's
Los Altos Rancho
Blossom Valley

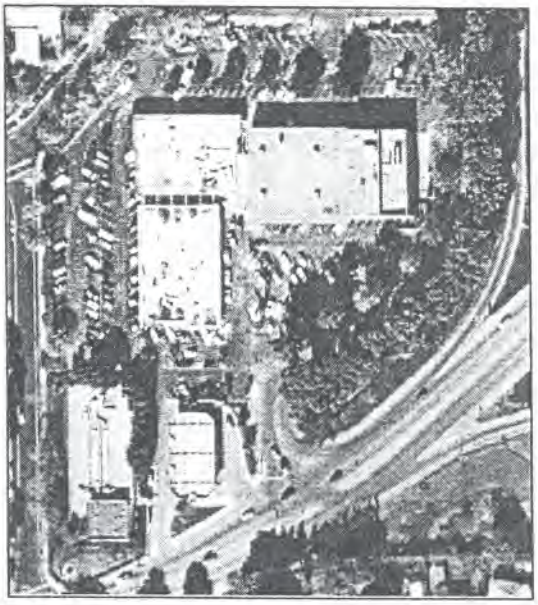
Regional Shopping Centers

Eastridge
Stanford
Valley Fair
Westgate

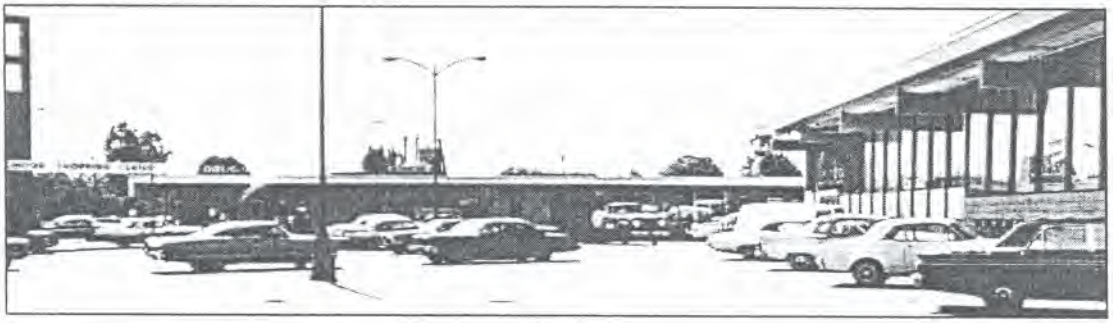
Edgewood Plaza



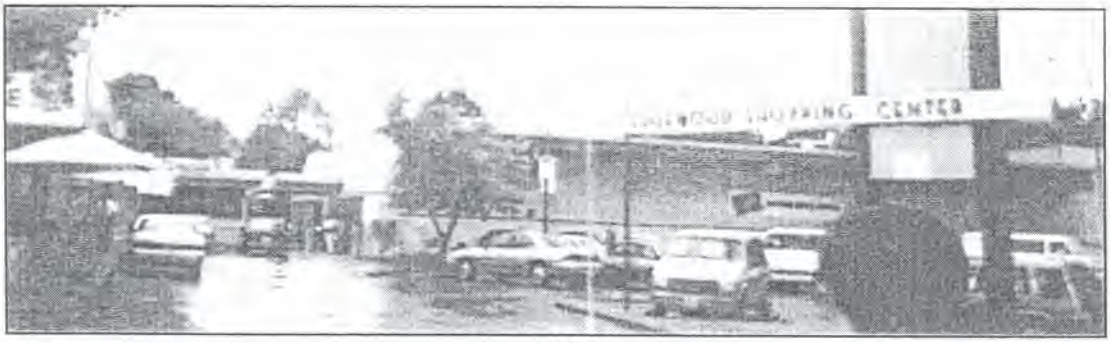
1971



1994



1971



1997

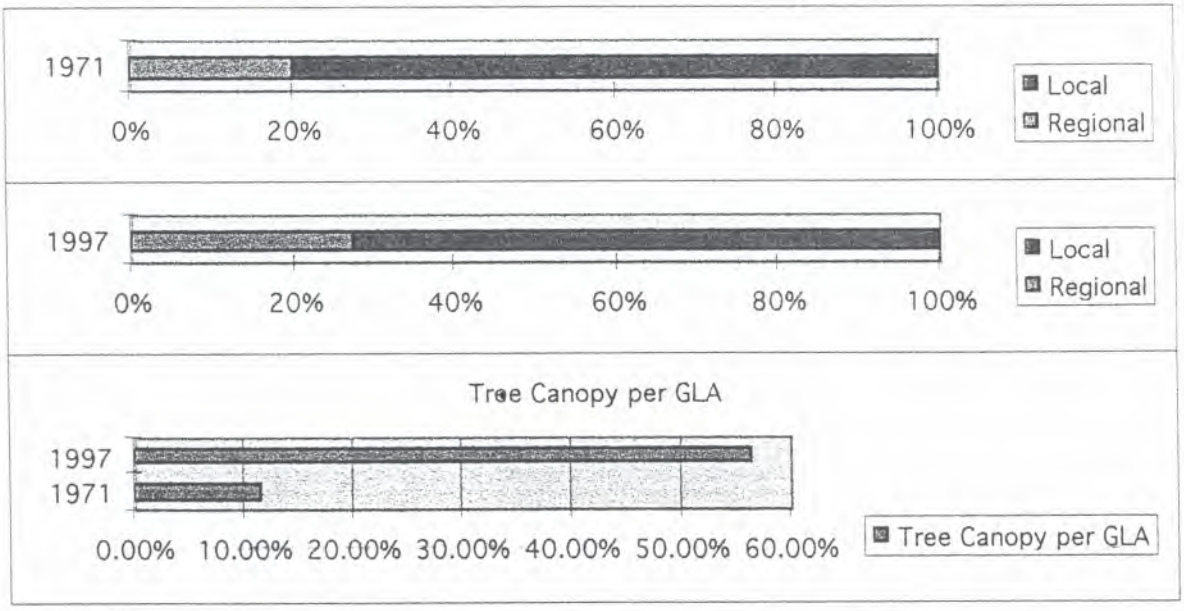
Figure 10 a

Statistics for Edgewood Plaza 1971 - 1997

First Year of Operation	1957
Canopy Coverage per GLA - 1971	11.4%
Canopy Coverage per GLA - 1997	56.4%
Gross Leasable Area - 1971 (square meters)	3,281
Gross Leasable Area - 1997 (square meters)	3,281
Regional Store Type - 1971	20.0%
Regional Store Type - 1997	27.3%

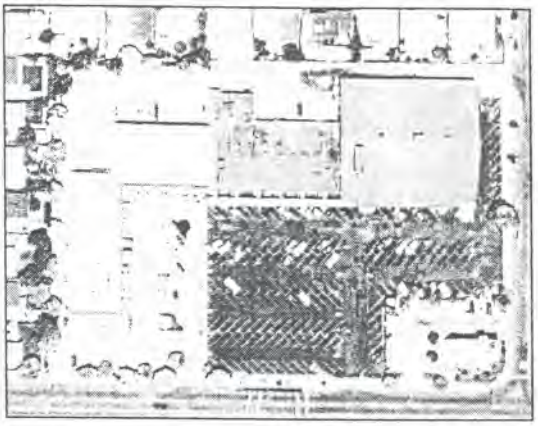
Remarks:

Edgewood Plaza has by far the largest tree canopy per GLA ratio. It is located on the corner of the 101 Freeway and Embarcadero, the road which connects Stanford University to the Freeway. In 1971 it had a large tree screen between the Freeway and the parking lot. These trees have matured into giants. The parking lot also had planted trees, which expanded their crowns. The center underwent some remodeling, but overall it has remained unchanged. Its perfect location, affluent clientele, and a wooded appearance made other changes unnecessary.

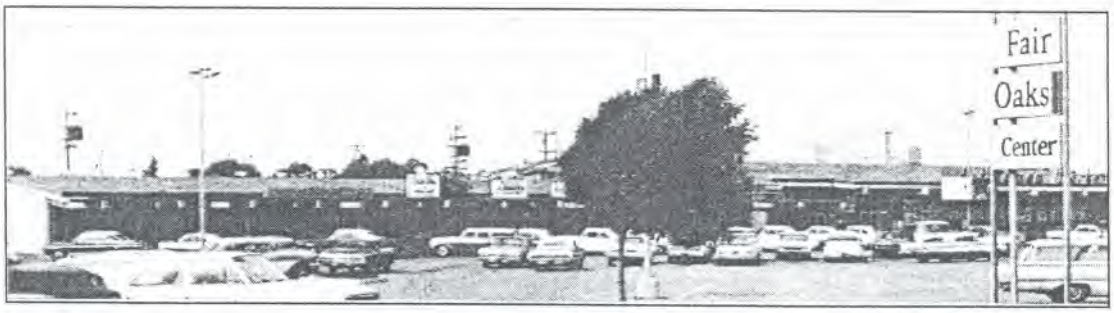


Fair Oaks

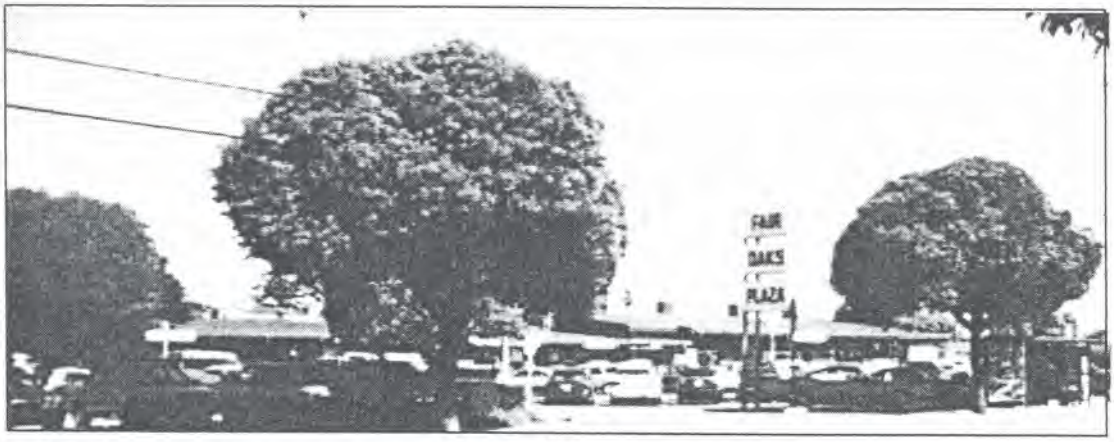
1971



1996



1971



1997

Figure 11 a

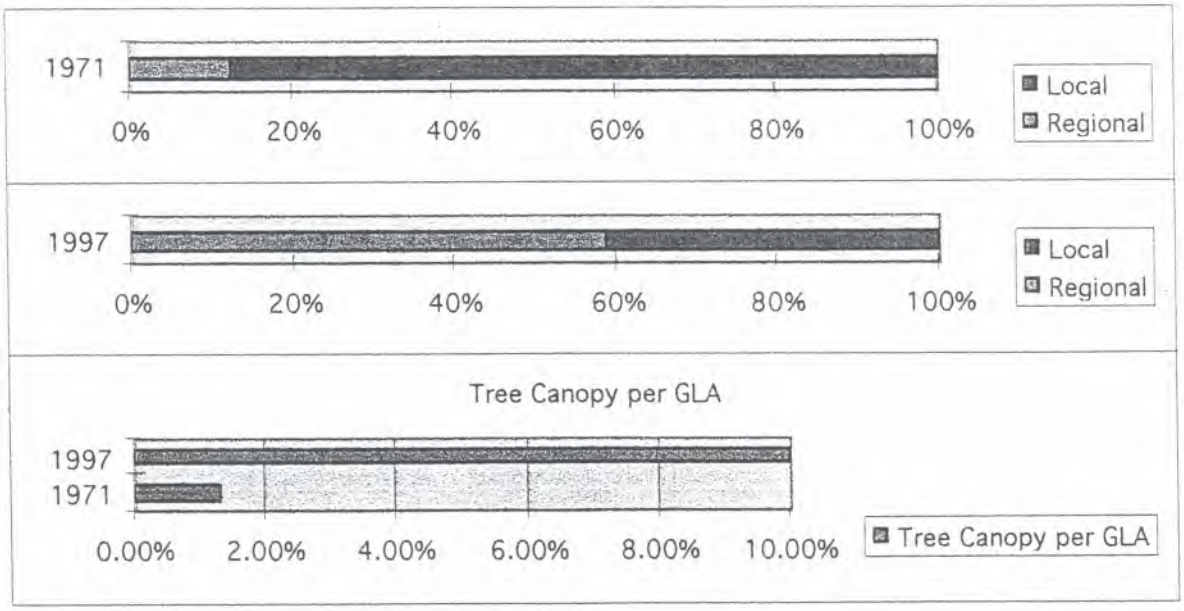
Statistics for Fair Oaks 1971 - 1997

First Year of Operation	1960
Canopy Coverage per GLA - 1971	1.3%
Canopy Coverage per GLA - 1997	10.0%
Gross Leasable Area - 1971 (square meters)	3,411*
Gross Leasable Area - 1997 (square meters)	3,411
Regional Store Type - 1971	12.5%
Regional Store Type, - 1997	58.8%

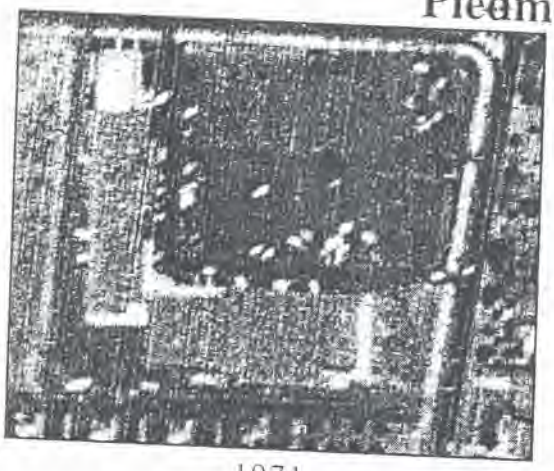
Remarks:

Fair Oaks experienced a unique evolution. Its tenant mix went from local to a regional makeup. This came from the fact that the center is now surrounded by large high-tech manufacturing plants employing thousands. The center is filled with restaurants of diverse ethnicity such as Mexican, Japanese, Filipino, Chinese, Italian, Thai, American, and Armenian. At lunch time the parking lot is full. Being such a crowd magnet, the center did not need to undergo renovations or expansions in order to stay competitive. The street trees planted prior to 1971 matured into large-crown shade trees, giving the center its large ratio.

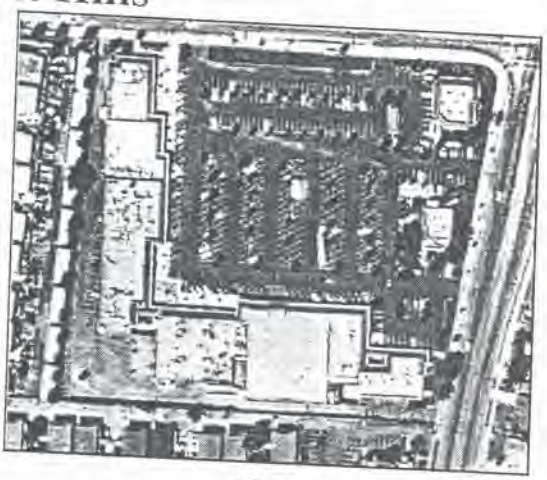
* The 1971 aerial photograph does not show the expansion which was started that year.



Piedmont Hills

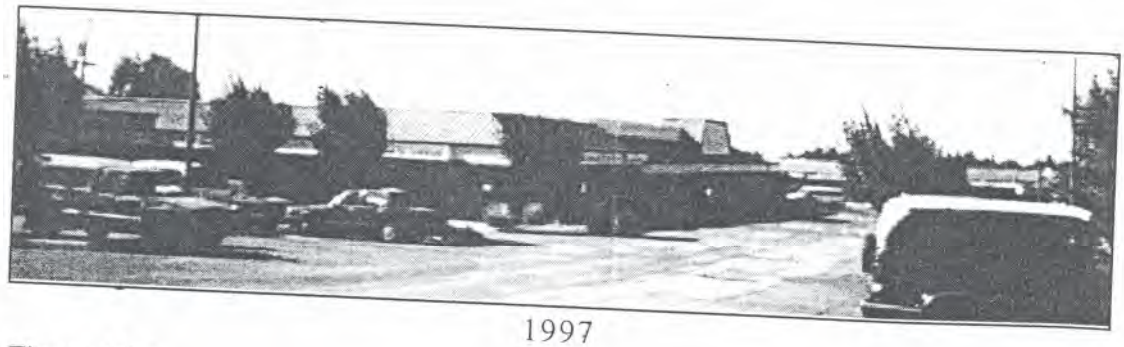


1971



1996

1971



1997

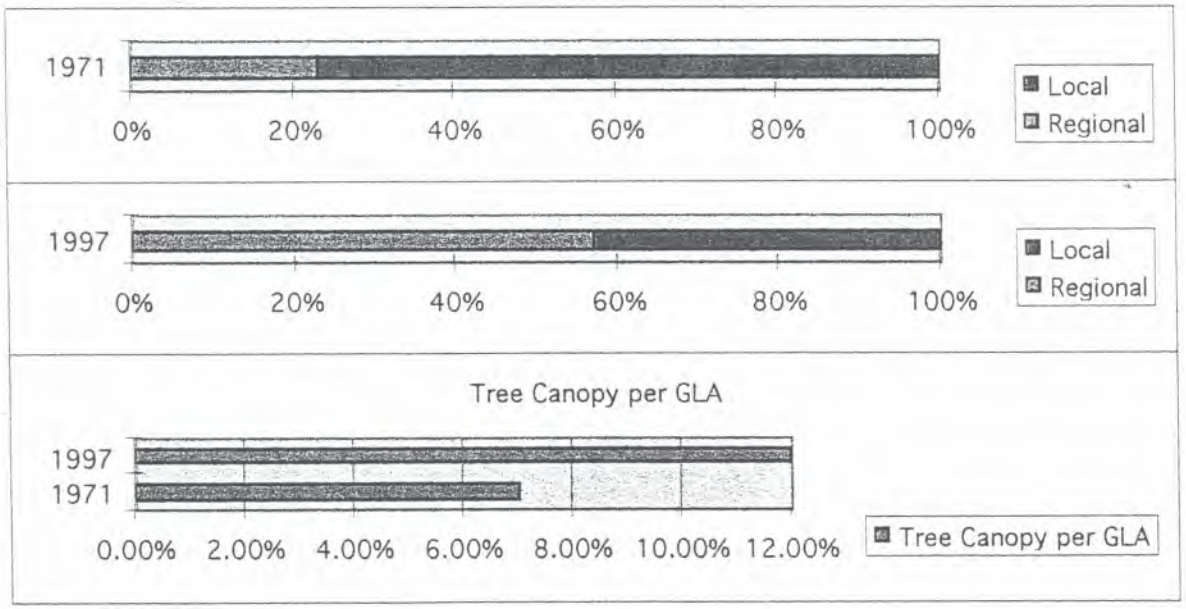
Figure 12 a

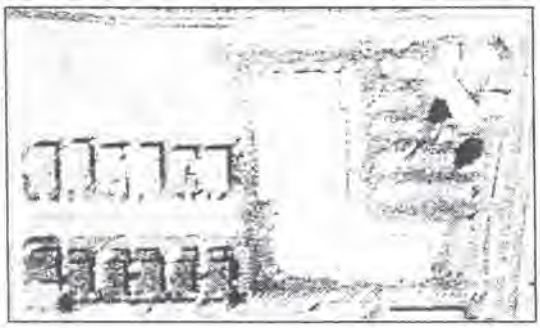
Statistics for Piedmont Hills 1971 - 1997

First Year of Operation	1965
Canopy Coverage per GLA - 1971	7.0%
Canopy Coverage per GLA - 1997	12.0%
Gross Leasable Area - 1971 (square meters)	5,757
Gross Leasable Area - 1997 (square meters)	7,432
Regional Store Type - 1971	23.1%
Regional Store Type- 1997	57.1%

Remarks:

Piedmont Hills employed four methods trying to stay competitive in a changing neighborhood-- renovation, expansion, tenant mix change, and tree planting. The center is trying to redefine itself at this time, since the anchor store is vacant. If the right tenant can be found, the center should become a financial success.





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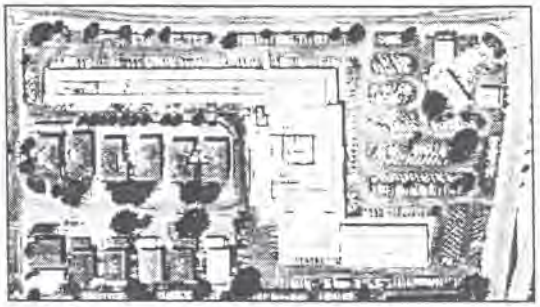

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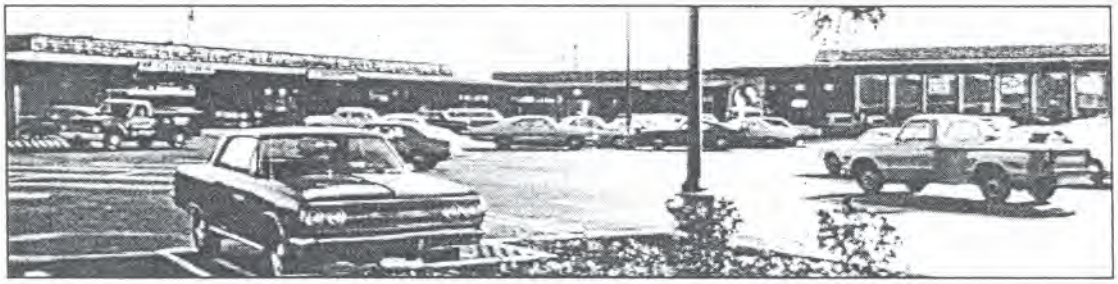

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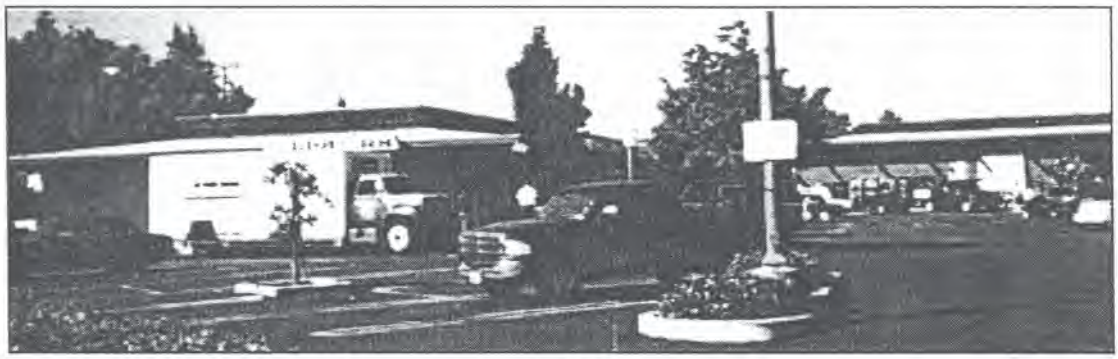


1997

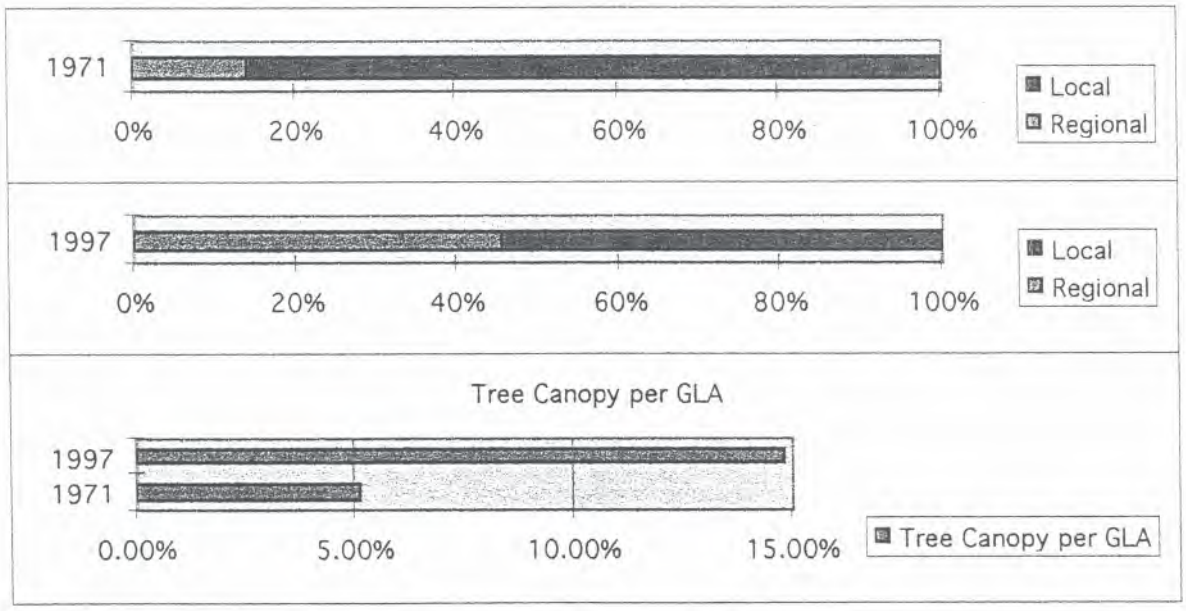
Figure 13 a

Statistics for Wolfe-Reed 1971 - 1997

First Year of Operation	1969
Canopy Coverage per GLA - 1971	5.1%
Canopy Coverage per GLA - 1997	14.8%
Gross Leasable Area - 1971 (square meters)	3,887
Gross Leasable Area - 1997 (square meters)	7,060
Regional Store Type - 1971	14.3%
Regional Store Type - 1997	45.5%

Remarks:

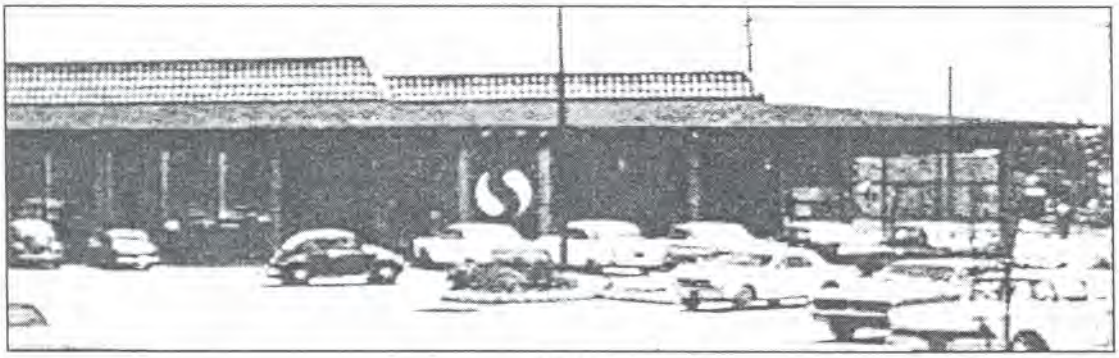
Wolfe-Reed evolved with a growing population. It doubled its GLA, attracted customers from outside its immediate surroundings, and planted and cared for its trees. In 1971, three large trees, one palm and two evergreens, dominated the center of the parking lot and currently those trees still provide shade and an aesthetic benefit for the center.



University

1971

1996



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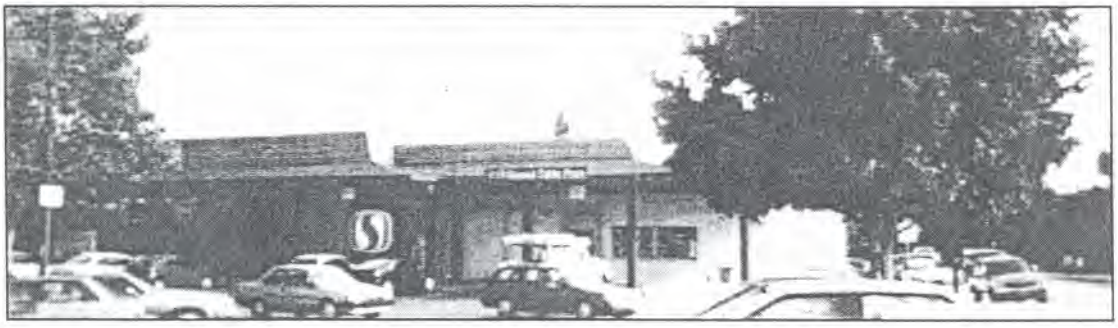


1997

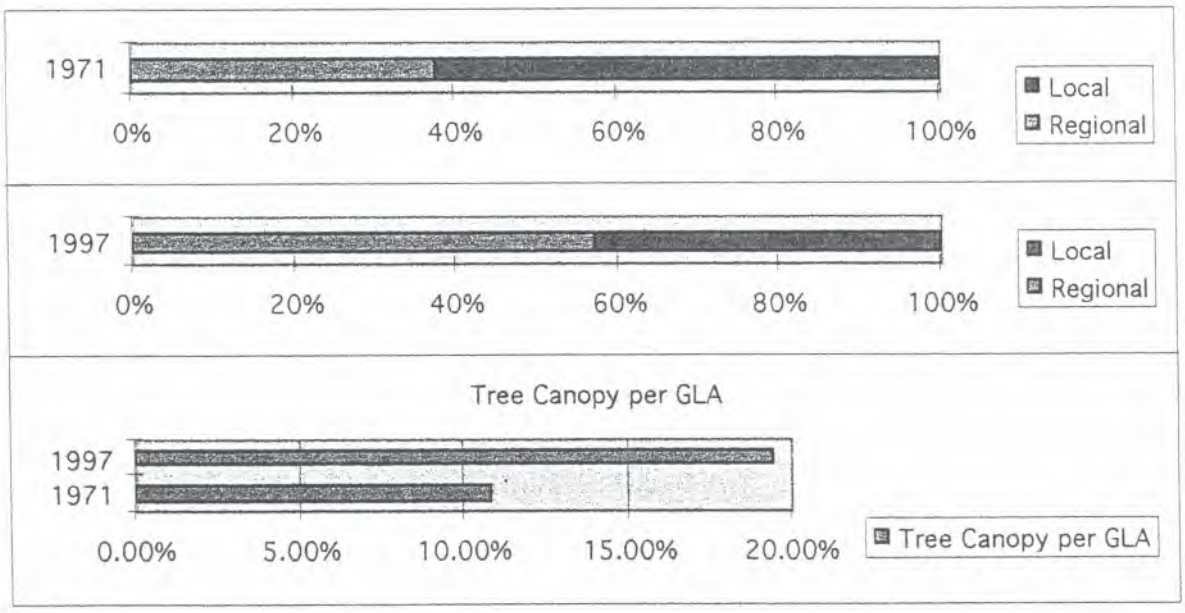
Figure 14 a

Statistics for University 1971 - 1997

First Year of Operation	1953
Canopy Coverage per GLA - 1971	10.8%
Canopy Coverage per GLA - 1997	19.4%
Gross Leasable Area - 1971 (square meters)	3,141
Gross Leasable Area - 1997 (square meters)	3,141
Regional Store Type - 1971	37.5%
Regional Store Type - 1997	57.1%

Remarks:

One of the smallest neighborhood center, University has been able to remain profitable with virtually no renovation or expansion. Out of seven establishments, five sell food, one liquor, and one is a beauty salon. Its proximity to Santa Clara University guarantees it a steady flow of lunch patrons. In 1971, the parking lot already contained trees which matured, further influencing the centers profitability.



Ann Darling

1971

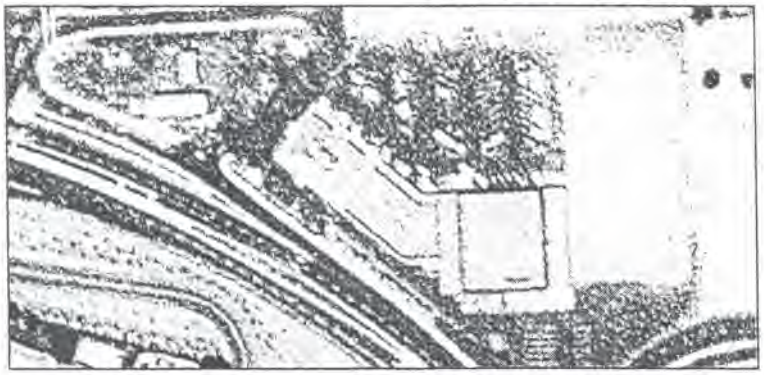
1996

1971

1997

Figure 15 a

Foothill Plaza



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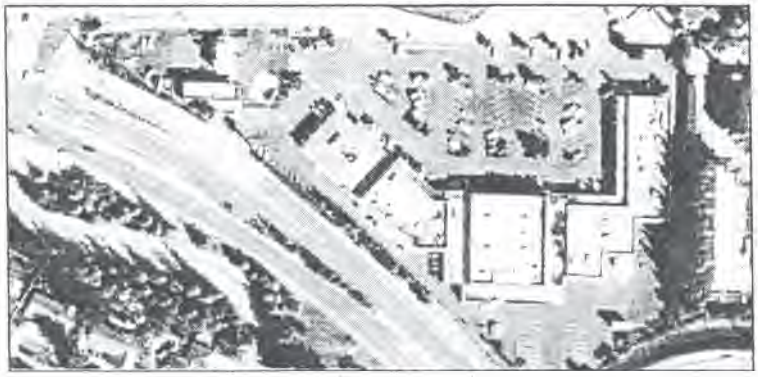
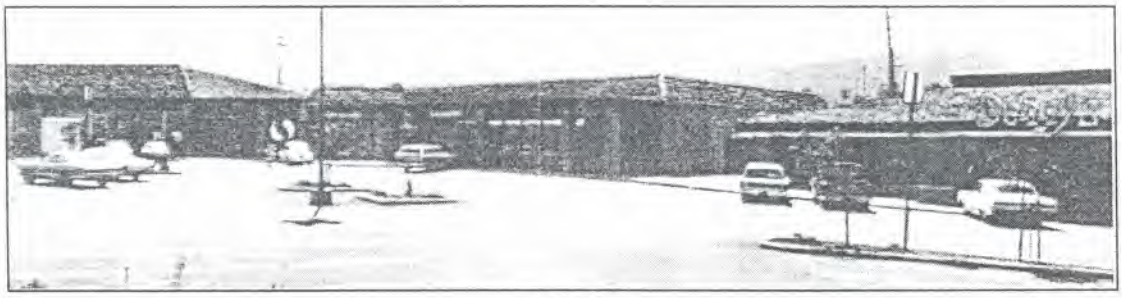


1994



1971

1997

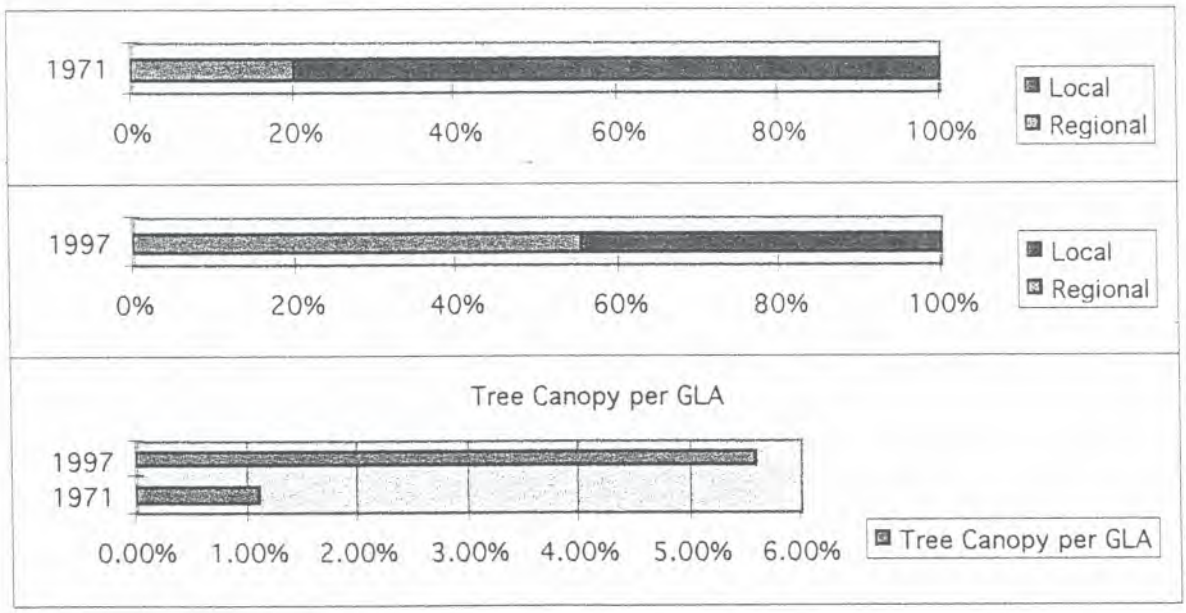
Figure 16 a

Statistics for Foothill Plaza 1971 - 1997

First Year of Operation	1969
Canopy Coverage per GLA - 1971	1.1%
Canopy Coverage per GLA - 1997	5.6%
Gross Leasable Area - 1971 (square meters)	3,307
Gross Leasable Area - 1997 (square meters)	4,860
Regional Store Type - 1971	20.0%
Regional Store Type, - 1997	55.6%

Remarks:

Foothill Plaza employed all methods available to stay profitable: a thirty percent increase of GLA, landscaping, tree planting, tenant control, and recently store front renovations. This center is currently trying to establish a new identity within the community. Several businesses of the center are vacant, waiting for tenants with a broad customer base.

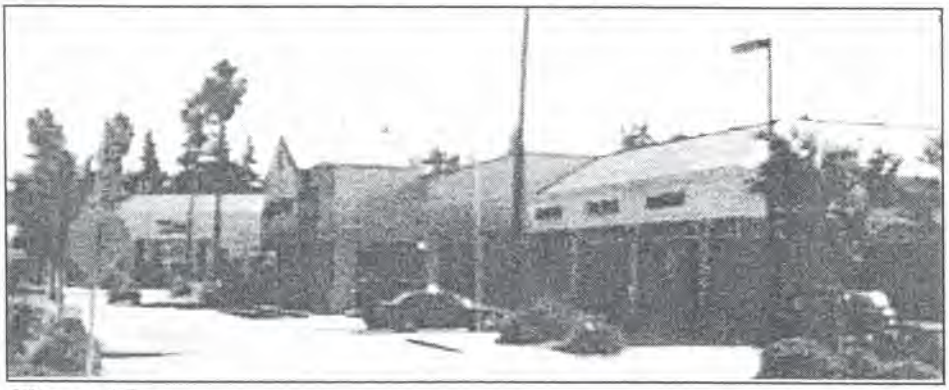


Orchard Farms

1971

1996

1971



1997

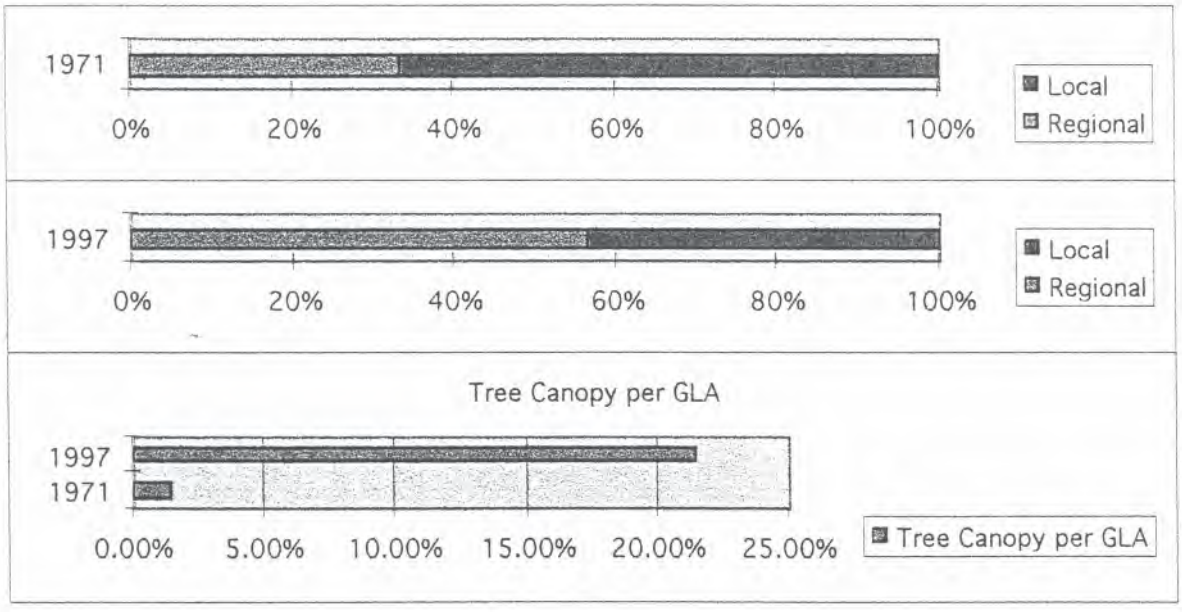
Figure 17 a

Statistics for Orchard Farms 1971 - 1997

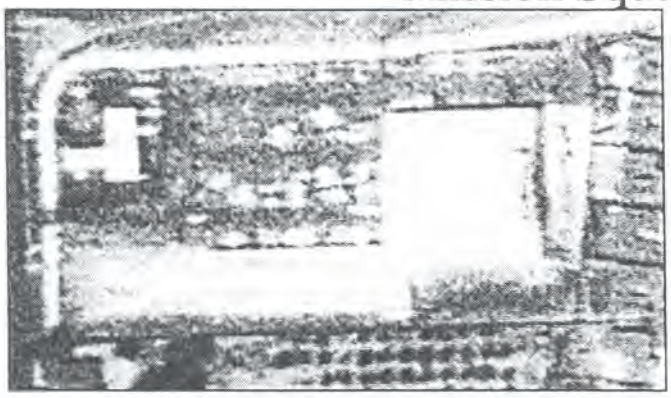
First Year of Operation	1969
Canopy Coverage per GLA - 1971	1.4%
Canopy Coverage per GLA - 1997	21.4%
Gross Leasable Area - 1971 (square meters)	5,300
Gross Leasable Area - 1997 (square meters)	12,046
Regional Store Type - 1971	33.3%
Regional Store Type - 1997	56.5%

Remarks:

In 1992, all of Orchard Farm's buildings, except the anchor building were razed. With the rebuilding, the layout completely changed, GLA more than doubled, and a large number of trees were planted, giving the center one of the highest tree canopy/GLA ratios. This figure will rise dramatically, as the trees are only six years old. Orchard Farms is one of two observed centers moving from a neighborhood to a community classification.



Mission Square



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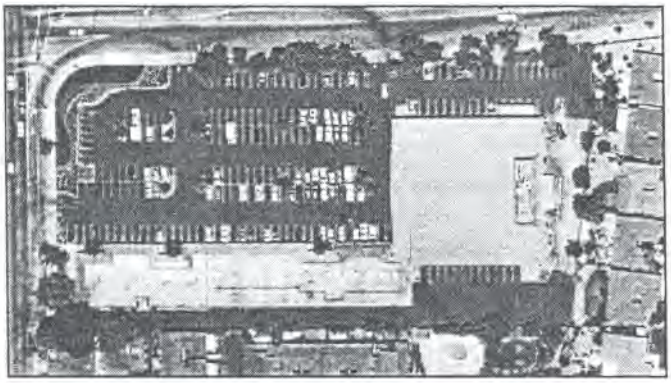
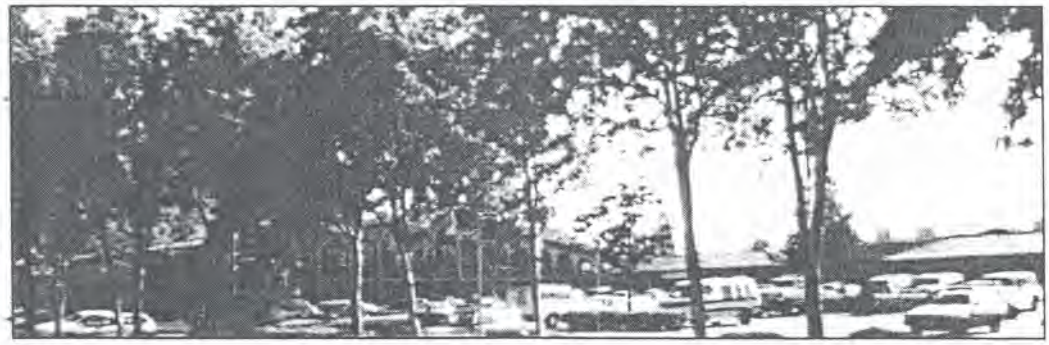


1996

1971



1997

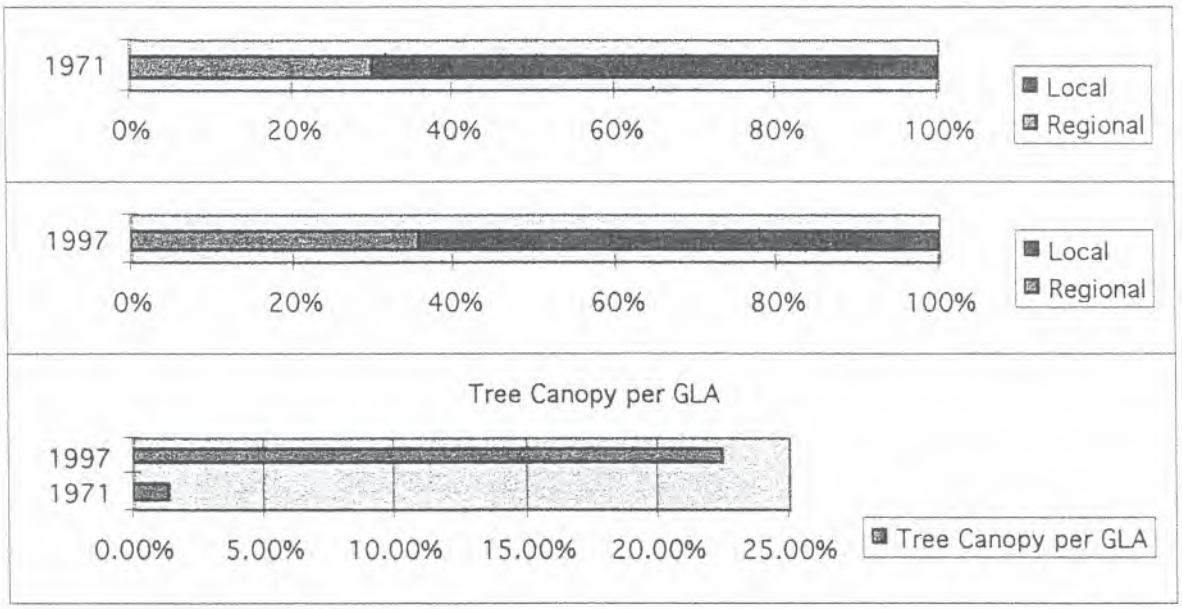
Figure 18 a

Statistics for Mission Square 1971 - 1997

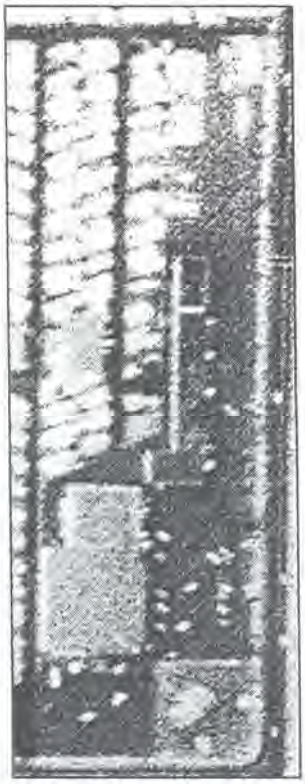
First Year of Operation	1969
Canopy Coverage per GLA - 1971	1.3%
Canopy Coverage per GLA - 1997	22.5%
Gross Leasable Area - 1971 (square meters)	3,326
Gross Leasable Area - 1997 (square meters)	3,326
Regional Store Type - 1971	30.0%
Regional Store Type - 1997	35.7%

Remarks:

Mission Square's role as a neighborhood center remains unchanged. The neighborhood surrounding the center evolved into one of the most desired one in the city of San Jose. With the resurgence of the neighborhood came profitability of the center. It responded by renovating the small store fronts, but otherwise the center is unchanged. Trees planted in 1971 have reached maturity and separate the center from the street.



Caribbees



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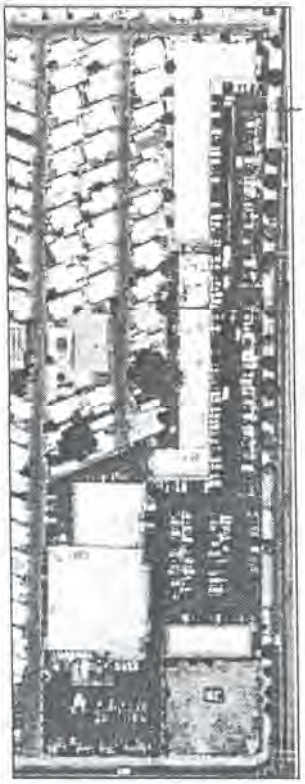
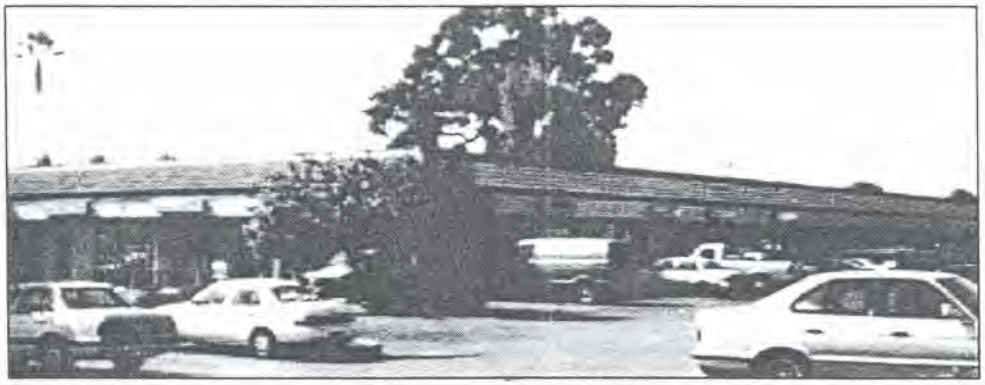


1996

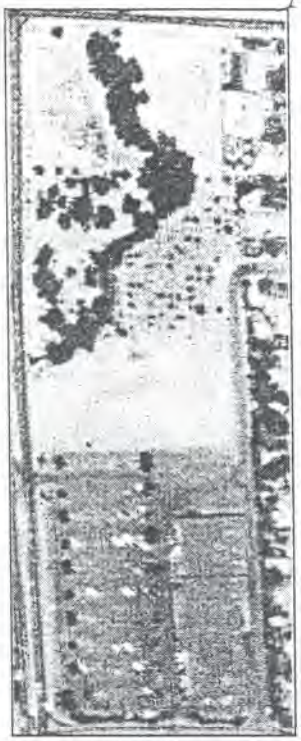
1971



1997

Figure 19 a

Argonaut Place



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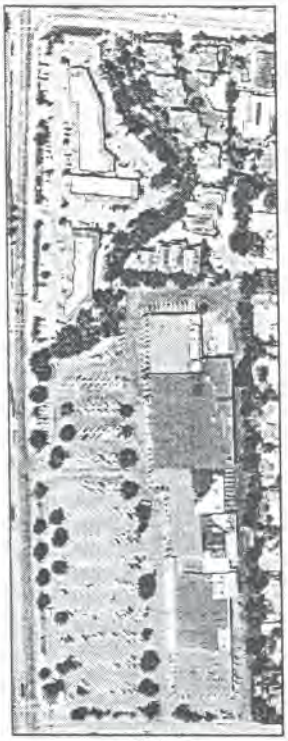


1996

1971

1997

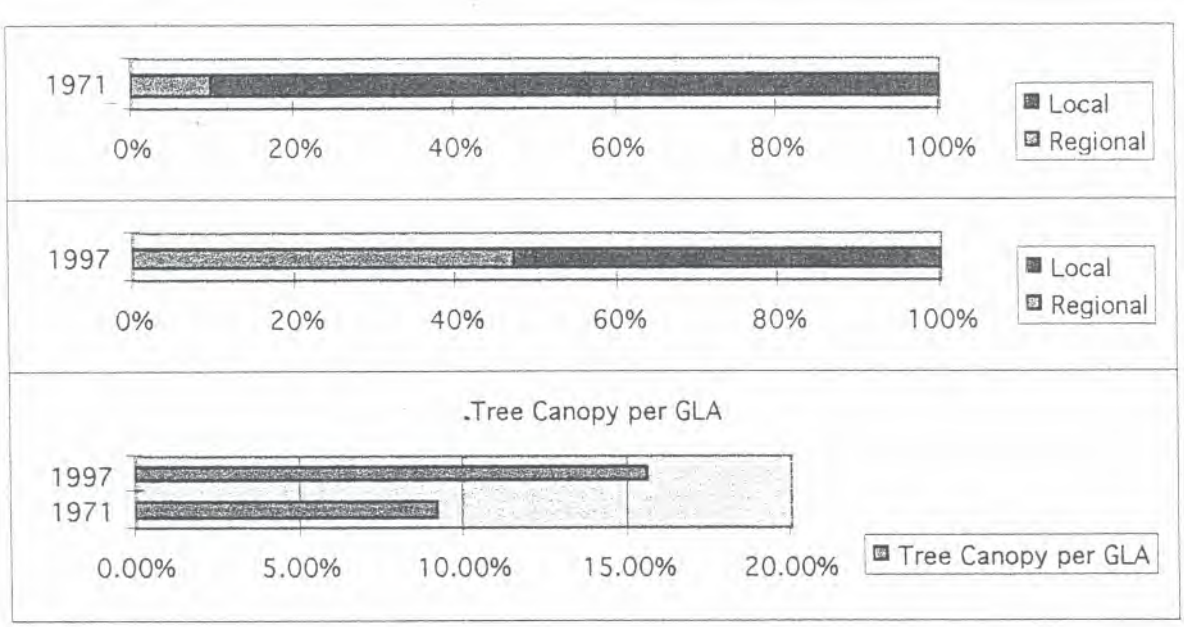
Figure 20 a

Statistics for Argonaut Place 1971 - 1997

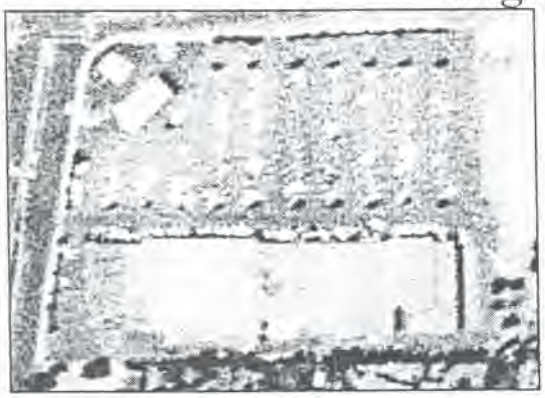
First Year of Operation	1960
Canopy Coverage per GLA - 1971	9.2%
Canopy Coverage per GLA - 1997	15.6%
Gross Leasable Area - 1971 (square meters)	3,677
Gross Leasable Area - 1997 (square meters)	12,681
Regional Store Type - 1971	10.0%
Regional Store Type - 1997	47.1%

Remarks:

Argonaut Place, located in the affluent Silicon Valley pocket of Saratoga, changed its role from serving the neighborhood to one of a broader customer base. It almost tripled in size, and had the forethought when it opened to plant trees in the parking lot, which matured into a very large shade-providing canopy.



King's Court



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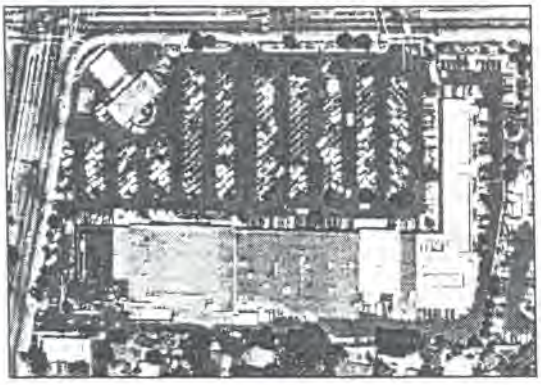


1996

1971

1997

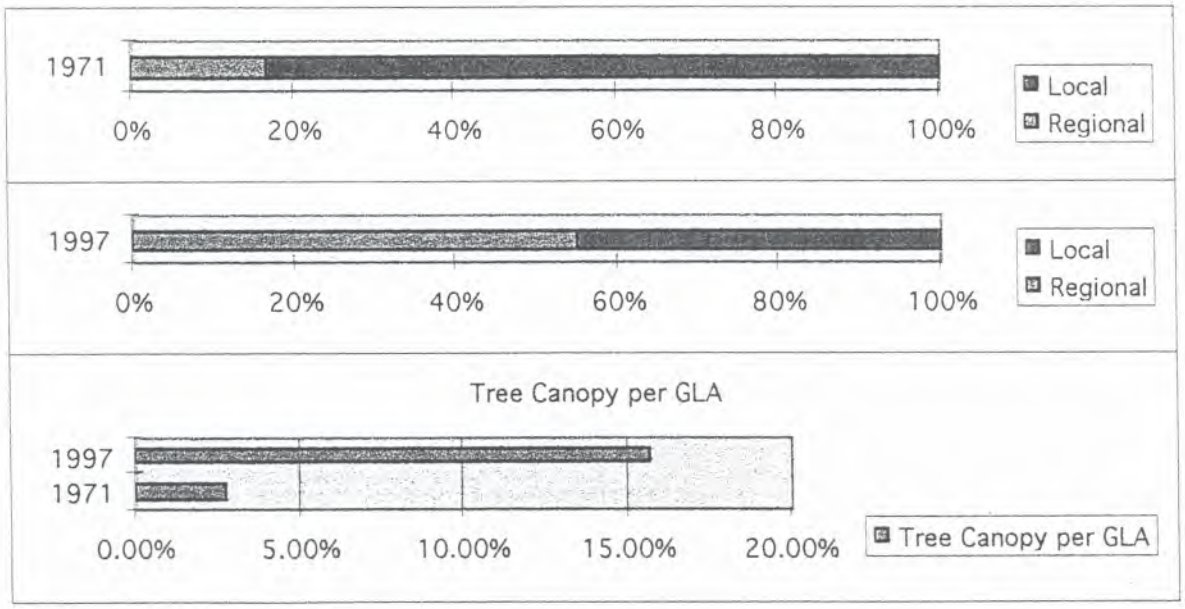
Figure 21 a

Statistics for King's Court 1971 - 1997

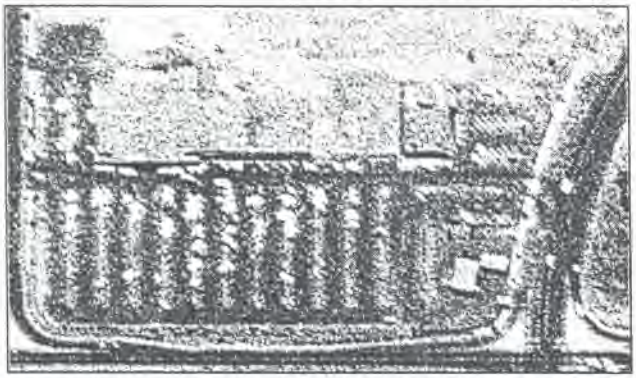
First Year of Operation	1960
Canopy Coverage per GLA - 1971	2.8%
Canopy Coverage per GLA - 1997	15.7%
Gross Leasable Area - 1971 (square meters)	5,690
Gross Leasable Area - 1997 (square meters)	7,269
Regional Store Type - 1971	16.7%
Regional Store Type - 1997	55.0%

Remarks:

King's Court employed expansion, renovations, tenant change, and tree nurturing in its effort to maximize profits. Since King's Court has the fortune of being located in upscale Los Gatos, a town proud of its tree-lined streets, trees play a big role in the center's operations.



Almaden Shopping Center



1971

1996

1971

1997

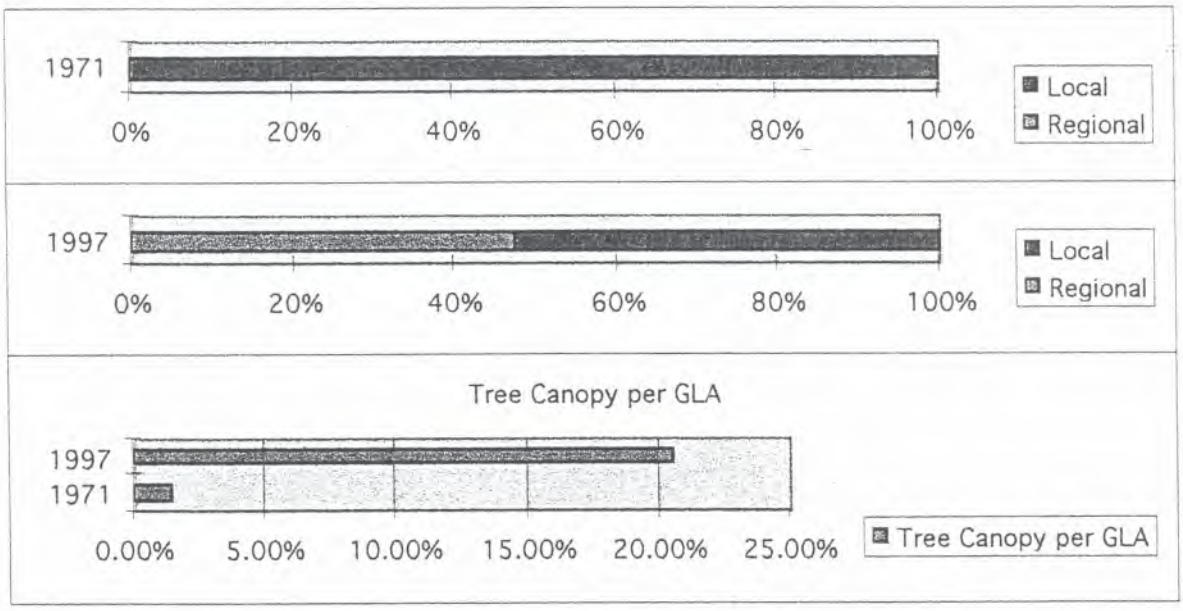
Figure 22 a

Statistics for Almaden 1971 - 1997

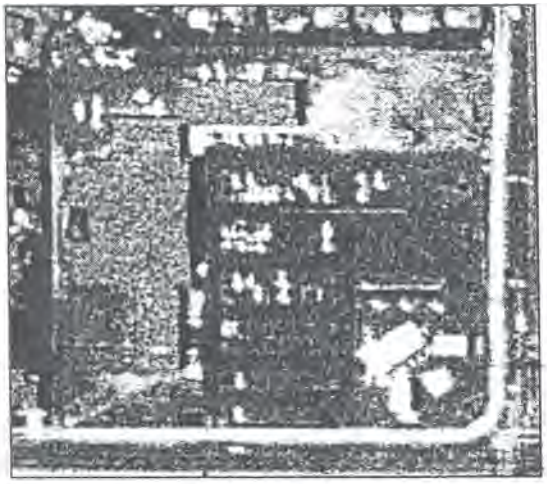
First Year of Operation	1966
Canopy Coverage per GLA - 1971	1.4%
Canopy Coverage per GLA - 1997	20.5%
Gross Leasable Area - 1971 (square meters)	4,164
Gross Leasable Area - 1997 (square meters)	6,698
Regional Store Type - 1971	0.0%*
Regional Store Type - 1997	47.6%

Remarks:

Almaden increased its GLA by 25%, renovated the storefronts, planted trees, and brought in some businesses drawing from the outside of the immediate neighborhood, such as restaurants, cellular sales, and professional offices.



Santa Teresa Square



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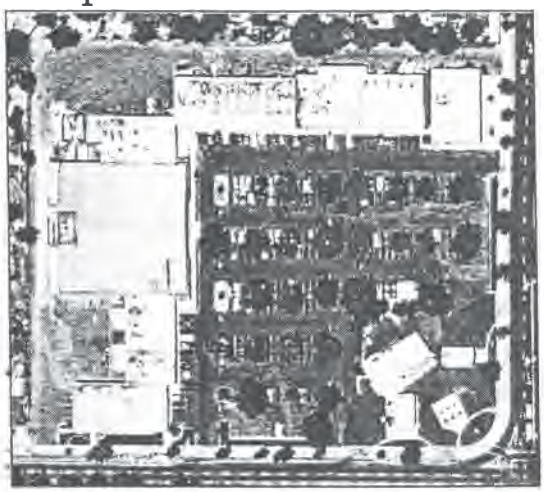


1996

1971

1997

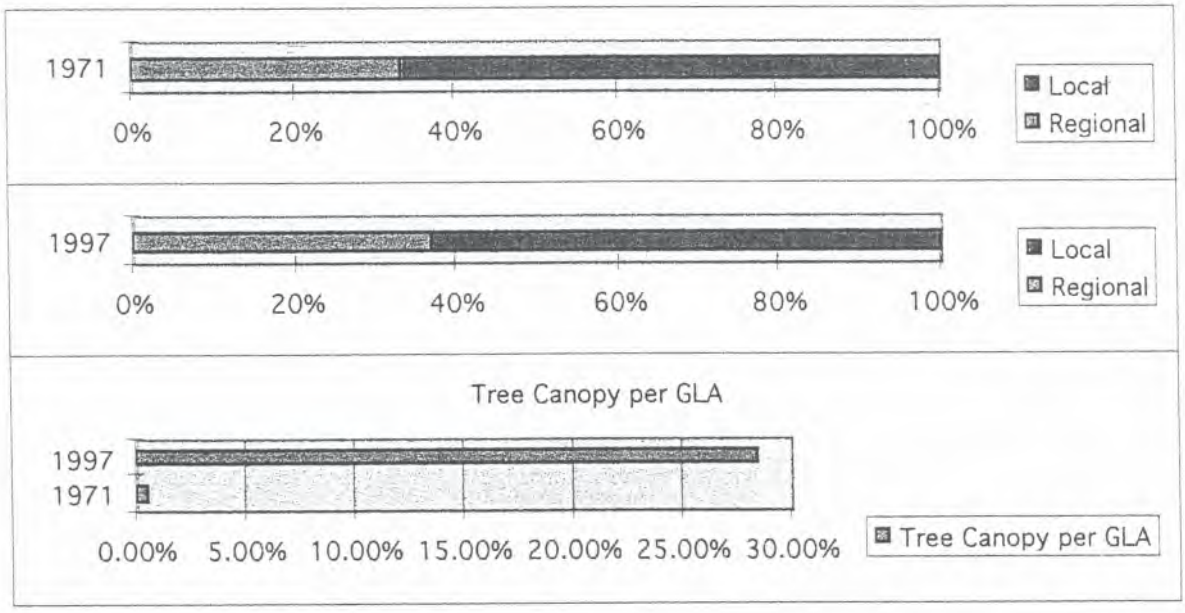
Figure 23 a

Statistics for Santa Teresa Square 1971 - 1997

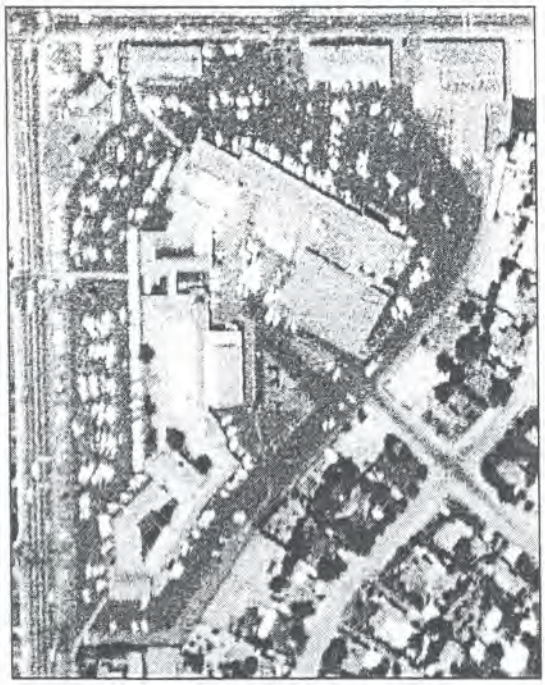
First Year of Operation	1970
Canopy Coverage per GLA - 1971	0.5%
Canopy Coverage per GLA - 1997	28.4%
Gross Leasable Area - 1971 (square meters)	3,623
Gross Leasable Area - 1997 (square meters)	5,435
Regional Store Type - 1971	33.3%
Regional Store Type - 1997	36.8%

Remarks:

Besides increasing the GLA and renovating the store fronts, Santa Teresa square planted more trees in the parking lot than any of the other studied centers. The parking lot is a virtual forest, a welcomed sight on a hot day.



Cambrian Park Plaza



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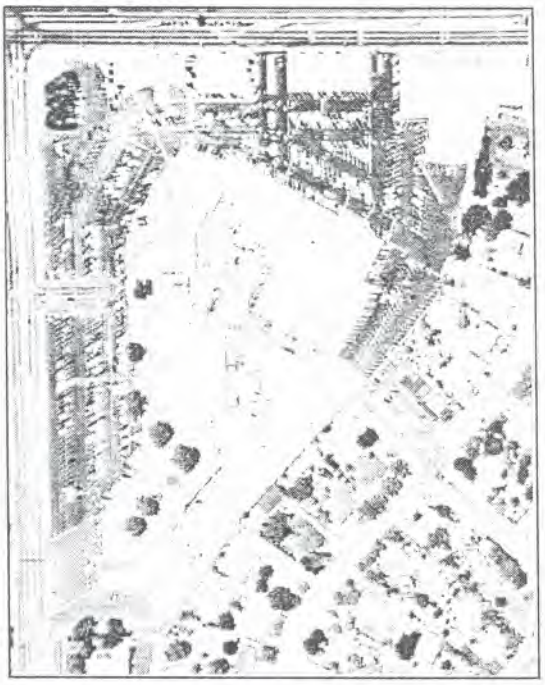


1996

1971

1997

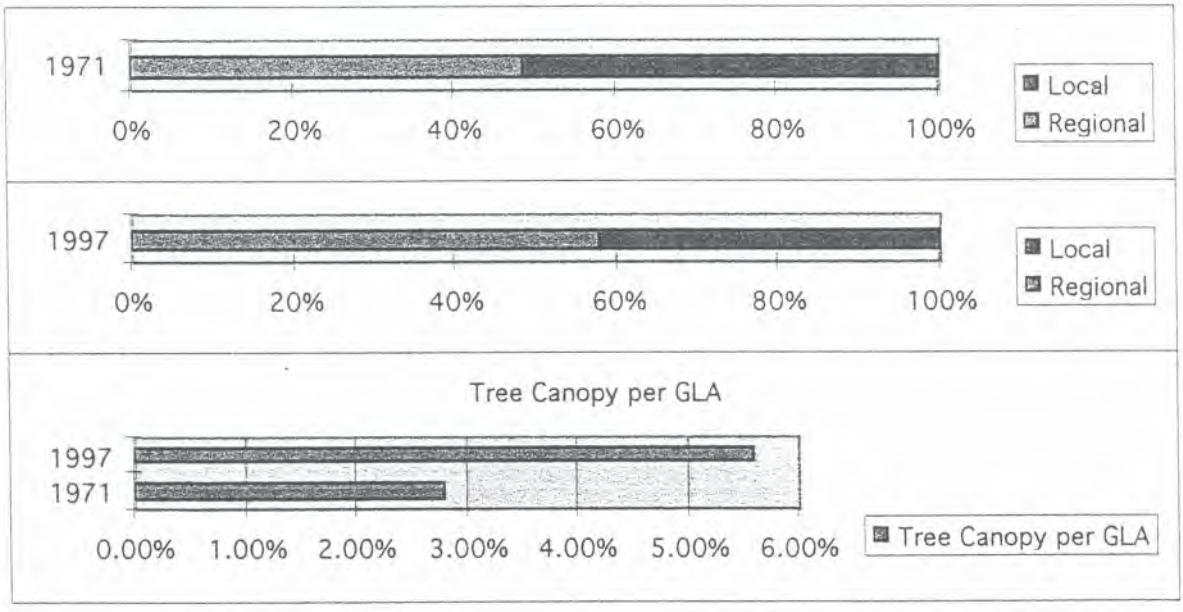
Figure 24 a

Statistics for Cambrian Park Plaza 1971 - 1997

First Year of Operation	1953
Canopy Coverage per GLA - 1971	2.8%
Canopy Coverage per GLA - 1997	5.6%
Gross Leasable Area - 1971 (square meters)	15,522
Gross Leasable Area - 1997 (square meters)	15,793
Regional Store Type - 1971	48.5%
Regional Store Typo - 1997	57.9%

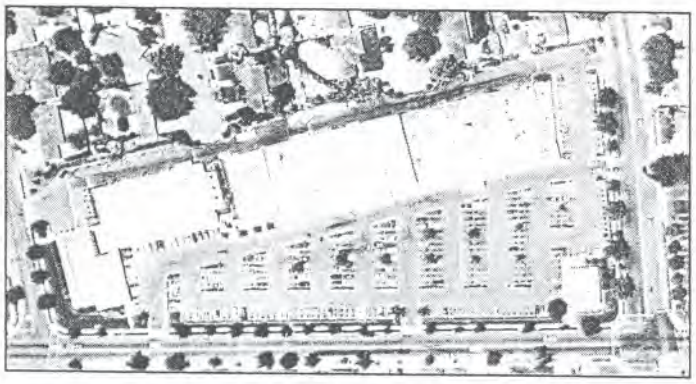
Remarks:

Essentially, Cambrian Park Plaza has not changed. The increase of canopy coverage is a result of a few large trees growing over the last 25 years. Originally, the center's buildings were constructed around existing trees, but otherwise no significant number of additional trees were added over the time period. The center's location on the intersection of Union and Camden Avenues, two major arterial ways, allowed the center to survive in the current state. Its only gas station has been removed, and a building of roughly the same size was added.

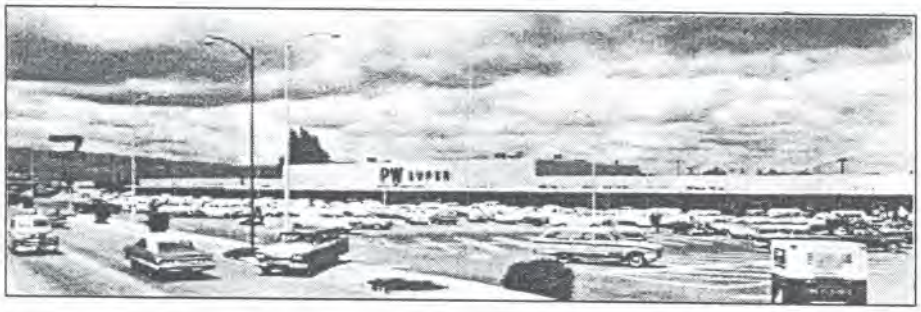


Foxworthy

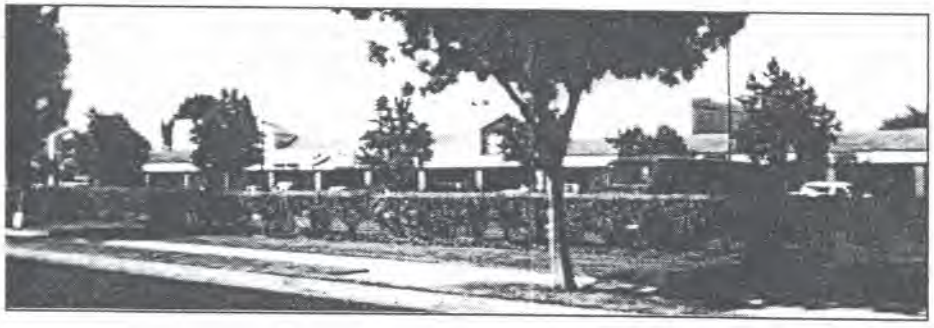
1971



1996



1971



1997

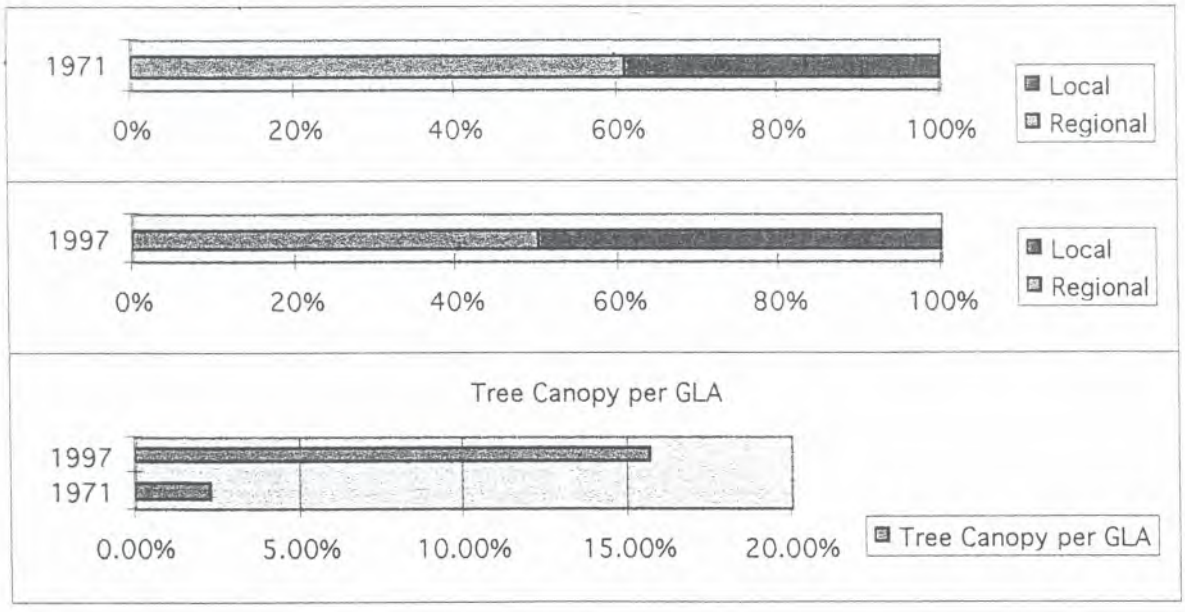
Figure 25 a

Statistics for Foxworthy 1971 - 1997

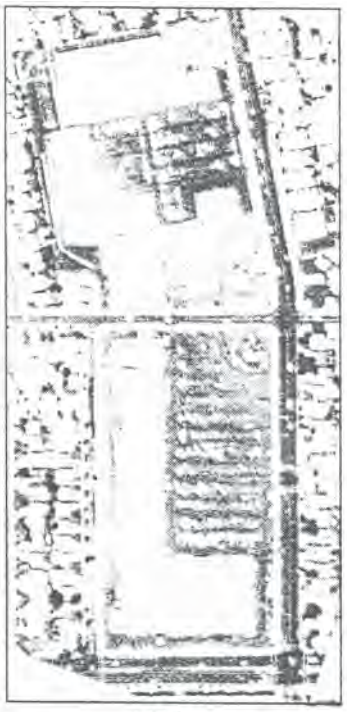
First Year of Operation	1957
Canopy Coverage per GLA - 1971	2.3%
Canopy Coverage per GLA - 1997	15.7%
Gross Leasable Area - 1971 (square meters)	6,226
Gross Leasable Area - 1997 (square meters)	6,208
Regional Store Type - 1971	61.1%
Regional Store Typo - 1997	50%

Remarks:

Foxworthy Shopping Center used to be classified as a Community Shopping Center. However, the current demographic make-up of the surrounding area cannot support such a center. Twenty-five years ago the neighborhood was filled with families -- the children grew up and moved out, leaving a smaller and aging population behind. The center now functions as a Neighborhood Center. Comprehensive remodeling / relandscaping is evidence of the Center's attempt to re-define its role in the area. Its gas station was removed and a building of roughly the same size was constructed in its place.

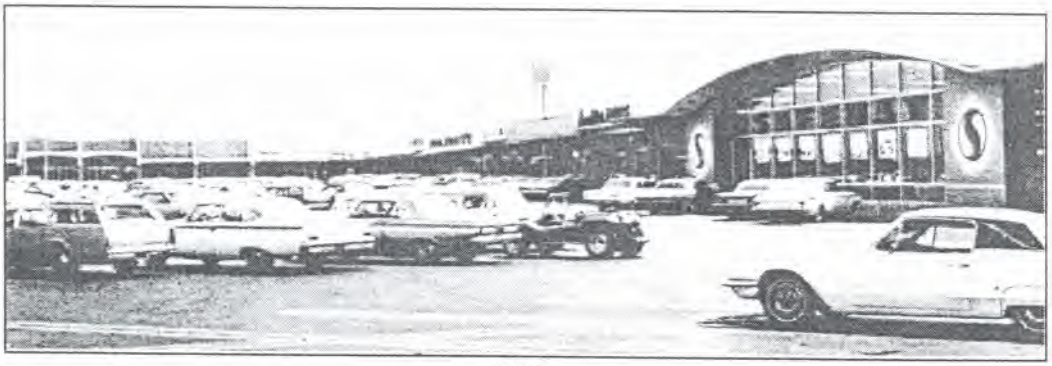


Hacienda Gardens



1971

1996



1971

1997

Figure 26 a

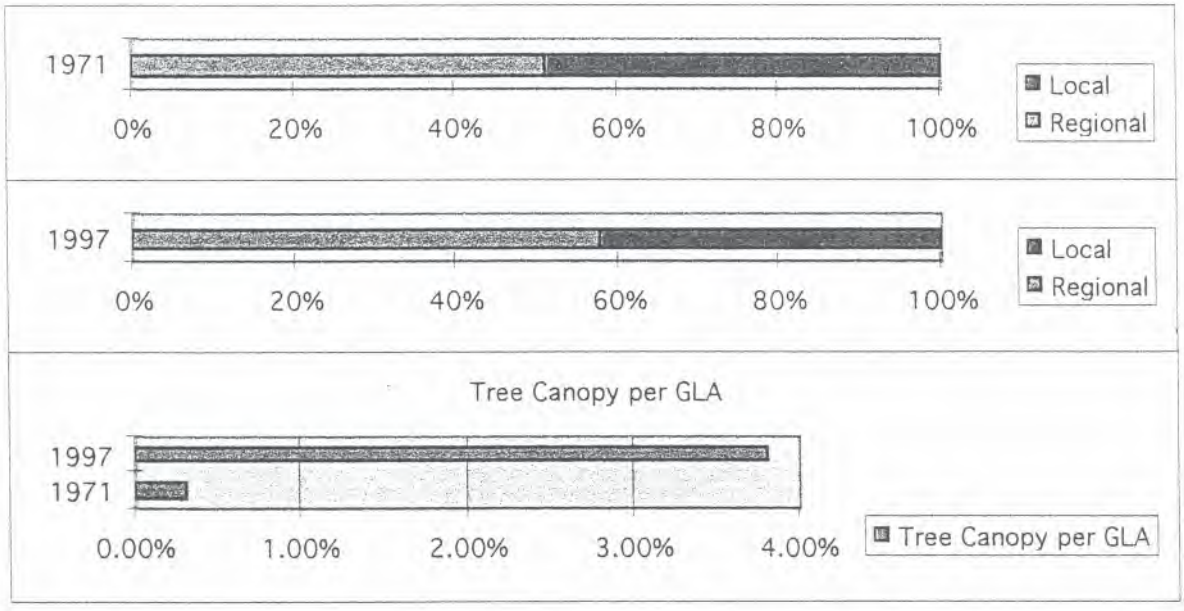
Statistics for Hacienda Gardens 1971 - 1997

First Year of Operation	1959
Canopy Coverage per GLA - 1971	0.3%
Canopy Coverage per GLA - 1997	3.8%*
Gross Leasable Area - 1971 (square meters)	22,042
Gross Leasable Area - 1997 (square meters)	26,477
Regional Store Type - 1971	51.1%
Regional Store Type - 1997	57.9%

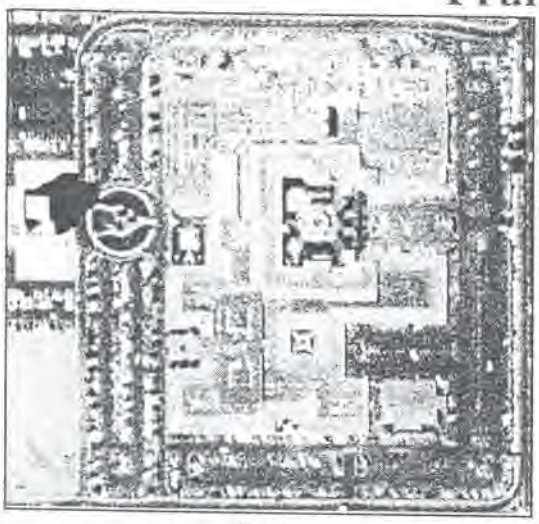
Remarks:

Only the store fronts of the anchor stores received some renovations. The rest of the center remains unchanged, has not been renovated or relandscaped, and a large portion of the center is vacant. The low rents attracted a private grade school into the center.

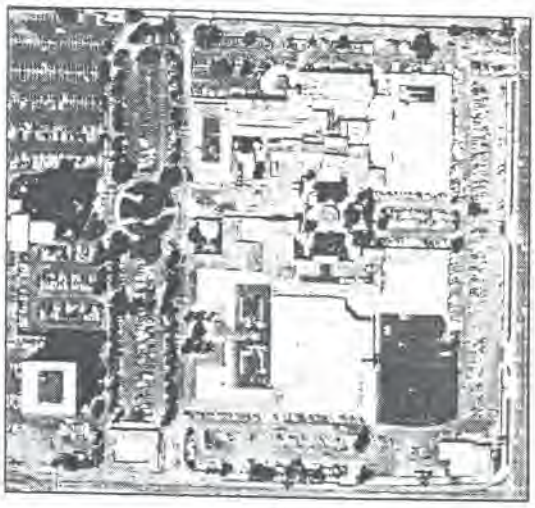
* The large increase comes from the fact that in 1971 the center had virtually no landscaping, therefore any increase in canopy appears as a major figure. The center had the second lowest 1997 canopy/GLA ratio observed.



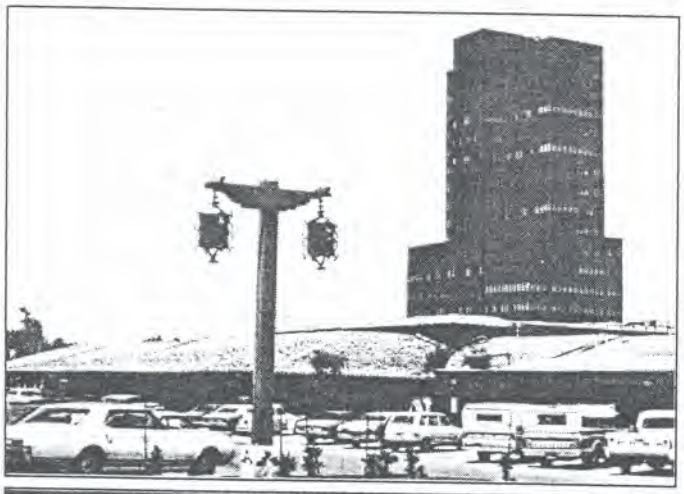
Prune Yard



1971



1996



1971

1997

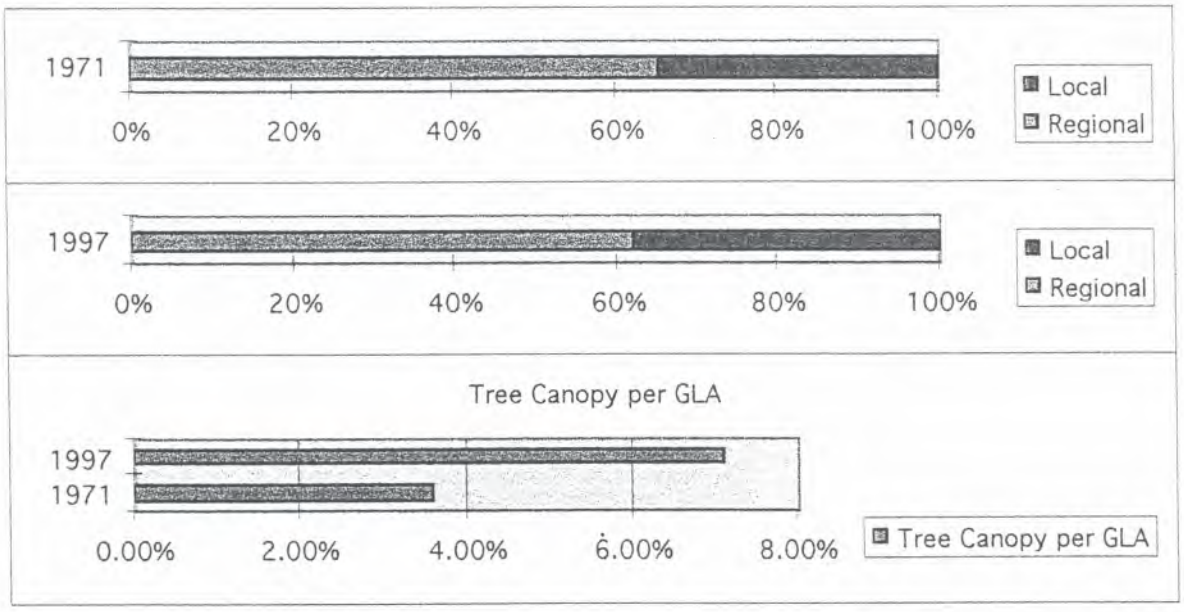
Figure 27 a

Statistics for The Pruneyard 1971 - 1997

First Year of Operation	1970
Canopy Coverage per GLA - 1971	3.6%
Canopy Coverage per GLA - 1997	7.1%
Gross Leasable Area - 1971 (square meters)	27,870
Gross Leasable Area - 1997 (square meters)	27,870
Regional Store Type - 1971	65.5%
Regional Store Type - 1997	62%

Remarks:

Although the GLA reflects no growth, the center underwent a major renovation. Old buildings were raised to make room for new ones, two of them are now occupied by high-profile retailers, Barnes & Noble bookstore and Trader Joe's. Even in 1971, the center had more trees than most of the other Community Centers.



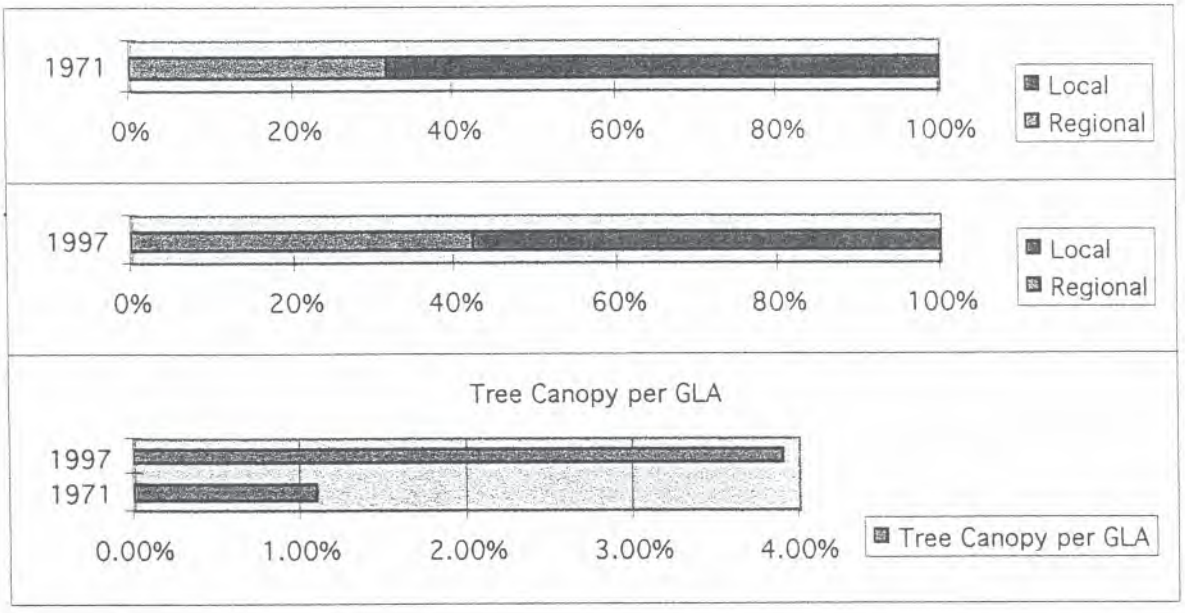
Statistics for Seven Trees 1971 - 1997

First Year of Operation	1965
Canopy Coverage per GLA - 1971	1.1%
Canopy Coverage per GLA - 1997	3.9%*
Gross Leasable Area - 1971 (square meters)	10,639
Gross Leasable Area - 1997 (square meters)	11,334
Regional Store Type - 1971	31.8%
Regional Store Type - 1997	42.4%

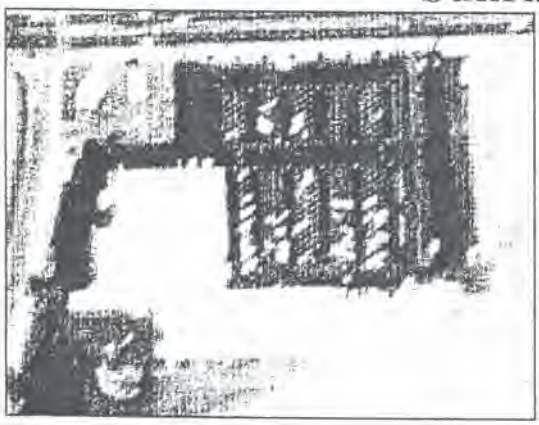
Remarks:

Even with an almost fourfold increase in canopy coverage over 25 years, Seven Trees had the lowest observed canopy/GLA ratio. It also has the second lowest percentage of Regional Type Stores, which are housed in buildings unchanged from 1971. Of the seven trees, Junipers, which gave the center its name, one has died and the rest are not far behind.

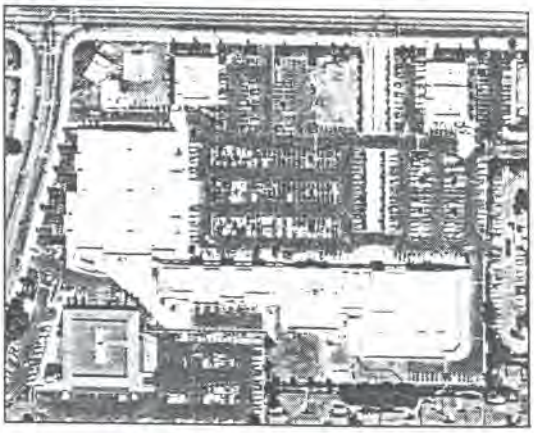
*In 1986 a Burger King restaurant was added. The increase of tree canopy is due to the extensive landscaping surrounding the restaurant.



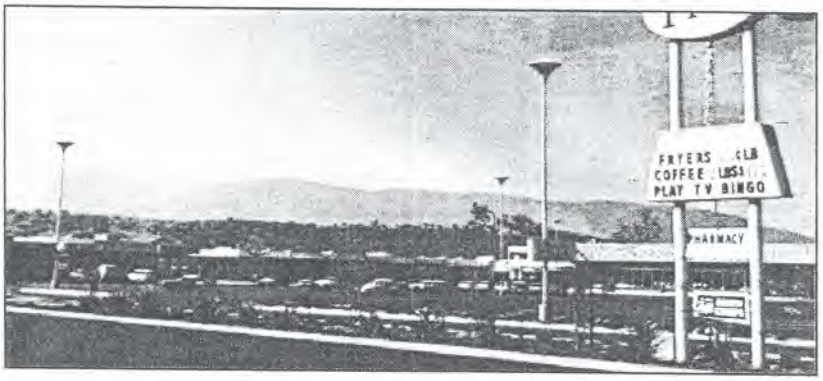
Sunrise Plaza



1971



1996



1971

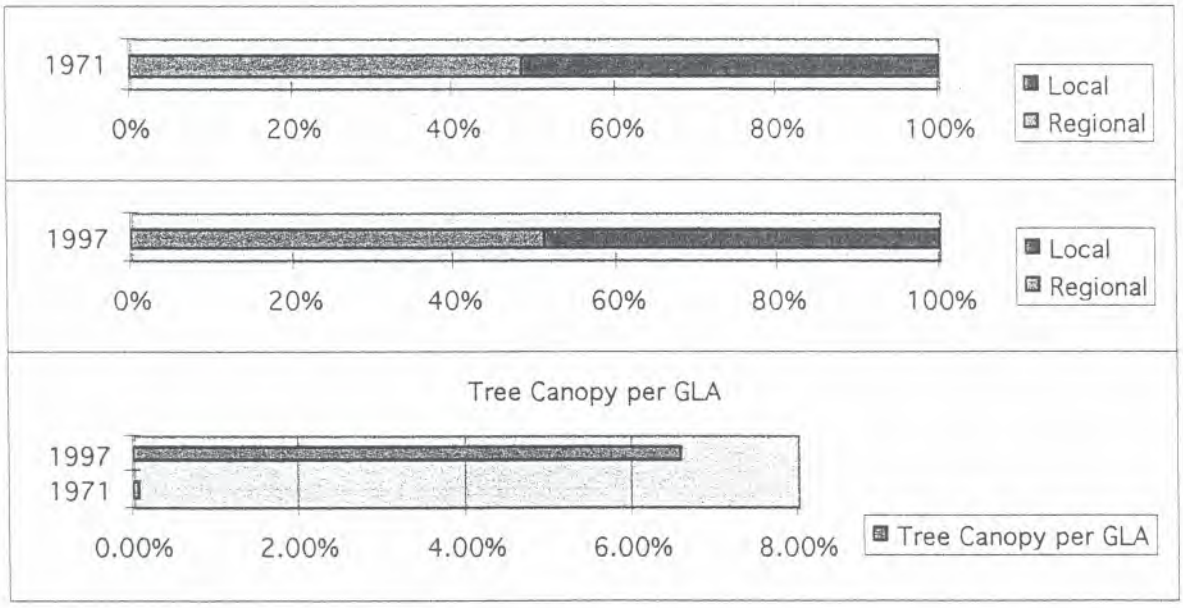
1997

Statistics for Sunrise Plaza 1971 • 1997

First Year of Operation	1966
Canopy Coverage per GLA - 1971	0.6%
Canopy Coverage per GLA - 1997	6.6%
Gross Leasable Area - 1971 (square meters)	7,411
Gross Leasable Area - 1997 (square meters)	11,070
Regional Store Type - 1971	41.7%
Regional Store Type - 1997	44.4%

Remarks:

Sunrise Plaza underwent a complete remodel in 1992. Only the shapes of the buildings remain the same. As with all observed remodeled/rebuilt centers, new landscaping and trees were a major part of the overall design change. The tree figure is still comparatively low since the planted trees are only 7-years-old. In the future, the center will look something akin to Santa Theresa Square.



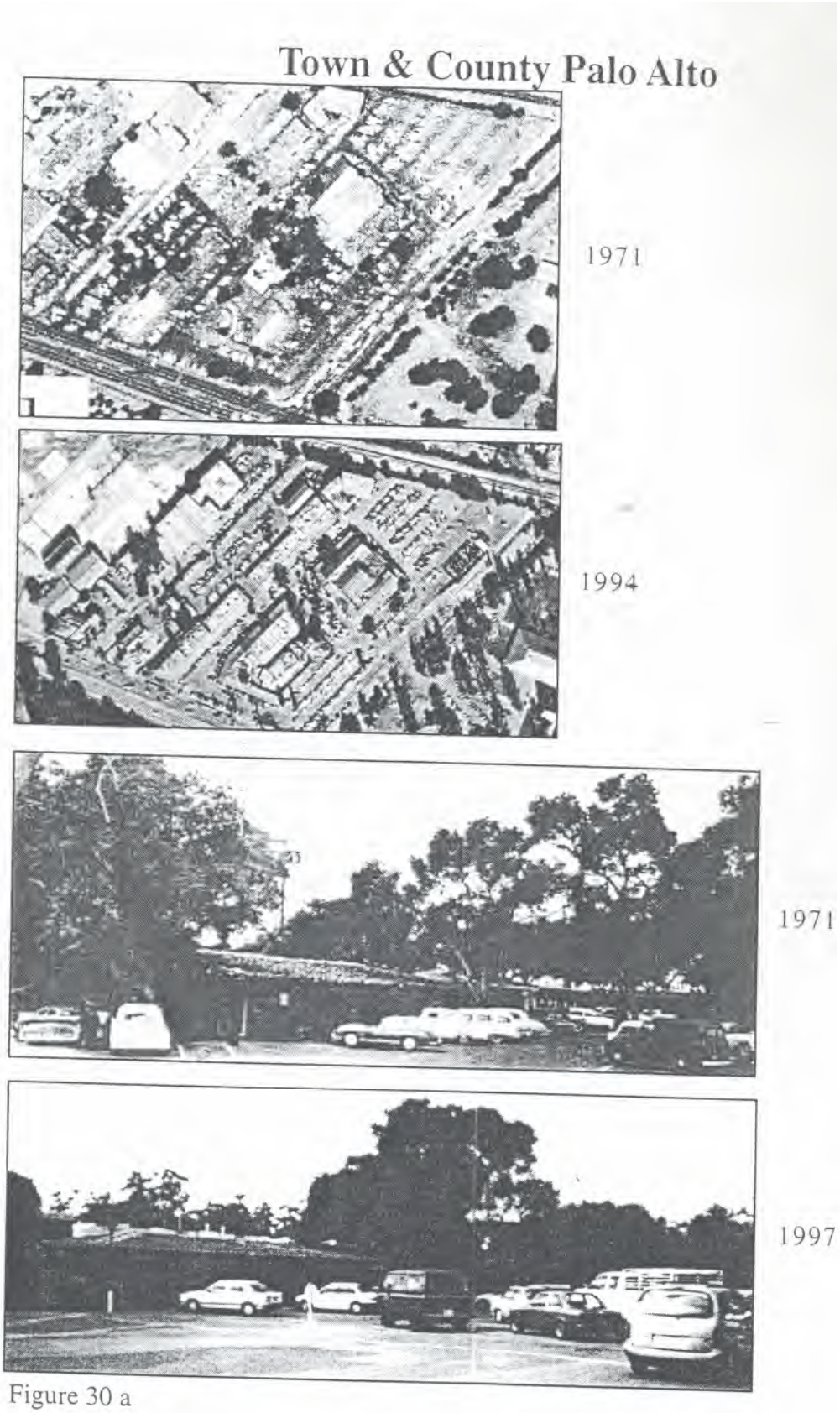


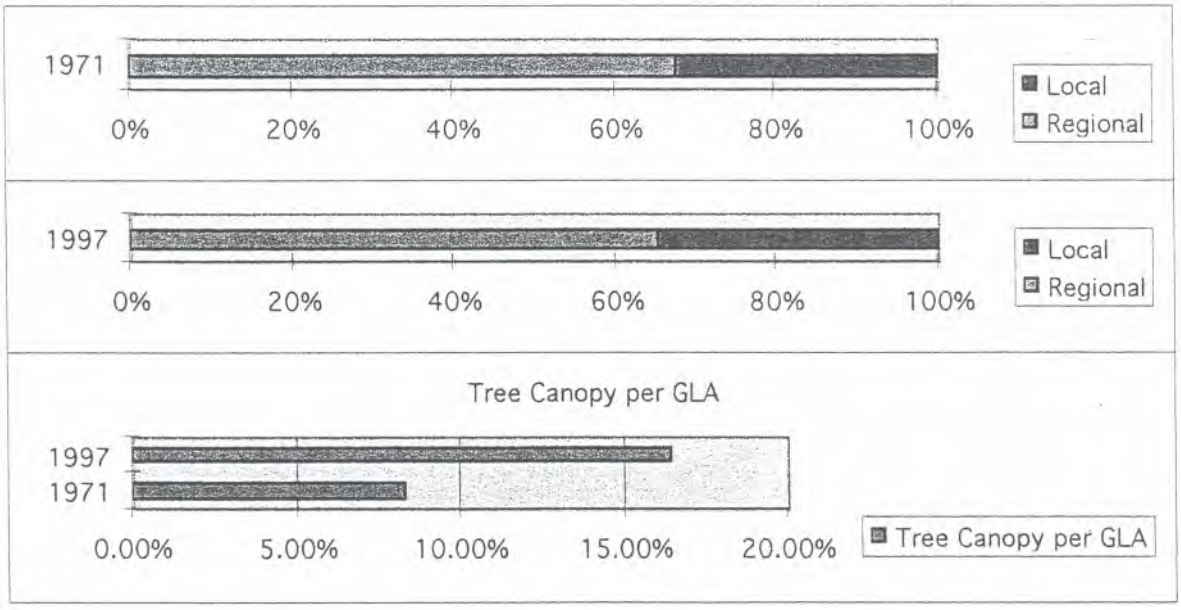
Figure 30 a

Statistics for Town & Country Palo Alto 1971 - 1997

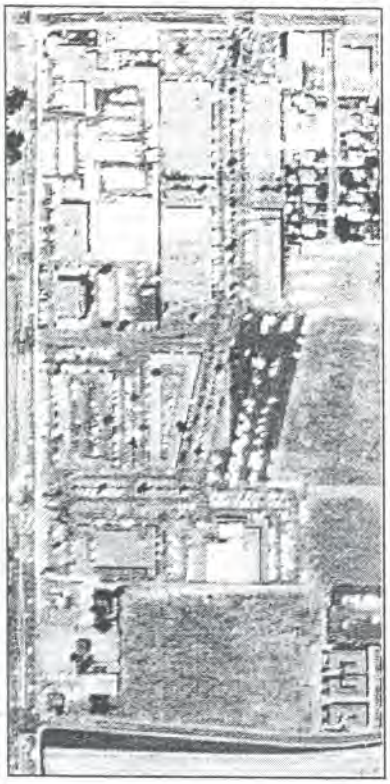
First Year of Operation	1949
Canopy Coverage per GLA - 1971	8.3%
Canopy Coverage per GLA - 1997	16.4%
Gross Leasable Area - 1971 (square meters)	35,209
Gross Leasable Area - 1997 (square meters)	35,209
Regional Store Type,- 1971	67.6%
Regional Store Type - 1997	65.2%

Remarks:

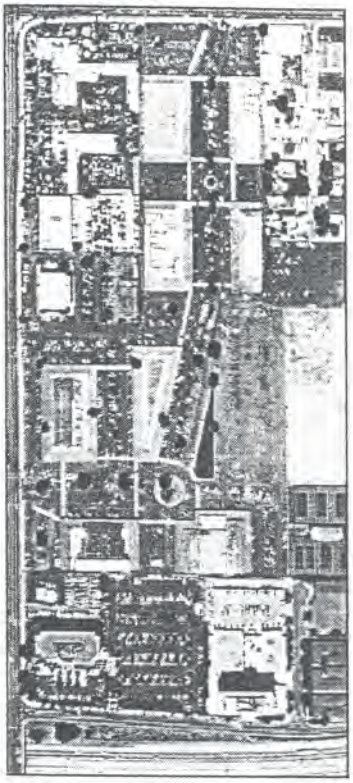
Town & Country Palo Alto has survived since 1949 unchanged due to its location in one of the most prosperous areas of Silicon Valley. Super Regional Mall, Stanford, is nearby, but it has not drawn Town & Countries' customers -- it appears the centers complement each other. The buildings were built around existing Oaks, one reason for the high 1971 percentage recorded.



Town & Country San Jose



1971



1996

1971

1997

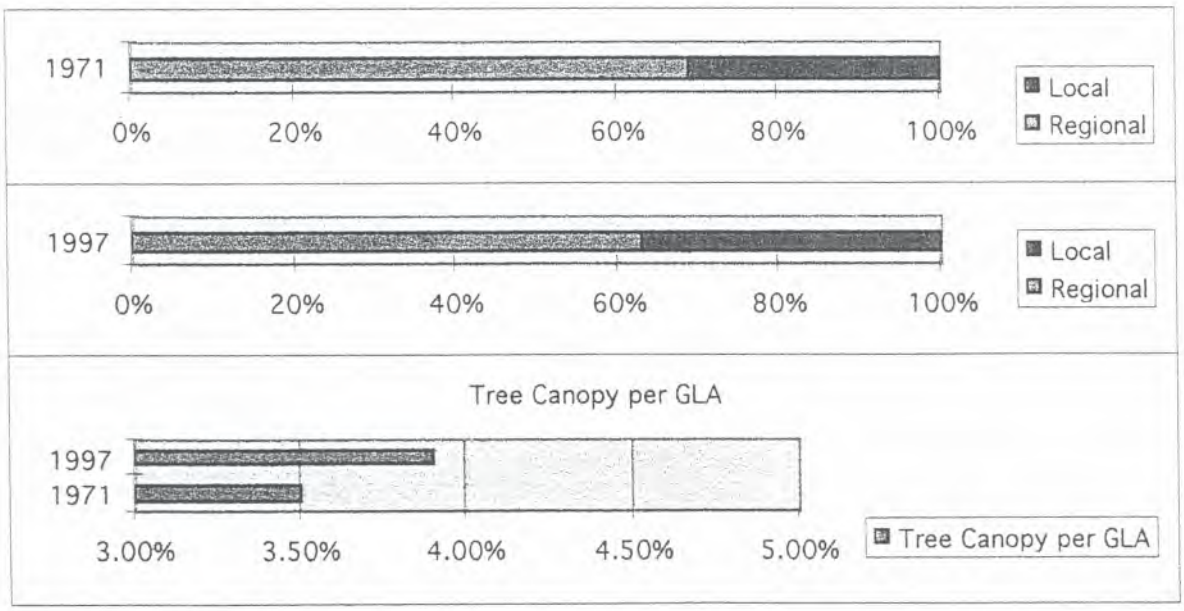
Figure 31 a

Statistics for Town & Country San Jose 1971 - 1997

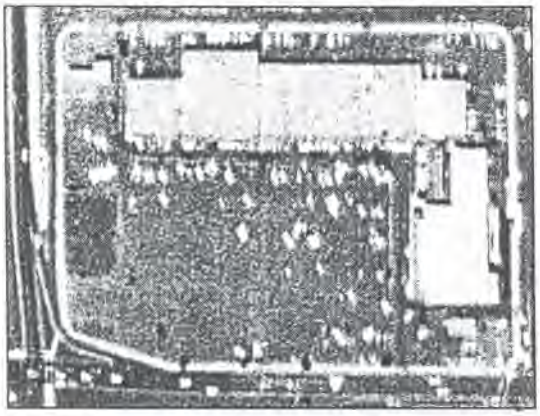
First Year of Operation	1962
Canopy Coverage per GLA - 1971	3.5%
Canopy Coverage per GLA - 1997	3.9%
Gross Leasable Area - 1971 (square meters)	23,225
Gross Leasable Area - 1997 (square meters)	30,193
Regional Store Type - 1971	69.0%
Regional Store Type - 1997	63.2%

Remarks:

On the surface, both Palo Alto and San Jose Town & Countries share the same situation. Both are near the biggest Malls in Silicon Valley, were built by the same company, and share the same architecture. But unlike Palo Alto, which was able to keep its Regional Type Stores, San Jose lost them, as well as market share, to Valley Fair. Plans have been accepted by the city of San Jose to raze the center, construct 1,100 residences, and double its GLA.



Lawrence Square



1971

1996

1971

1997

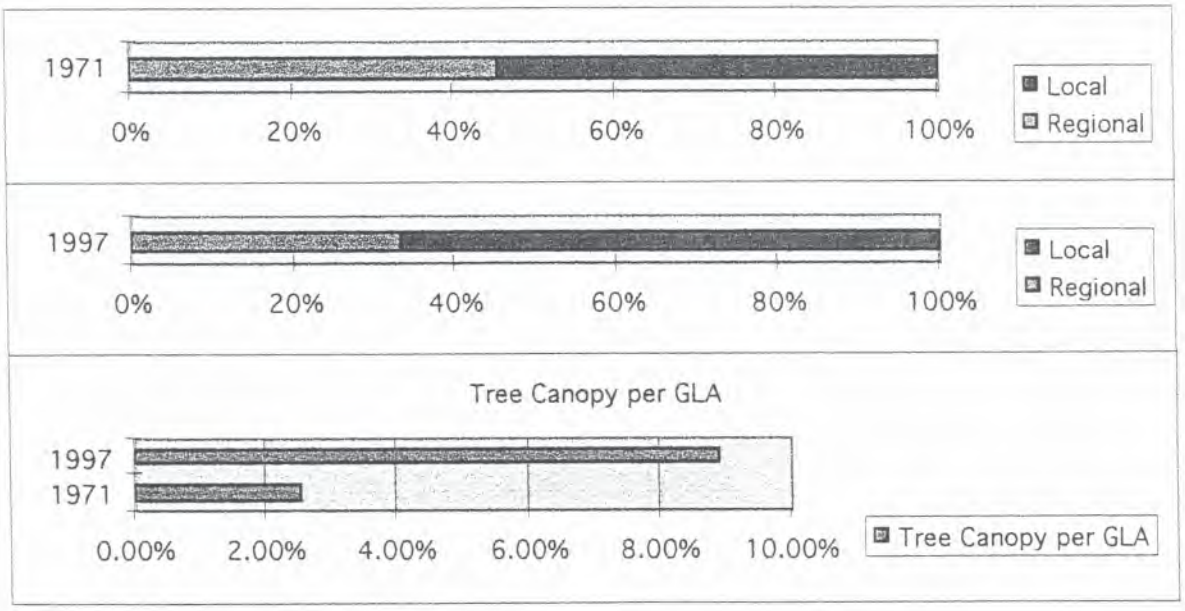
Figure 32 a

Statistics for Lawrence Square 1971 - 1997

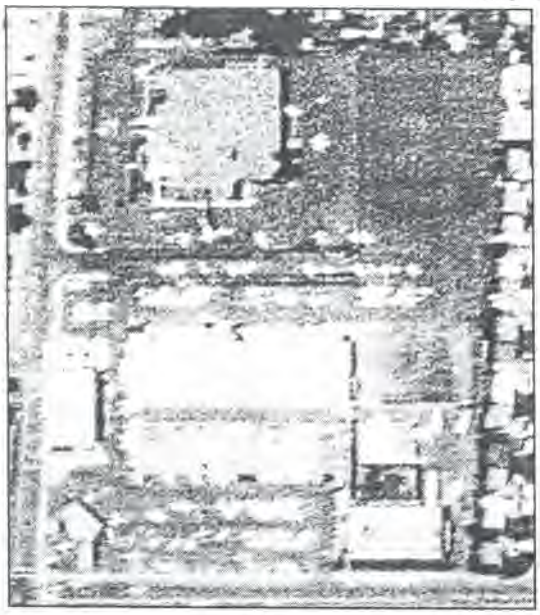
First Year of Operation	1960
Canopy Coverage per GLA - 1971	2.5%
Canopy Coverage per GLA - 1997	8.9%
Gross Leasable Area - 1971 (square meters)	10,045
Gross Leasable Area - 1997 (square meters)	12,832
Regional Store Type - 1971	45.5%
Regional Store Type - 1997	33.3%

Remarks:

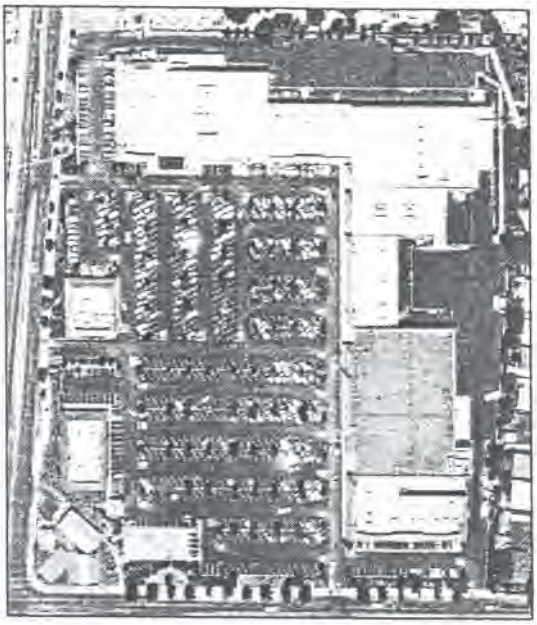
Lawrence Square had to adjust to a changed transportation network. Lawrence Express Way, the road on the western side of the center was widened, moved, and elevated. Its two gas stations were removed, and the center started to cater more to the local populations, as see by the 12% drop in Regional Store Types. It also underwent a major renovation in 1992, explaining the sharp increase on tree canopy coverage.



Lo Bue's



1971



1996

1971

1997

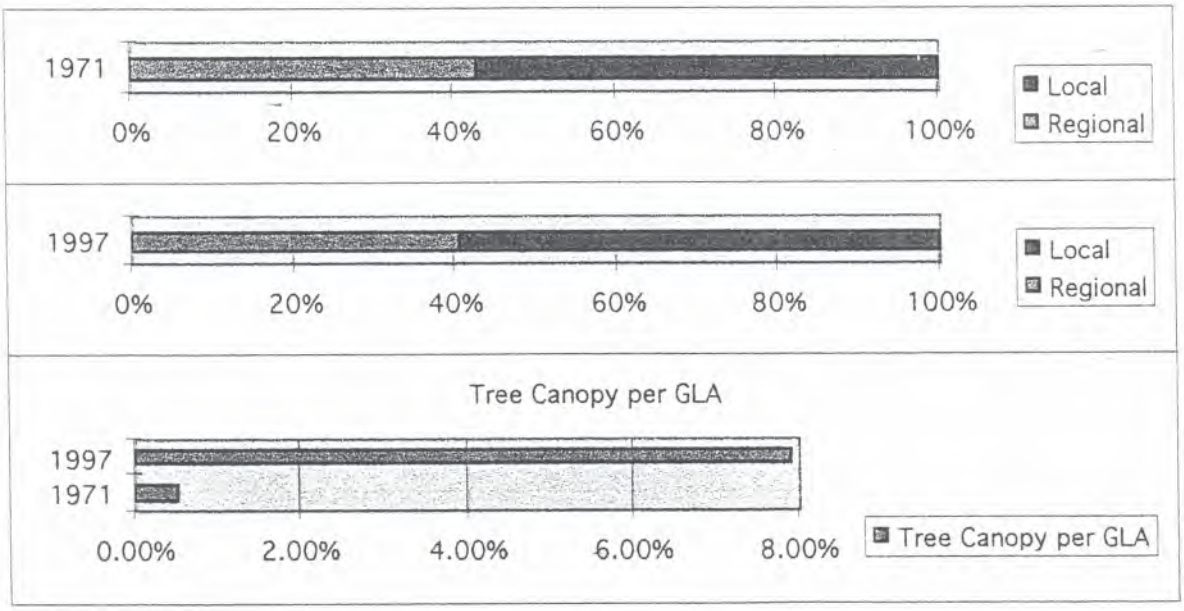
Figure 33 a

Statistics for LoBue's Plaza 1971 - 1997

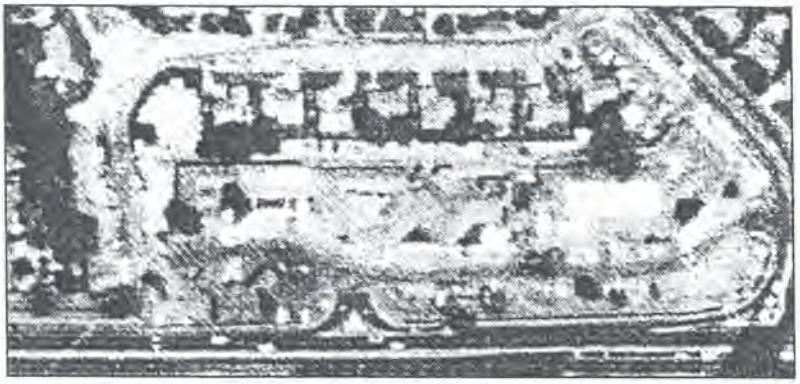
First Year of Operation	1955
Canopy Coverage per GLA - 1971	0.5%
Canopy Coverage per GLA - 1997	7.9%
Gross Leasable Area - 1971 (square meters)	11,527
Gross Leasable Area - 1997 (square meters)	15,859
Regional Store Type - 1971	42.9%
Regional Store Type - 1997	40.7%

Remarks:

Although the center was classified in 1971 as a Community Center due to its size, in function it was more of a neighborhood one. In 1987, it was completely razed; what was once a bowling alley in the middle of the center is now a tree studded parking lot. LoBues' appears to be a text book case for shopping center management. After 30 years of service it was completely rebuilt, readying it for the next thirty.

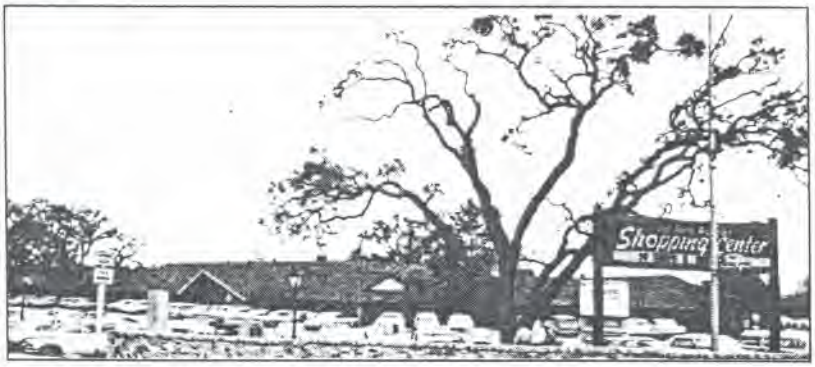


Los Altos Rancho



1971

1994



1971

1997

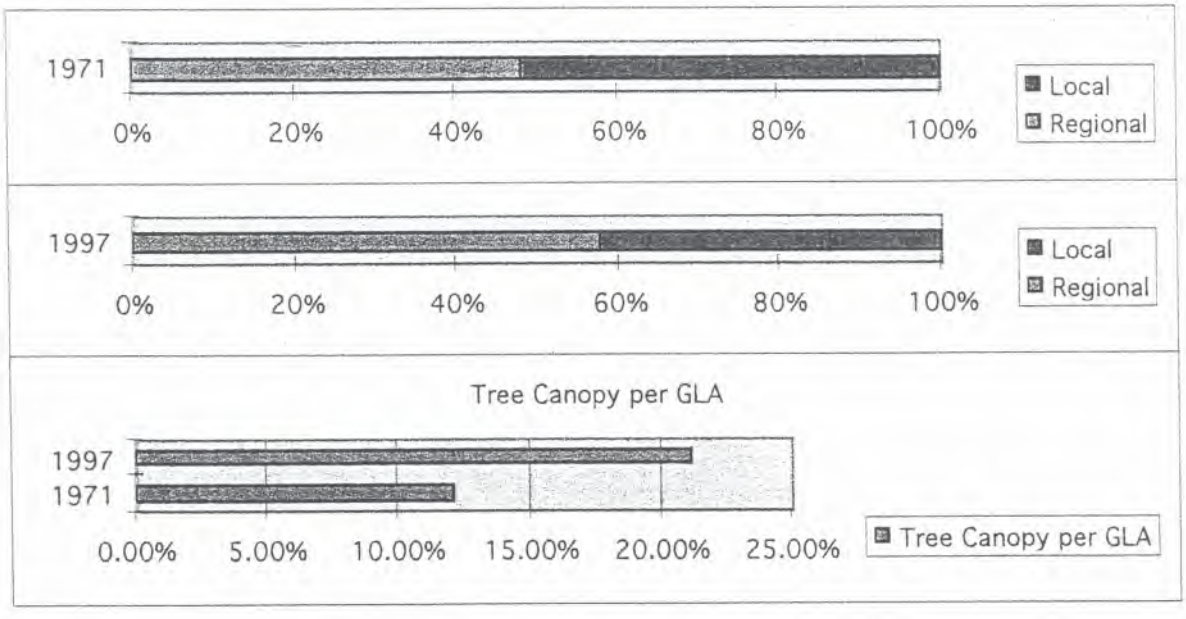
Figure 34 a

Statistics for Los Altos Rancho 1971 - 1997

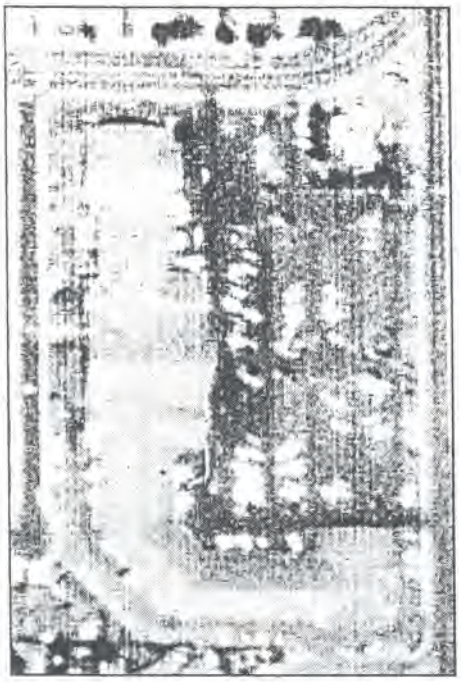
First Year of Operation	1960
Canopy Coverage per GLA - 1971	12.1%
Canopy Coverage per GLA - 1997	21.1%
Gross Leasable Area - 1971 (square meters)	7,149
Gross Leasable Area - 1997 (square meters)	7,158
Regional Store Type - 1971	48.1%
Regional Store Type - 1997	57.7%

Remarks:

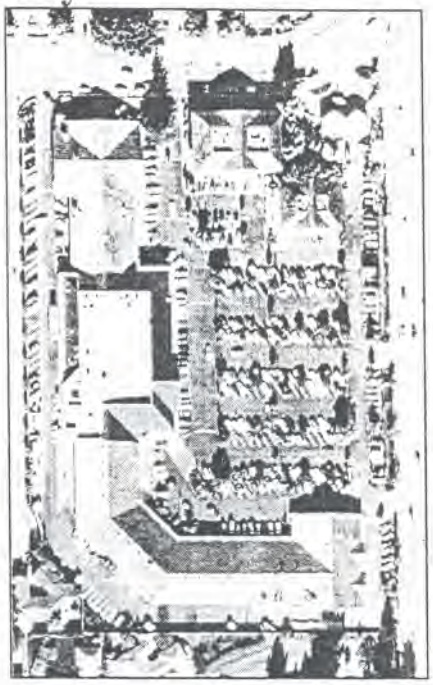
Los Altos Rancho, like Town & Country Palo Alto, is located in a wealthy neighborhood. It has been able to prosper without expansion or renovation. It did, however, change its tenant mix to one resembling that of a regional shopping center. The center doubled its canopy by planting fast-growing redwood trees -- these replaced the aging oaks, which the center was built around.



Blossom Valley



1971



1994

1971

1997

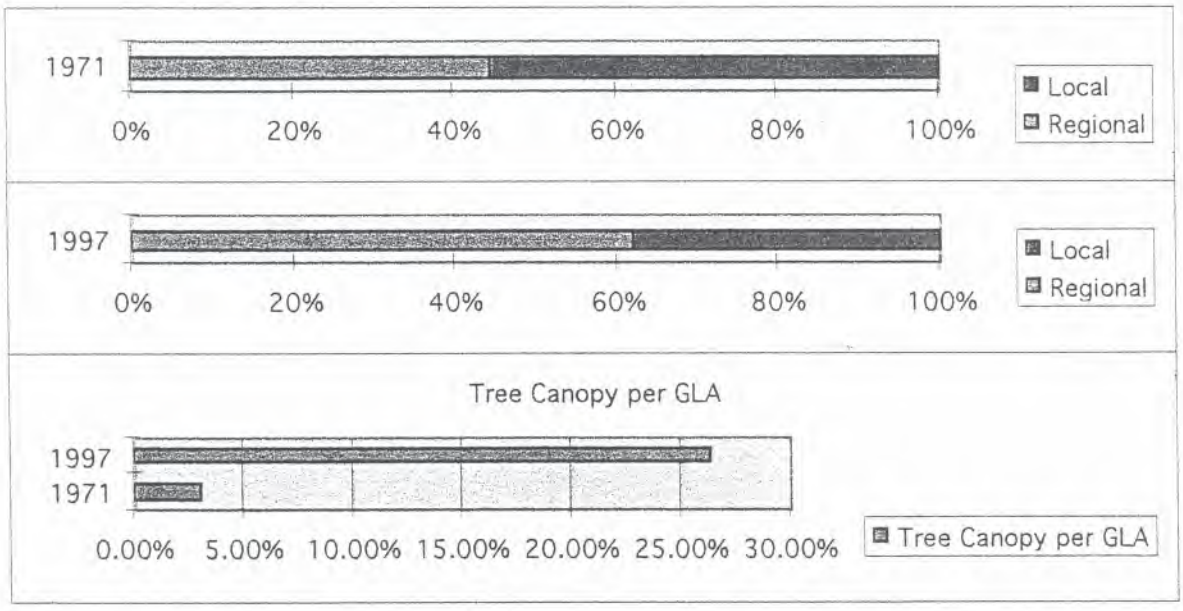
Figure 35 a

Statistics for Blossom Valley 1971 - 1997

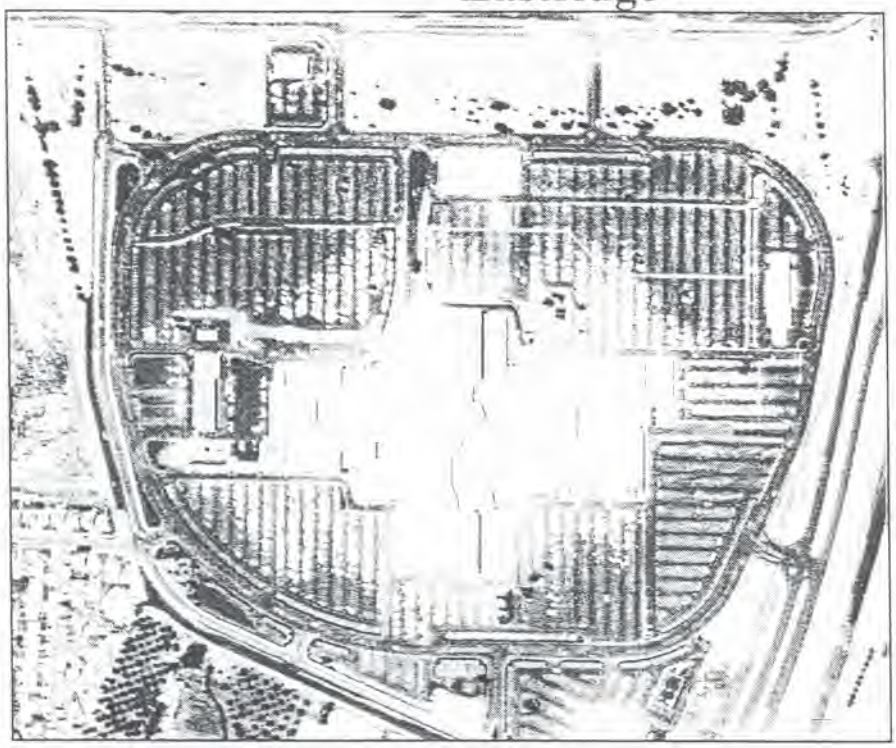
First Year of Operation	1955
Canopy Coverage per GLA - 1971	3.0%
Canopy Coverage per GLA - 1997	26.4%
Gross Leasable Area - 1971 (square meters)	7,200
Gross Leasable Area - 1997 (square meters)	7,200
Regional Store Type - 1971	44.4%
Regional Store Type - 1997	69.9%

Remarks:

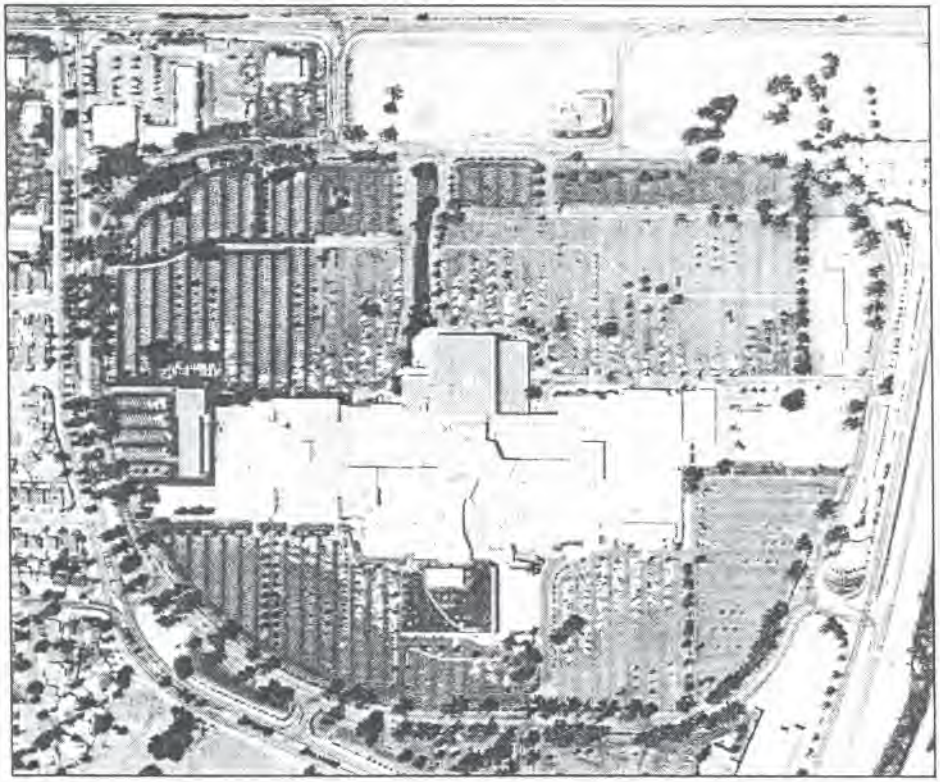
Blossom Valley employed three methods for staying competitive. It renovated the store fronts, covered the parking lot with shade trees, and manipulated the tenant mix to attract more shoppers. It is at this time a vibrant, tree-covered center.



Eastridge



1971



1996

Figure 36 a

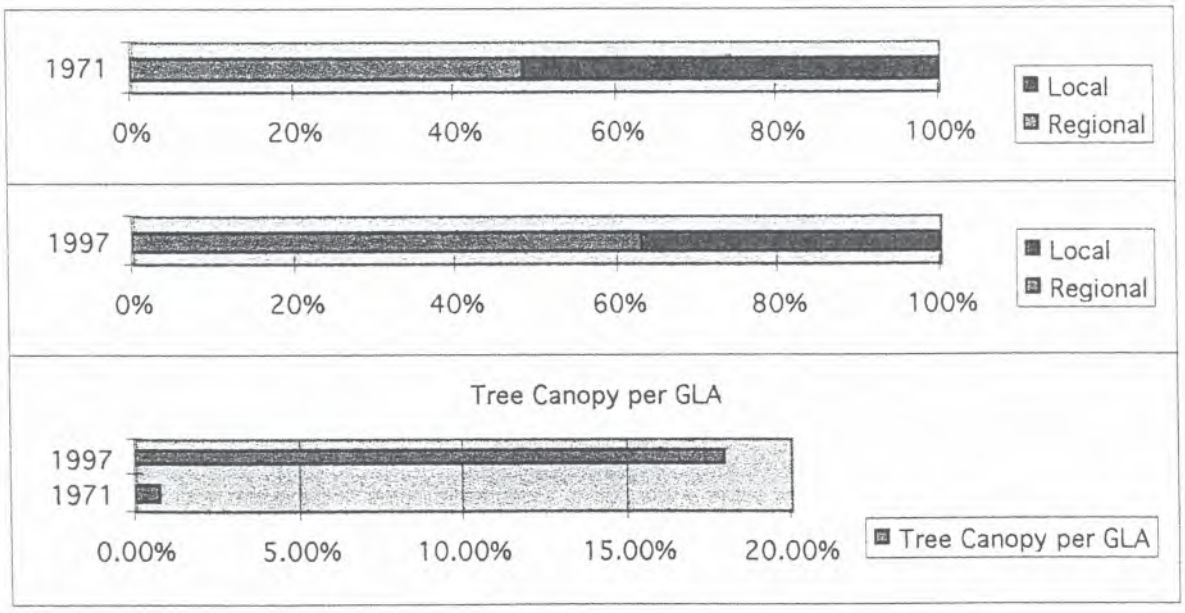
Statistics for Eastridge 1971 - 1997

First Year of Operation	1971
Canopy Coverage per GLA - 1971	0.7%
Canopy Coverage per GLA - 1997	18%
Gross Leasable Area - 1971 (square meters)	132,141
Gross Leasable Area - 1997 (square meters)	122,814*
Regional Store Type - 1971	48.5%
Regional Store Type - 1997	63.0%

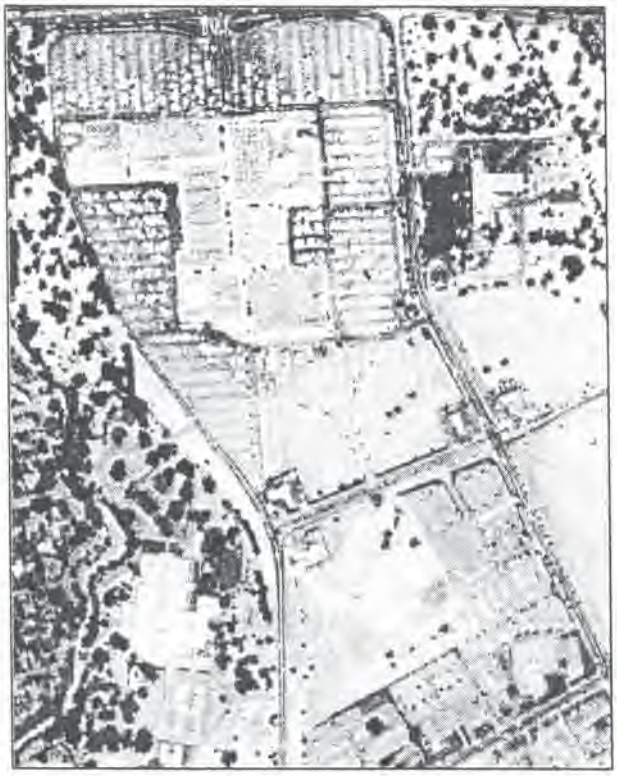
Remarks:

Eastridge, the second biggest mall in Silicon Valley, did not have very many options trying to stay competitive. First, tenant mixes in regional malls are focused on a very large customer base, an area not easily expanded, and mall space is too expensive to be filled with stores drawing mostly on a local customer base. Eastridge, when first opened in 1971 was bigger than the largest mall currently operating, therefore expansion to remain profitable was also limited. It's only avenues of trying to remain profitable consisted of an image make-over, landscaping, and tree planting.

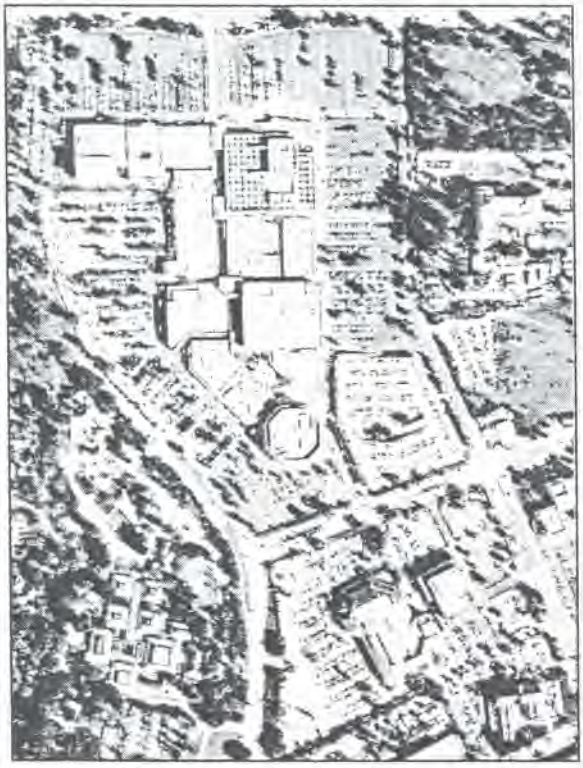
* The decrease in GLA is a result of anchor stores such as J.C. Penny's closing their automotive services.



Stanford



1971



1996

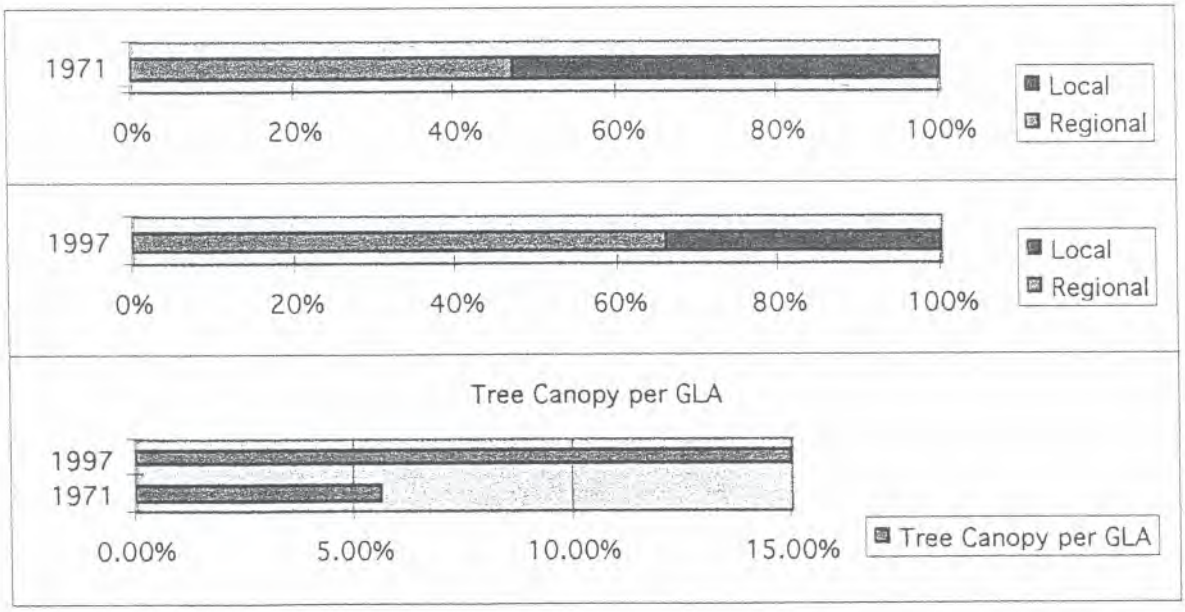
Figure 37 a

Statistics for Stanford 1971 - 1997

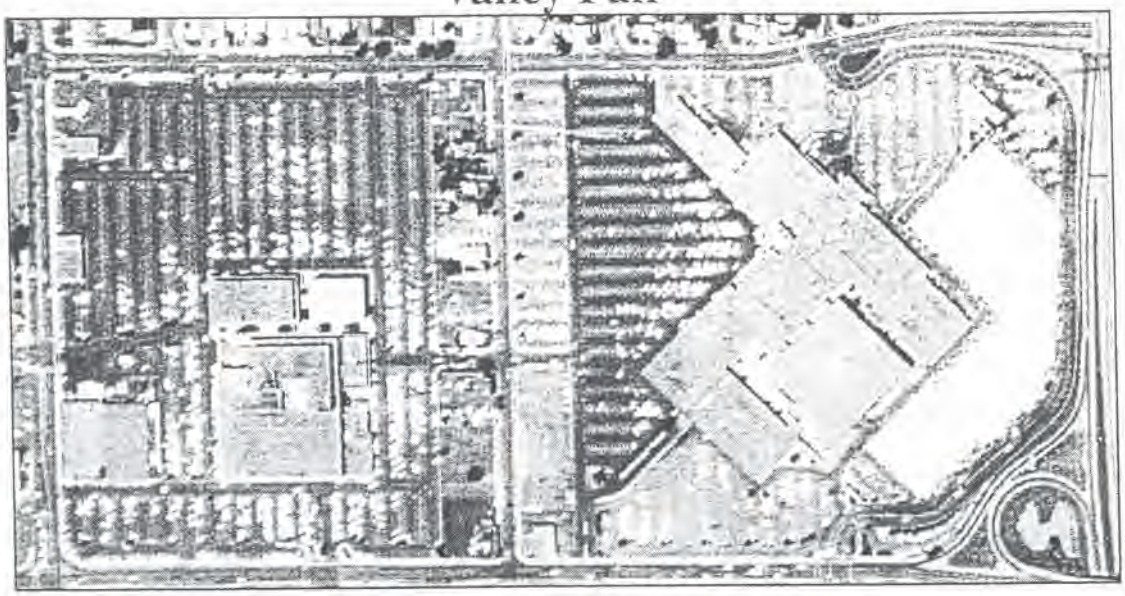
First Year of Operation	1955
Canopy Coverage per GLA - 1971	5.6%
Canopy Coverage per GLA - 1997	15%
Gross Leasable Area - 1971 (square meters)	79,154
Gross Leasable Area - 1997 (square meters)	125,415
Regional Store Type - 1971	47.2%
Regional Store Type - 1997	65.9%

Remarks:

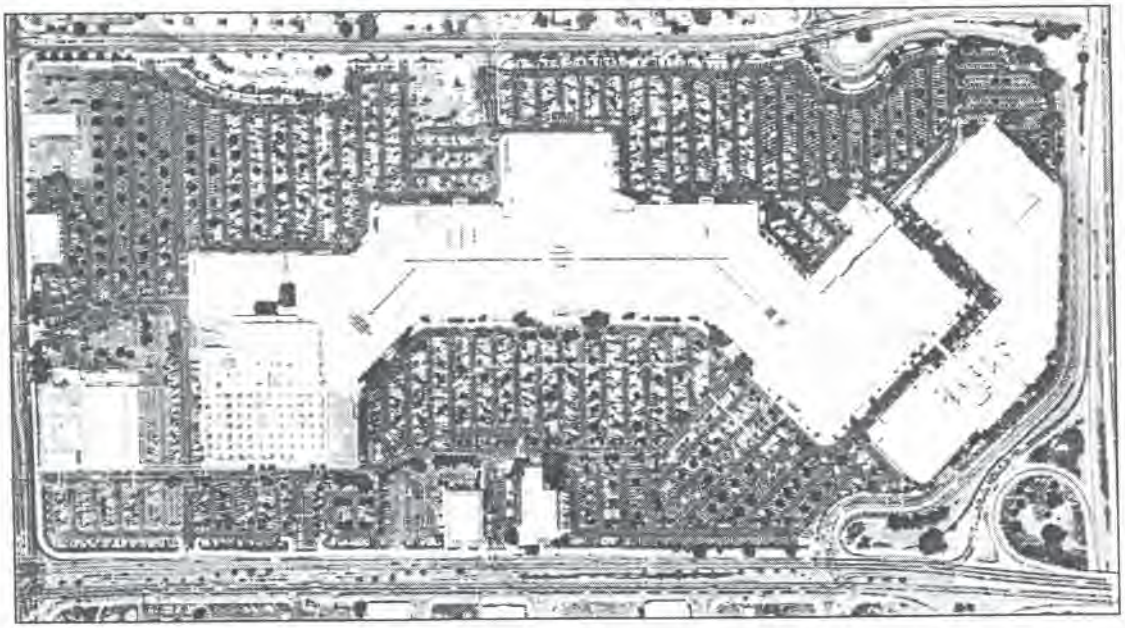
Stanford Shopping Center is built on Stanford University property and the trustees have control over major decisions. The center is located in one of the most affluent areas of Silicon Valley. The center started as a small regional mall, then over its life span added 50% more GLA. Location, renovation, expansion, and landscape changes enabled Stanford to corner the upscale retail market.



Valley Fair



1971



1996

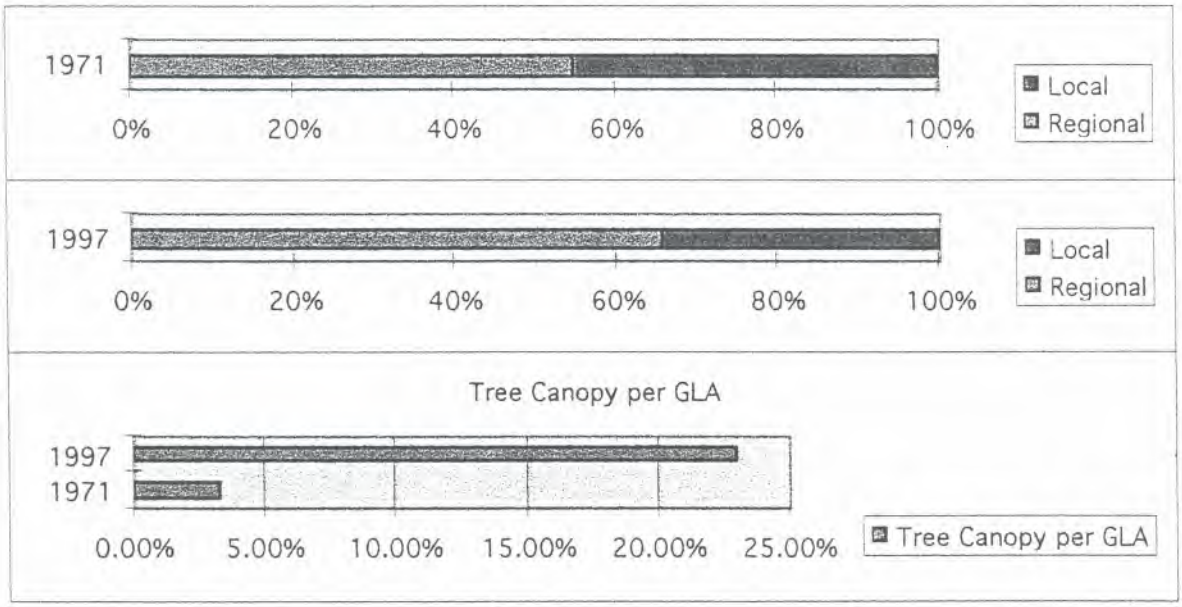
Figure 38 a

Statistics for Valley Fair 1971 - 1997

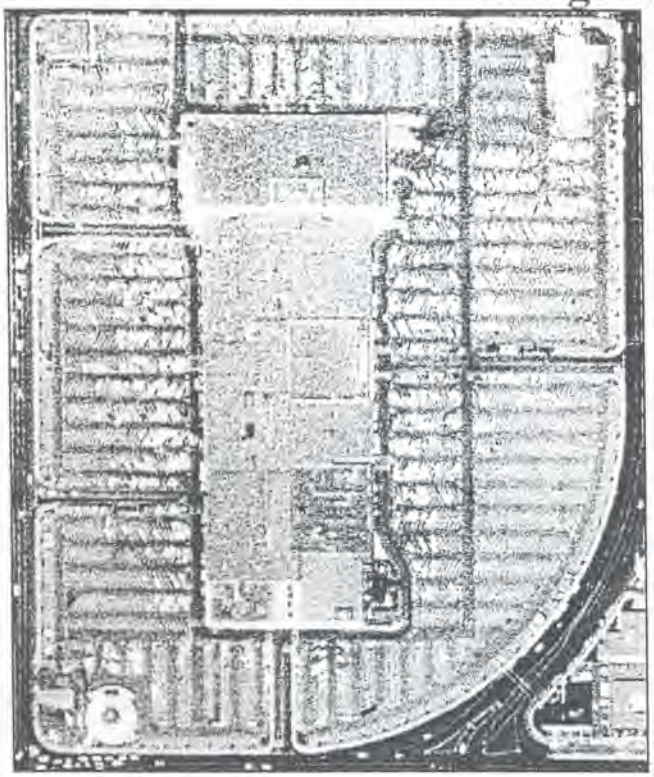
First Year of Operation	1956
Canopy Coverage per GLA - 1971	3.3%
Canopy Coverage per GLA - 1997	23%
Gross Leasable Area - 1971 (square meters)	88,952
Gross Leasable Area - 1997 (square meters)	107,764
Regional Store Type - 1971	54.9%
Regional Store Type- 1997	65.7%

Remarks:

Valley Fair has an interesting history. Prior to 1986, Valley Fair and Steven's Creek Plaza were two separate shopping centers for 30 years. Then both centers closed for one year in 1986 and the centers were joined. Now Valley Fair has the highest tree canopy/GLA ratio observed for regional shopping centers; it also experienced the largest degree of renovation. The city boundaries of San Jose and Santa Clara bisect the center.



Westgate



1971

1996

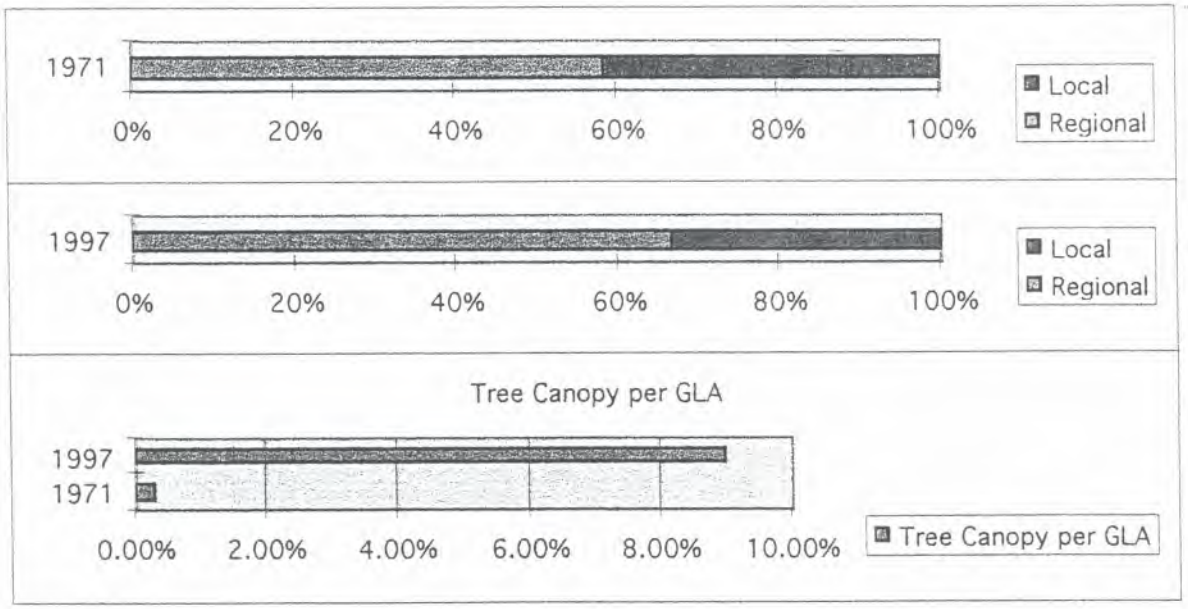
Figure 39 a

Statistics for Westgate 1971 - 1997

First Year of Operation	1953
Canopy Coverage per GLA - 1971	0.3%
Canopy Coverage per GLA - 1997	9%
Gross Leasable Area - 1971 (square meters)	46,971
Gross Leasable Area - 1997 (square meters)	60,385*
Regional Store Type - 1971	59.6%
Regional Store Type - 1997	66.7%

Remarks:

Westgate is the smallest of the study's regional centers. The basic layout of the center has not changed. It did however undergo a large remodel/relandscaping in 1989 and a smaller one in 1996. A previously barren parking lot is now shaded, and 7 new buildings have been added in the parking lot. Considering the fact that the center has to compete with ultra-successful Valley Fair, it has faired well, owing to the management's vision to keep the center as new as possible.



The Six Downtown Areas

In addition to the thirty randomly selected, planned shopping centers, six old downtown areas in and around San Jose were selected for examination. Physical modification work — the planting of trees along streets and in designated parking lots, the construction of street furniture and decorative features, and the remodeling of on-street parking — has been performed in all the areas. The areas (see Figures 40 through 43) are:

Downtown Palo Alto
Downtown Los Altos
Downtown Mountain View
Downtown Los Gatos
Downtown Campbell
The principal commercial district of Willow Glen (once an independent incorporated area, now a part of corporate San Jose)

A fundamental difference in origin exists between the planned shopping centers and these downtown areas. The shopping centers are all planned, that is they were designed on the drawing board and built as whole units at a time integral with the subdivision of large pieces of land for the construction of tract housing. The downtowns, by contrast, evolved on a lot-by-lot, store-by-store basis over a period of many years. The original nucleus of each town resulted from some local decision at the time of founding that was based on such situations as being located at a road intersection, or at the railroad station (e.g., Palo Alto and Mountain View, where the main street was always at right angles to the station). Decisions to build commercial establishments, outward from these nuclei, were made by local individuals, who presumed (some successfully, some not) that the opening of a business establishment would be profitable. The pattern was usually linear, stretching along a main street. In Palo Alto, this is expressed in University Avenue. In Mountain View, it is Castro Street. Los Altos has its Main Street and the paralleling State Street. Los Gatos has Santa Cruz Avenue, and the remnant of Main Street (part of which was lost when Highway 17 was made into a freeway). Campbell has Campbell Avenue, and Willow Glen has Lincoln Avenue. A few businesses are seen on adjacent side streets in all the downtowns, the largest being Palo Alto, the smallest Campbell.

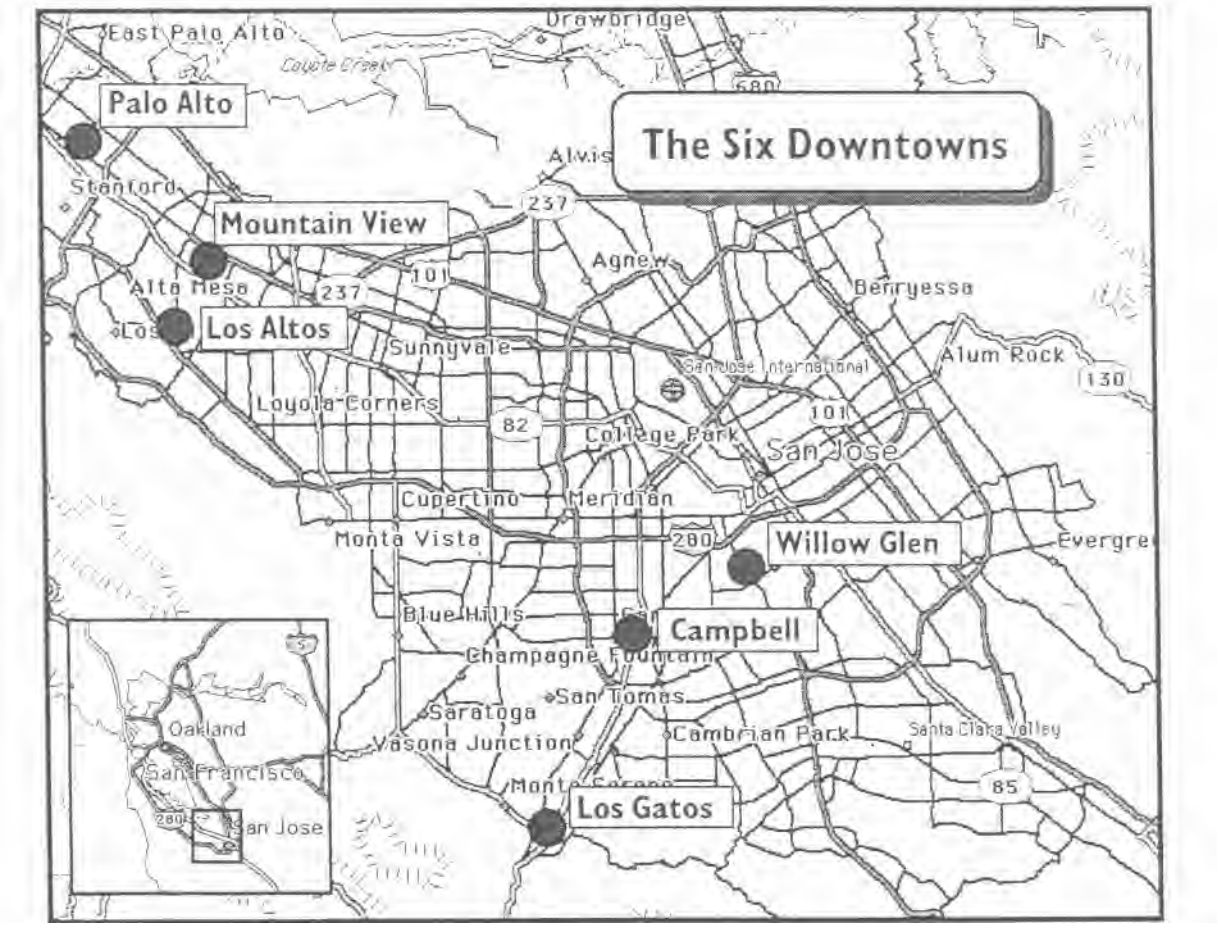
Trees and landscaping.

A fundamental difference in tree planting and landscaping exists also between the shopping centers and the downtowns. For the former, the decision to plant or not plant trees originally or the modification later is the result of a decision by the shopping center owner (often a real estate development firm). For the downtowns the decision is a public, collective one, and funded by public monies always with the notion that improvement is for the general public good be it simply esthetic or with commercial advancement motivation in mind.

Tenant Mix

The other major, and fundamental, difference between the two is the possibility of action that a shopping center owner can take in controlling the types of business establishments in the center, known in the trade as "changing the tenant mix" by using the devices of lease prices and duration. The pattern in downtowns has no such control, and accordingly, the mix at any one time is a product of collective response by individuals to

The Six Downtowns of the study area



The six downtowns, selected for the study, are the major old, small trade centers of Santa Clara Valley. All were local centers supplying goods and services to their surrounding communities. All, except Willow Glen, are corporate entities; Willow Glen, independent at'one time, was annexed by San Jose in the 1920s.

Figure 40

Downtown Study Areas: Mountain View and Los Gatos

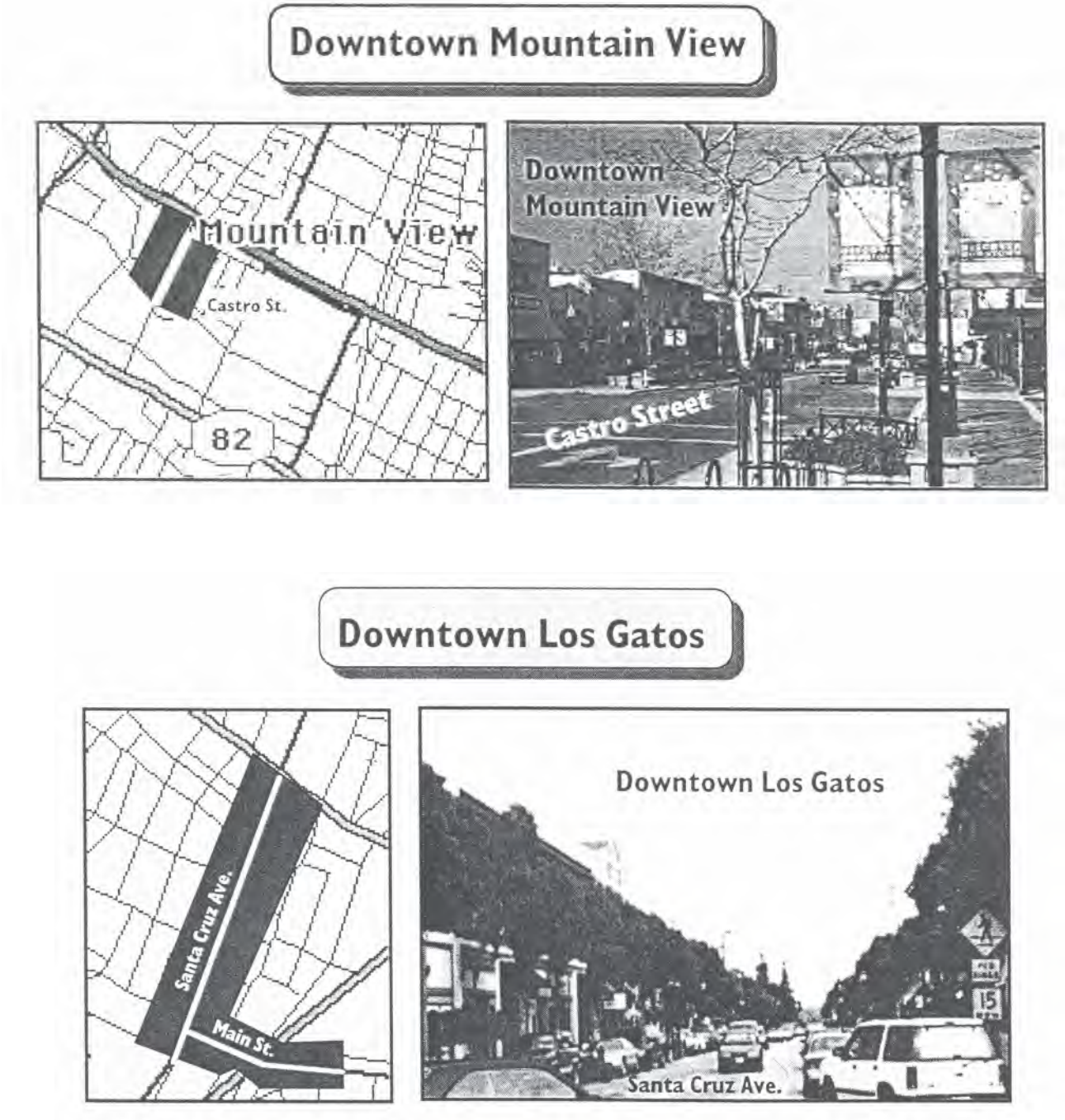


Figure 42

Downtown study areas: Willow Glen and Campbell

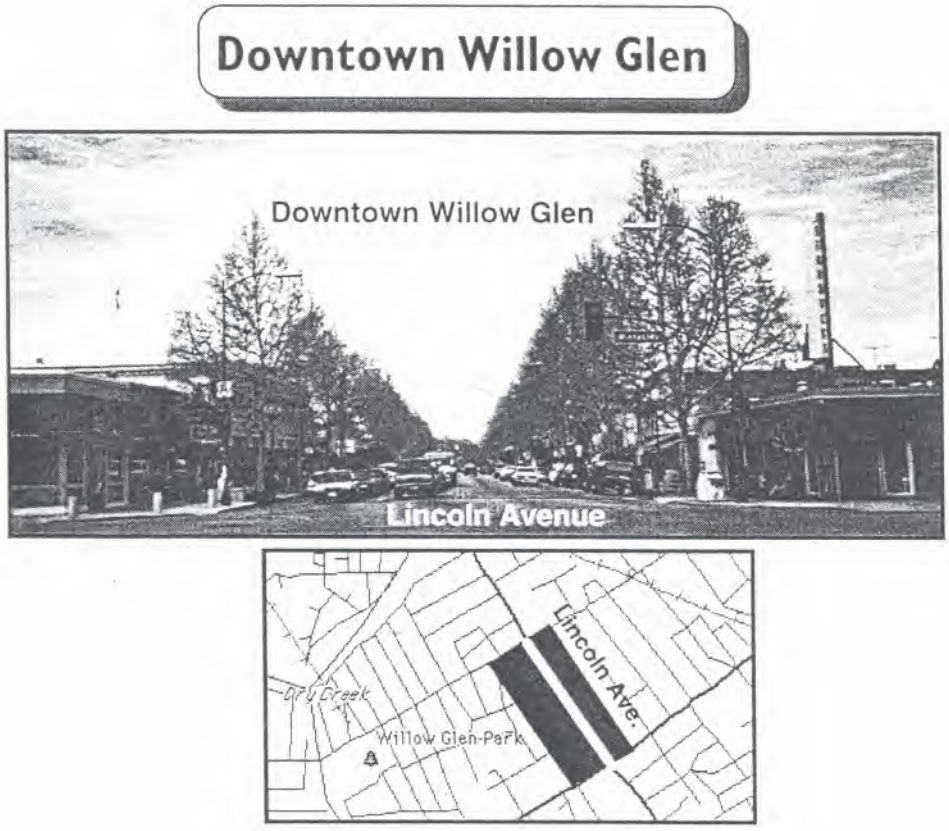


Figure 43

the demands of the market place. As will be discussed under findings, the six downtowns have responded to these market demands, and in the process have undergone dramatic change in the past quarter century.

Shopping center/downtown relationships

Neither shopping centers nor the old downtowns operate in a vacuum. Common wisdom claims that the building of shopping centers was the direct (and often principal) cause of the decline of downtowns; the cry is still heralded by the supporters of downtown San Jose that the culprit is Valley Fair. A more sophisticated view is that the loss of businesses in downtown were felt first and mainly by retailers of *mass appeal goods and services* (a category comprising general clothing-shoe stores, department stores, and general household goods). Some others, some *limited appeal specialty goods and services*, and some *convenience* establishments were also hurt as the principal customer base was drawn to the shopping centers.

Today, however, and with details provided below, the downtowns have almost entirely replaced the lost mass appeal shopping goods with eating/drinking establishments and high-end specialty goods. Thus, downtown Palo Alto thrives even though highly successful Stanford Shopping Center is nearby. To look at the situation in another way, the market is not a "zero-sum game" today. General expansion of the total market plus a dramatic increase in disposable income have resulted in such a much broader market that not only do mass-appeal oriented malls/shopping centers thrive but most downtowns prosper as well. That downtown San Jose and downtown Campbell have not shared in this prosperity is probably due to other exogenous factors, not the least of which is a broad enough base of near downtown residents of sufficient means, residing within walking distance, to support downtown establishments; San Jose is currently attempting to build such a base with its many new downtown housing complexes and entertainment centers.

Structure of the study

This study has focused its efforts on defining the relationship between trees/landscaping and growth in high-end retailing in the downtowns. A significant increase in number and size of trees from 1971 to 1997 has been observed and recorded for all six downtowns. A dramatic change in the retail character of the downtowns is also recorded. They have all progressed from local trade centers to places offering a range of high-end specialty goods and services for a market stretching far beyond the former area of customers supporting these downtowns.

Method

Tree assessment. Using the process of *mensuration* of aerial photographs of two dates of 1971 and 1996, tree numbers and canopy area were measured. Canopy was measured by noting tree diameter on the photographs and calculating area.

Trees are found along the streets in the parking strip and in special planters (see photo on next pate). Trees have also been planted in parking lots for their esthetic value, the finished look they provide, and as shade in summer for parked cars.

Along Santa Cruz in downtown Los Gatos.

Work is currently underway along Santa Cruz Avenue in Los Gatos to add to the many existing trees planted in the parking strip. Planter boxes and decorative fencing and lighting fixtures in conjunction with newly planted trees lend a finishing touch and enhance the ambiance of the street as artwork. The presence of these units also has the effect of softening any harshness of the street as a traffic arterial by breaking up the view of the street as a linear phenomenon and enhancing the pedestrian tone of the sidewalk.

In all six downtowns, tree planting has resulted in a profound difference in the appearance of the main streets and parking lots. All were literally transformed from a barren, commercial priority landscape to a softened one where stores were masked by trees. Today, the motorist drives down a corridor of trees and the sidewalk pedestrians see little of the street; their attention is directed toward shop fronts.

Measurements (see Table 3) support the esthetic generalizations. Collectively for the six downtowns, tree numbers increased from 659 in 1971 to 1478 in 1997. Total canopy increased by 1009 percent, from 37.344 square meters in 1971 to 407,355 square meters in 1997. Tree numbers in each city increased with the greatest being in Los Gatos, growing from 182 to 373. Of the six, Los Altos showed the largest canopy in the parking lot at 43,870 square meters.

Land use change

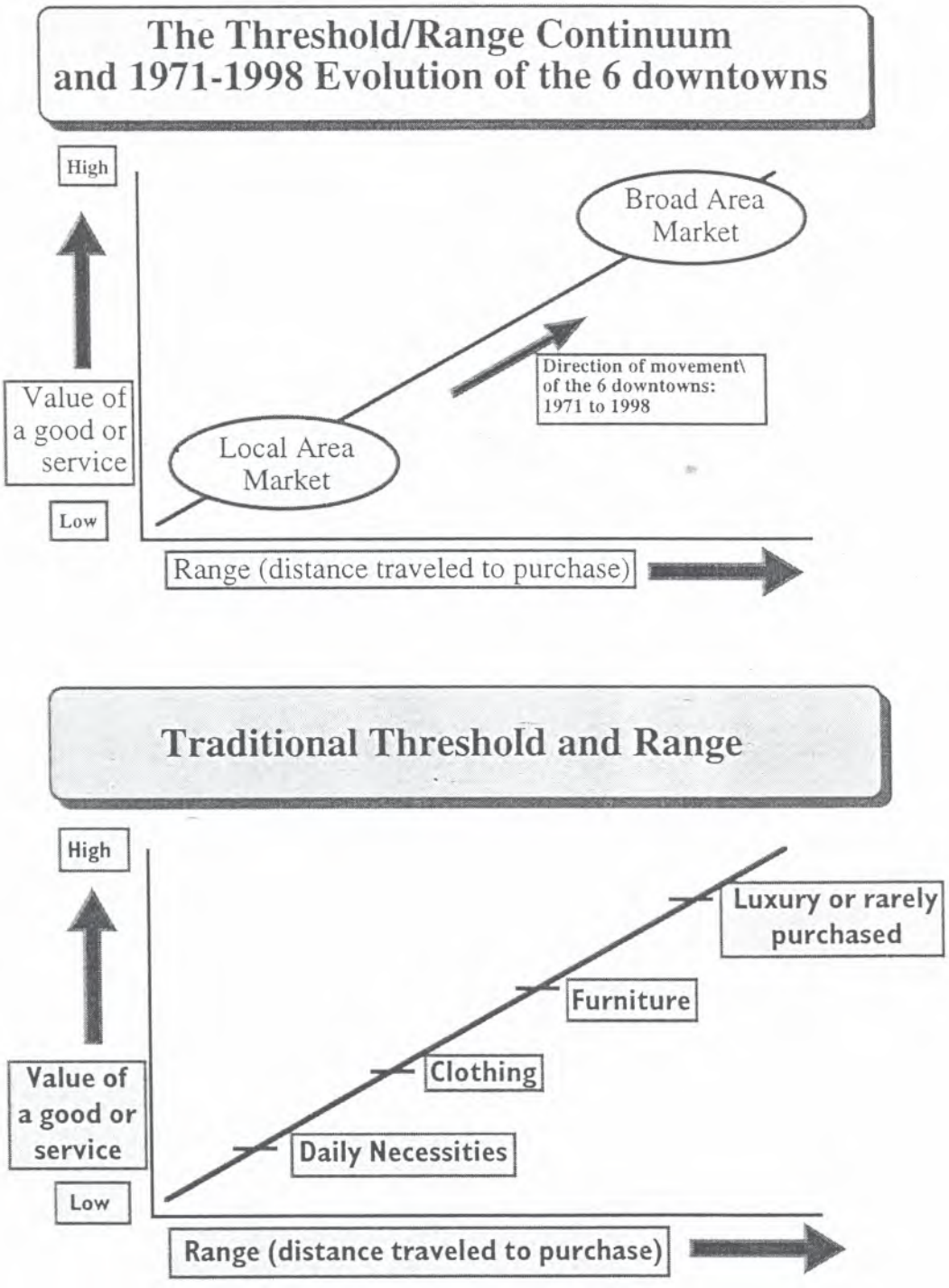
The very nature of the downtowns, being composed of individually owned properties and places of business, makes it virtually impossible to acquire data on property values or rents. Sales tax revenues cannot be revealed by the California State Franchise Tax Board due to laws disallowing disclosure of any indication of the amount of sales of individual stores except by special order at high cost; for shopping centers, data were available for use in this study being reported collectively, as they are, for the shopping center as a whole, but only the large ones.

As a result, inferential data had to be employed to measure downtown area growth and change and from these measurements an inference could be made of property values, those for the past compared to those of the present, thus meeting the goal of the study. Fortunately, a body of urban geography theory could be applied to available data. Using these theories, the types of retail establishments were observed, both at the present and via city directories to recreate the retail landscape of 1971.

One major theory (Figure 44), that concerning the size and distribution of central places, states that retail centers (both downtown areas and shopping centers) of small cities will be trade centers for their immediate hinterlands and will offer goods and services to serve those hinterlands. Emphasis is on low-level *mass appeal goods and services,* such as general clothing stores and household goods and *convenience* goods and services, such as cleaners, hair dressers, and shoe repair shops. The *threshold and range* for higher order goods and services can be profitably offered only in larger cities. Such goods and services require a large customer base to reach a threshold base level of support for a store offering such items. This means that only a relatively small portion of the population will be in such a market, either because of restrictive high cost or lack of interest, e.g., specialized hobbies.

Given the nature of the study's downtowns, all were essentially small town trading centers in 1971, engaged primarily in serving their immediate markets in the immediate hinterland. Assessing the number and proportion of these businesses would provide a quantitative base for comparison with figures of the present situation.

That the downtowns have achieved a character today quite unlike what they had twenty-five years ago is common knowledge. Visits to the downtowns by a casual observer reveal what seems to be a high proportion of high-end shopping establishments, and an unusually high number of eating and drinking places. As should be obvious to all, the immediate market of these downtowns, their local populace, would not be great enough to support all of these establishments, thus suggesting the method to be employed should count and measure business establishments of the two major types of: (1) high-end shopping and eating/drinking retail stores; and (2) local service, local market related stores. In addition, theory would suggest that in 1971, the old downtowns still exhibited remnants of mass appeal shopping goods stores, ones that had not yet succumbed to the competition from the burgeoning shopping centers.



The traditional threshold (bottom) demonstrates the basic theory that the market for daily necessities serves a local population. At the top end of the continuum are offerings of high-end goods and services. The upper graph illustrates how the six downtowns have been transformed in the last quarter century from primarily local markets to those serving a wider population.

Figure 44

Given these differences, all the stores in all downtowns were noted and placed into the two broad classes, each containing a number of discrete types of stores, as the following table indicates:

Types of retail goods and services establishments

Broad market, high-end

I. Eating and drinking (defined as all those offering seating and tables)
2. Home furnishings (including boutiques, gift shops, collectibles)
3. Specialty clothing (mainly women's clothing)
4. Art galleries and framing
5. Books and music
6. Jewelry
7. Specialized sporting goods
8. "Yellow Pages" items, those highly specialized offerings that often select string street -locations but can prosper in old downtowns, largely because of a readily recognizable address
9. Movie theaters

Local market, convenience

1. Local services (comprising shoe repair, cleaners, travel agents, laundries, etc.)
2. Hair salons, nails, barber shops, beauty supplies
3. Banks
4. Printing, copying
5. Optical (glasses and optometrists)
6. Florists
7. Drugs and pharmacies
8. Cameras, one-hour developing, film, etc.
9. Stationery
10. Portrait photographers

For each of the six sites the initial task was to define the area of pedestrian circulation. These areas are where customers arriving by car, and park either on the street or in designated parking lots, shop on foot in a single visit to the downtown. Beyond these areas, in each case, lie shopping, centers with theirown off-street parking, and are not be considered to be an integral part of a downtown. Pedestrian circulation areas for each city were:

Palo Alto: University Avenue, Hamilton Avenue, and Lytton Avenue between Alma to the west and Cowper Street, plus the side streets between the half block south of Hamilton and Lytton.

Mountain View: Castro Street from the railroad tracks to California Street plus approximately a half block on either side of Castro on some of the cross streets.

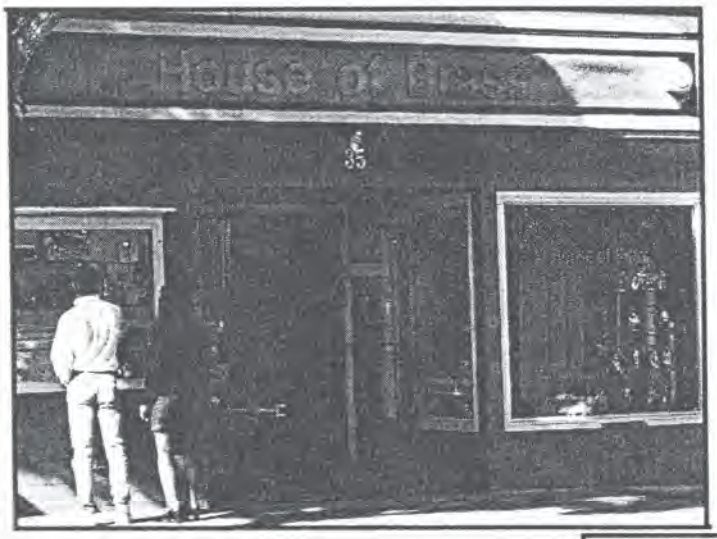
Los Altos: Main Street and State Street from Foothill Expressway to San Antonio Street, plus sidestreets in between and adjacent parts of streets.

Los Gatos: Santa Cruz Avenue between Highway 17 entrance on the south and Saratoga Avenue on the north, plus Main Street to near the high school.

Willow Glen: Lincoln Avenue from Willow Street to Minnesota plus a quarter block on Willow Street.

Campbell: Campbell Avenue from Winchester Boulevard on the west to the railroad tracks on the east.

Retail goods and services establishments were placed into the classes (introduced on the previous page) for both 1971 — from information provided in the Polk Directories oy the Haines Directories — and 1997, from field observation. Determination in the field is readily made. Examples below illustrate.



The House of Brass on Santa Cruz Avenue in Los Gatos is a good example of a Broad Area Customer Base, High End. (Home Furnishings) retail store.

This shoe repair shop on Campbell Avenue falls into the class of Local Area Customer Base, Convenience. Establishments of this type, serving the local populace, are seen in all six of the study's downtowns.

Findings for the downtowns

Findings are discussed under the two headings of: first, an accounting of the trees in 1997 and their number and condition twenty-five years earlier; and second, their conversion from the dominance of local area customer-base retail providers of goods and services to dominance by broad area customer base, high-end providers.

Tree cover

Tree cover in the downtowns, unlike the shopping centers where trees have been planted either in the parking lots or on streetside berms, is found: (I) in parking strips along the curbs; and (2) in parking lots located either at the rear of stores lining arterials or in other designated parking lots, usually where buildings have been razed. Ground photographs in Willow Glen and Los Altos, on the following page, are examples.

The pattern of parking strip trees varies among the study downtowns. In some, especially Palo Alto and Willow Glen, the trees have been planted close enough together (and are mature enough) to have formed nearly a solid linear canopy along each side of the main streets. A limit in size suggests itself. If the canopies grow wider, branches will touch building fronts and will extend out excessively over the street. One effect here is the obscuration of (during the full leaf period of the year) of signs indicating the business establishments along the street although the benefit may be well worth the cost. In the other four downtowns spacing of the trunks is so wide that a continuous canopy cannot be achieved. An attractive urbanscape is produced but maximum effect on cooling local "urban heat islands" will not be made. At any rate, the degree of canopy is probably, to the average city user, more conceptual than clinical. -

Parking lots also vary from one downtown to another in number, size, and tree plantings. In all six study downtowns, offstreet parking lots have been created to serve the large number of people coming in from considerable distances. Some lots have been placed where buildings were razed, always on side streets rather than using premium main street frontage. In others, large open spaces have been created at the rear of principal street-facing stores.

The largest downtown, Palo Alto, has found it necessary to acquire several vacant lots to devote to public parking. That these have a two hour limit (with a further restriction by zone) manifests the success Palo Alto has had in attracting customers to its downtown. These lots have a spattering of trees within them but in no instances are solid canopies formed. Considering their relatively large areas of dark asphalt surface, these lots would be ideal places to plant more heat island mitigating trees. Most of the offstreet parking in Los Gatos is found in the long, linear area paralleling Santa Cruz Avenue and between Santa Cruz Avenue and University Avenue that was once occupied by the main railroad line connecting Santa Clara Valley and Santa Cruz. This has made for an ideal situation as the lots

at the rear of the stores facing long Santa Cruz Avenue provide ready short distance access for shoppers going from car to store. Trees have been planted at the outer edges of the lots but the interiors are virtually without trees suggesting an area ripe for additional plantings. Mountain View's lots are also found at the rear of the businesses lining the main street (Castro) and provide parking for the area's large restaurant trade. Trees are largely absent. The parking situation in Los Altos is the best of the six sites as its parking lots were planned to parallel, and lie between, the main streets (Main and State) and were planted thickly with trees that now form solid canopies (see photo below). Willow Glen's parking lots, again at the rear, on the west side of Lincoln Avenue are spacious but have few trees. Campbell's lots are similar with but a few trees.

Examples of tree cover along principal streets and in parking lots are seen below.

Parking lot behind Main Street in Los Altos.

Figure 45

Trees in Downtown Palo Alto: 1971 and 1994

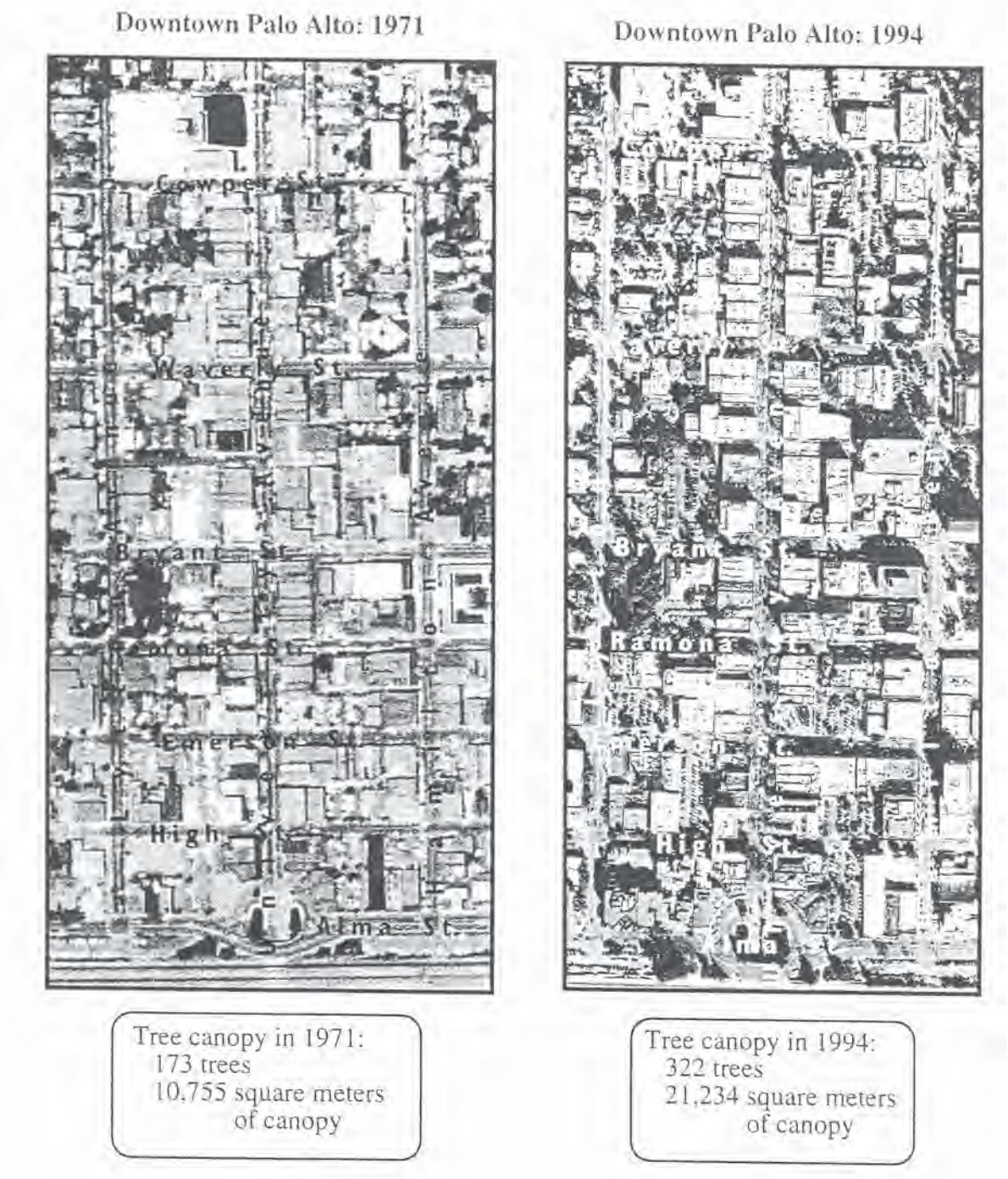


Figure 46

Trees in Downtown Los Gatos: 1971 and 1996

Downtown Los Gatos: 1971

Tree canopy in 1971
182 trees
11,678 square meters of canopy

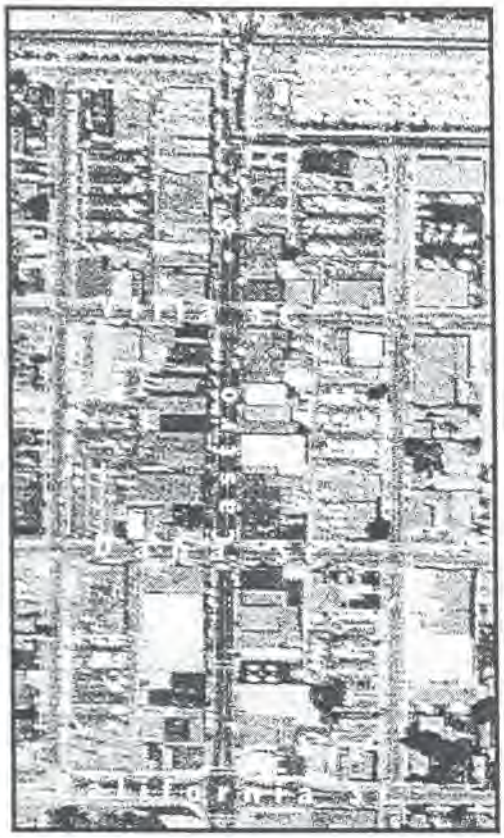
Downtown Los Gatos: 1996

Tree canopy in 1996
373 trees
22,489 square meters of canopy

Figure 47

Trees in Downtown Mountain View: 1971 and 1994

Downtown Mountain View: 1971



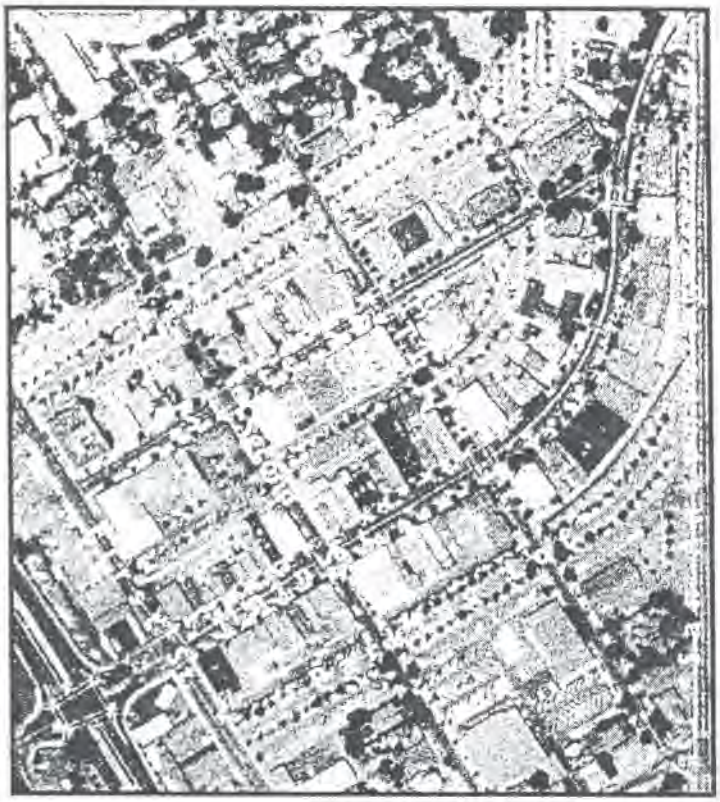
Tree canopy in 1971
78 trees
3,571 square meters
of canopy

Downtown Mountain View: 1994

Tree canopy in 1994
168 trees
9,207 square meters
of canopy

Figure 48

Trees in Downtown Los Altos: 1971 and 1994



Downtown Los Altos: 1971

Trees in 1971:
184 trees
9,083 square meters
of canopy

Downtown Los Altos: 1994

Trees in 1994:
252 trees
19,368 square meters
of canopy

Figure 49

Trees in Willow Glen: 1971 and 1996

Downtown Willow Glen, 1971

Tree canopy in 1971:
29 trees
746 square meters
of canopy

Downtown Willow Glen, 1996

Tree canopy in 1996:
220 trees
40,370 square meters
of canopy

Tree Cover Data

A complete inventory of all trees — by size class: 15 meter, 10 and 5 meter diameter crowns— was taken, through interpretation of the aerial photographs and reported in Table 3. The early time data are from the 1971 photographs: the "current" data are from 1996 photography, where available, and from 1994 data for the balance. Canopy was then computed for each class and summed for each downtown.

In 1971, the three most affluent communities — Palo Alto, Los Altos, and Los Gatos — demonstrated more of an urban forest than did Mountain View, Willow Glen, and Campbell. Trees in the first three were more numerous, larger, and had more canopy cover than the latter three. The aerial photographs give evidence of attention and care given to planting trees (see the 1971 photo of Los Altos as the best example).

Of the latter three, Mountain View appears already to have been intent on improving its environment, reflecting its early interest in establishing itself as a restaurant center. Willow Glen had yet to receive its improvement monies from San Jose's urban redevelopment funds, and even though the nearby residential area had, even then, a reputation as a sylvan urbanscape, commercial Lincoln Avenue continued on, following a past paradigm. Downtown Campbell remained a paved over barren land.

By 1994-7, the urban forest situation shows dramatic change (see Table 3). Numbers of trees and size of canopy increased in all six downtowns. Palo Alto and Los Gatos roughly double both their tree numbers and canopy area. Los Altos doesn't show a doubling of tree numbers but their earlier extensive planting pays off as these trees grow considerably allowing for a rough doubling of canopy size. Mountain View too shows a doubling of numbers but canopy nearly triples.

Latecomers Willow Glen and Campbell show the greatest increase in tree planting and canopy growth. Willow Glen's Lincoln Avenue (see photo again) is especially transformed.

To offset different histories and differences in absolute size, a calculation was made of what was determined to be the most appropriate measurement of the visual impact of a downtown's urban forest: the amount of canopy that covers the streets, sidewalks, and parking lots, for it is here where the downtown's customers drive, stroll, and park, and where they are most abundantly aware of the presence (or absence) of trees. And, of course, these are the only areas in downtowns where trees can be planted.

The area of streets, sidewalks, and parking lots was measured from the aerial photographs after first calculating scale and making measurements with a millimeter ruler. Percentages were then taken of the aggregated tree cover, relative to these areas. Figure 51 shows the dramatic change.

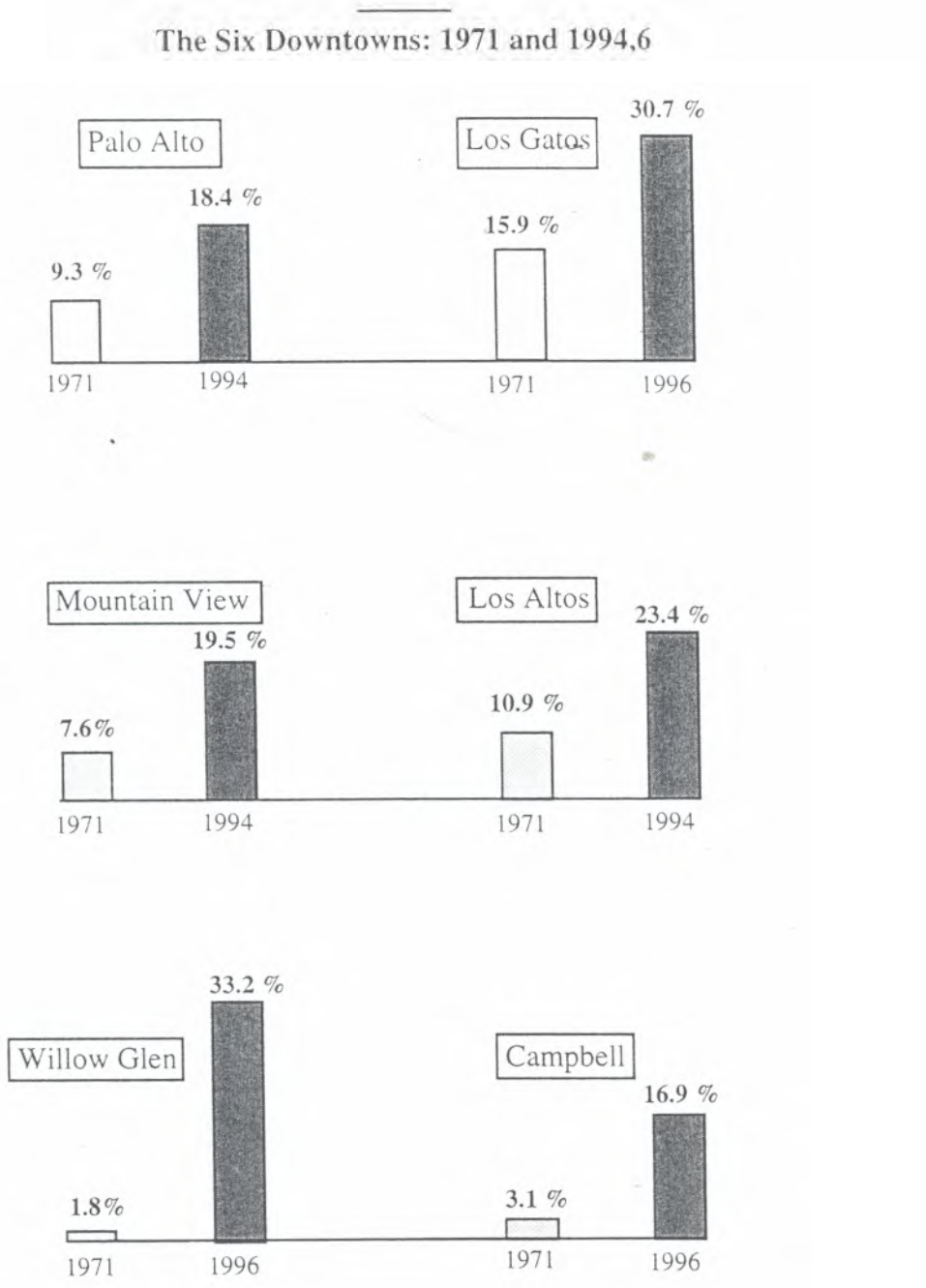
Table 3

The Six Downtowns: Tree Number and Canopy: 1971 and 1994,6

Palo Alto	19 71			19 94			
Tree Crown Diameter Class	Number of Trees	Canopy in Sq. Meters	Canopy as % of Streets Walks, P. lots	Number of Trees	Canopy in Sq. Meters	Area in Sq. m Streets, walks Parking lots	Canopy as % of Streets Walks, P. lots
15 meter	19	3554		35	6185		
10 meter	71	5574		160	12560		
5 meter	83	1627		127	2489		
Totals	**173**	**10755**	**9.3**	**322**	**21234**	**115564**	**18.4**
Los Gatos	19 71			19 96			
Tree Crown Diameter Class	Number of Trees	Canopy in Sq. Meters		Number of Trees	Canopy in Sq. Meters		
15 meter	25	4418		37	6538		
10 meter	71	5574		159	12482		
5 meter	86	1686		177	3469		
Totals	**182**	**11678**	**15.9**	**373**	**22489**	**73105**	**30.7**
Mountain View	19 71			19 94			
Tree Crown Diameter Class	Number of Trees	Canopy in Sq. Meters		Number of Trees	Canopy in Sq. Meters		
15 meter	7	1237		15	2651		
10 meter	16	1256		61	4789		
5 meter	55	1078		92	1803		
Totals	**78**	**3571**	**7.6**	**168**	**9207**	**47222**	**19.5**
Los Altos	19 71			19 94			
Tree Crown Diameter Class	Number of Trees	Canopy in Sq. Meters		Number of Trees	Canopy in Sq. Meters		
15 meter	4	706		12	2118		
10 meter	82	6437		213	16721		
5 meter	98	1940		27	529		
Totals	**184**	**9083**	**10.9**	**252**	**19368**	**82710**	**23.4**
Willow Glen	19 71			19 96			
Tree Crown Diameter Class	Number of Trees	Canopy in Sq. Meters		Number of Trees	Canopy in Sq. Meters		
15 meter	0	0		13	2297		
10 meter	3	236		120	9420		
5 meter	26	510		87	1705		
Totals	**29**	**746**	**1.8**	**220**	**13422**	**40370**	**33.2**
Campbell	19 71			19 96			
Tree Crown Diameter Class	Number of Trees	Canopy in Sq. Meters		Number of Trees	Canopy in Sq. Meters		
15 meter	5	883		13	2297		
10 meter	8	628		57	4475		
5 meter	0	0		73	1431		
Totals	**13**	**1511**	**3.1**	**143**	**8203**	**48384**	**16.9**

Figure 5 1

Percentage of Tree Canopy Covering Streets, Sidewalks & Parking Lots



All downtowns show considerable gains in canopy growth proportional to area. Variations are readily reconciled.

Palo Alto shows a rough doubling, of canopy but the current amount of cover may seem intuitively small. This is because the visitor's conception of tree-lined University Avenue and the side streets may fail to note the relatively few trees in the downtown's many, and large area parking lots. Los Gatos, also doubling from 1971 to the present, reaches a figure of close to a third of the street-parking lot area being shaded by trees thanks to the presence of many street trees, those in the small plaza at Santa Cruz and Main Streets, and because of the many large trees bordering, but not in the center area of the city's parking lots. Mountain View's canopy proportions are low because of the near barren parking lots. Los Altos doubled its canopy and ranks high although canopy proportions are somewhat depressed owing to the large size of the city's parking lots. Willow Glen's big jump to the present one-third canopy cover reflects mainly the large trees on Lincoln Avenue and in some of the parking lots. Campbell's gain is imposing but its present canopy cover of roughly seventeen percent is small, compared with the other downtowns.

The Nature of the Business Establishments of the Six Downtowns

Clearly, the downtowns were physically changed, improved from 1971 to the present. In addition to the planting and growth of the urban forest, other appurtenances — street furniture, ornamental arches, planter boxes, fashionable color splashes — gave these areas a look that was new, friendly, and competitively attractive to customers who were being lured by major shopping, malls with their designer interiors, food fairs, and the like. But, the question remained: did these improvements result in a greater number of customers, of increased sales, and ultimately, higher land values? While a direct answer is not possible, the surface indications of greater value, as discussed under method, were equally clearly present. All six downtowns had moved from a position of being largely local market business centers to regional or mini-regional centers.

Measurement of this phenomenon (reported in Table 4) involved the classifying and recording of business establishments under the two broad headings of: (1) Broad area customer base, high-end goods and services; and (2) Local area customer base, convenience goods and services. Measurements were made for both 1971 (from business directory data sources) and for the present, 1997. The broad classes are the aggregate of discrete classes, as the table indicates.

The leading component of the Broad area customer base is the class embracing all eating and drinking places. With the exception of Campbell, numbers here are extraordinarily high: Palo Alto has 77, Los Gatos 43, and relatively small Mountain View has 43, with restaurants appearing literally door to door along but a small three block frontage on Castro Street. Los Altos has 33, and Willow Glen 26. Reasons for the distribution vary. Palo Alto and Mountain View cater to surrounding high tech industrial areas, especially for the lunch trade, with Palo Alto profiting from its Stanford connection, especially on Saturday nights. Los Gatos also has a busy Saturday trade plus other weekend, including Sunday, shoppers at its antique and boutique stores. Los Altos benefits from its high-income neighborhood, and Willow Glen has become a San Jose local center for dining, morning, coffee and bagels. Campbell brings up a distant rear, in part because of the attraction of the Prune Yard shopping center, also within Campbell's corporate limits.

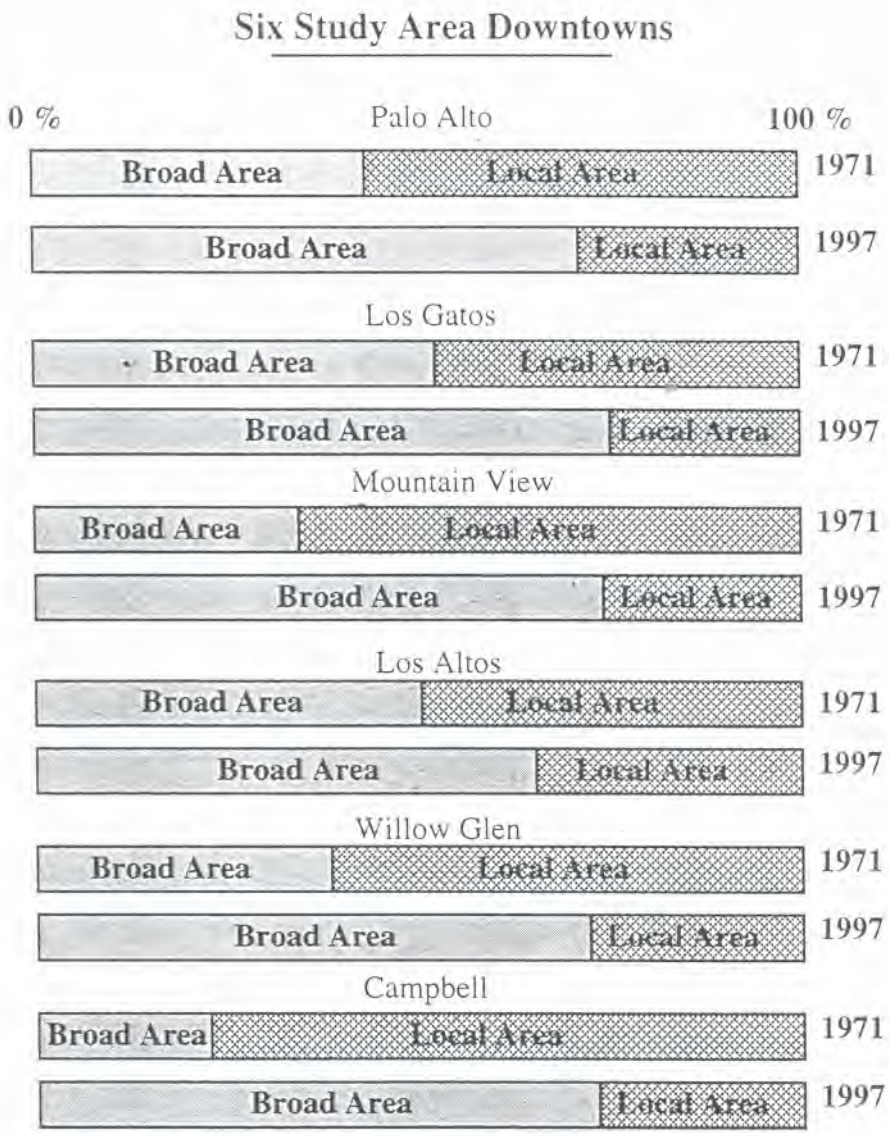
Table 4

Business Establishments, Six Downtowns: 1971 and 1997

Broad area customer base, high-end goods, services	Palo Alto		Los Gatos		Mountain View		Los Altos		Willow Glen		Campbell	
	1971	1997	1971	1997	1971	1997	1971	1997	1971	1997	1971	1997
Eating, drinking places	22	77	18	43	17	43	13	33	8	26	3	7
Home furnishings	12	29	30	39	3	8	16	31	9	16	1	12
Womens'/specialty apparel	4	18	12	22	2	0	6	17	5	5	3	3
Art galleries, framing	4	12	3	9	0	1	3	5	0	1	0	3
Books, music, etc.	7	8	3	7	1	6	0	8	3	4	0	0
Jewelry	7	7	3	11	2	1	2	6	2	4	0	0
Sports hobbies	1	5	3	6	0	0	4	1	0	1	0	2
"Yellow Pages"	2	4	3	2	1	2	0	2	6	2	2	4
Movie theaters	2	2	1	1	1	0	1	0	1	0	0	0
Sub total	61	166	76	140	27	61	45	103	34	59	9	31
Percent of Total	43.9	74.8	55.9	77.3	36.5	75.3	50.6	66.9	39.1	67.8	24.3	68.9
Local area customer base, convenience goods, svcs												
Local services	38	24	23	10	18	11	16	18	21	9	13	7
Hair, beauty	12	7	10	19	7	6	10	19	12	11	5	6
Banks, financial instit.'s	13	6	5	4	5	0	1	4	5	4	0	0
Printing, copying	0	6	1	0	1	0	0	0	0	0	0	0
Optical	1	6	0	4	0	0	2	2	1	1	0	0
Florists	2	3	2	2	1	1	3	3	1	2	0	1
Cameras, film	1	3	1	1	1	1	1	3	0	1	0	0
Portrait photographers	3	1	2	1	1	0	1	2	3	0	3	0
General merchandise	8	0	16	0	10	1	10	0	10	0	7	0
Sub Total	78	56	60	41	47	20	44	51	53	28	28	14
Total	139	222	136	181	74	81	89	154	87	87	37	45
Percent of total	56.1	25.2	44.1	22.7	63.5	24.7	49.4	33.1	60.9	32.2	75.7	31.7

Figure 52

Broad Area Customer-Base — Local Area Customer-Base: 1971 and 1997



Other sub-classes of the Broad Area Customer Base group further demonstrate the move to high-end, and therefore higher value, goods and services offerings. The class of *home furnishings* is a good case in point. The class, which comprises antique stores, "collectibles," and gifts, offers goods to customers who are browsing among the city's shops. These customers are attracted there, in part, because of the attractive (and tree-studded) environment. On a given weekend day, these customers will sample the merchandise at several stores, and probably take a libation or food at one of the many outlets. In other words, these high-end places work in consort as an agglomeration of attractions. A virtual guarantee of customers translates into higher values for urban land, both perceived and real.

Other outlets in this high-end category support the agglomeration of retail outlets, e.g., women's clothing stores offering a wide variety of styles from manufacturers not represented in the mass-appeal shopping malls. The art galleries/framing stores are constant attractions to persons wishing to enhance their domiciles. The concomitant appearance of book stores, especially the modern ones catering to browsers (and coffee drinker further augment the "good life."

The Local Area Customer Base stores offer goods and services to the truly local people, those for whom the local downtown is their *neighborhood shopping center.* Some of the very same retailers were, indeed, in these downtowns at the same locations in 1971. But even within these, some change has occurred, largely due to exogenous forces. For instance, the number of financial institutions has gone down, in part due to bank branch closures and to the consolidation of institutions. Printing/copying has gone way up thanks to technological change. Optical outlets have gone up, while portrait photographers have declined, perhaps because of the advent of video cameras, and home ownership of computer-enhanced photo manipulation equipment.

Aggregate figures by downtown

Conversion from Local Area customer base to Broad Area customer base was profound for all the six downtowns (see Figure 52). Using percent bar graphs, nearly all of the study areas went from roughly one-third broad area to two-thirds local in 1971 to two-thirds broad area and one-third local at the present. This may represent near maximum change considering that probably about a third local area offerings must always be present to provide for the local, and immediate market. Also, an urban geographic theory must be invoked, one that states that in the establishing of equilibrium, success is copied and that the market place will be filled with competitors until reaching the point where the weakest will not survive. This means, that, for instance, the number of antique stores in Los Gatos reaches a peak, for the moment, when all will profit. The addition of one or a few means that the weakest will not achieve market share and will fail. The same rule can readily be applied to the other sub-classes, such as as restaurants.

Retail types versus canopy cover

Again, the basic question is raised. What is the relationship between tree canopy and business success, as demonstrated by the conversion to Broad Area Customer Base provision of high-end goods and services? The bar graphs in Figure 53 & 54 provide an answer. For both 1971 and the present bar graphs of percent canopy and percent Broad Area customer base are shown, side by side, for each downtown.

Figure 53

Percentage of Tree Canopy Covering Streets, Sidewalks, & Parking Lots
Relative to Broad Area Customer Base, High-End Goods and Services

The Six Downtowns: 1971 and 1997

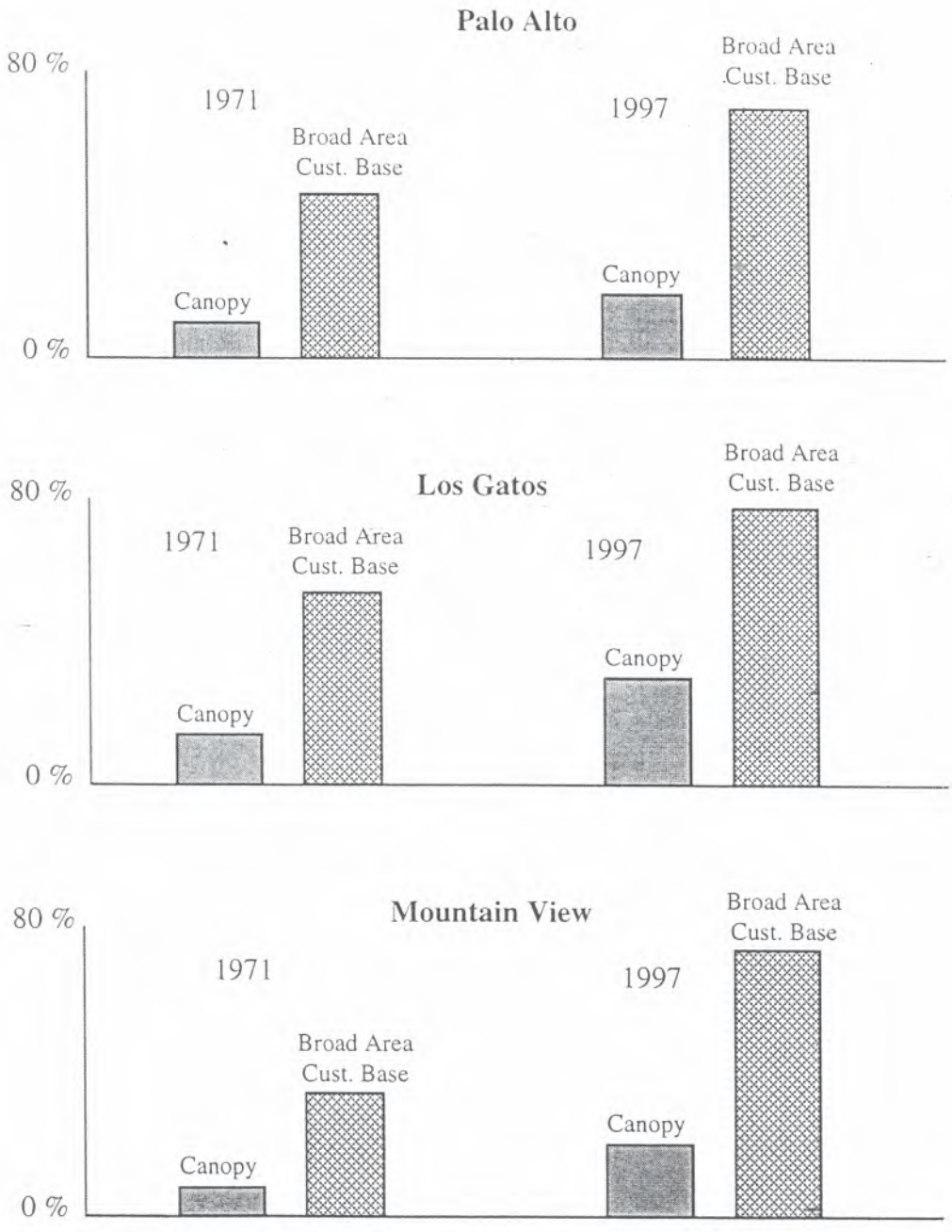
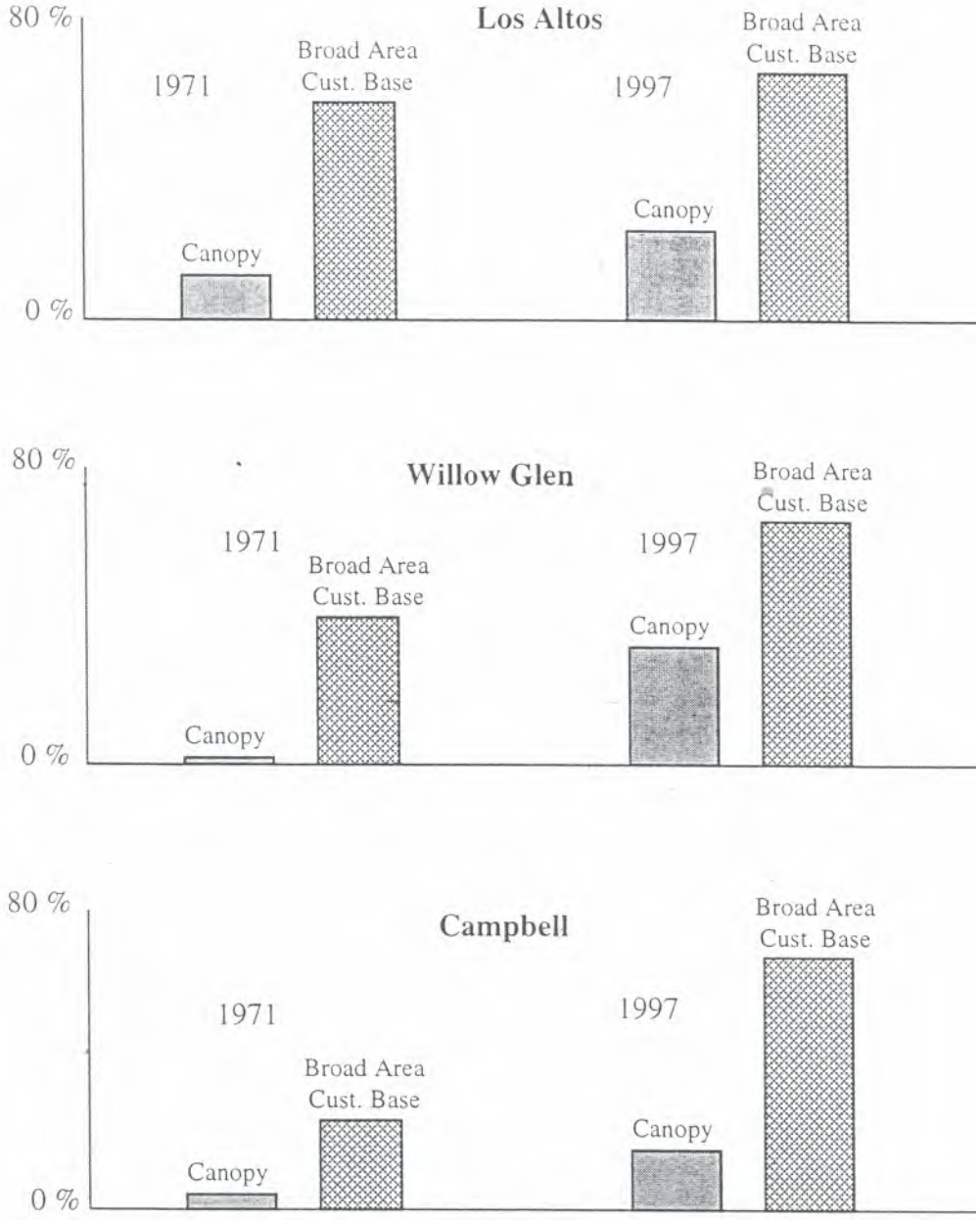


Figure 54


80 %
Los Altos
Broad Area
Cust. Base
1971
1997
Broad Area
Cust. Base
Canopy
Canopy
0 %
80 %
Willow Glen
Broad Area
Cust. Base
1971
1997
Broad Area
Cust. Base
Canopy
Canopy
0 %
80 %
Campbell
Broad Area
Cust. Base
1971
1997
Broad Area
Cust. Base
Canopy
Canopy
0 %

In all six downtowns, the Broad Area customer base increased from 1971 to the present. and so did the percentage of canopy covering streets, sidewalks, and parking lots. Palo Alto increased in both although its customer base increased more than did its canopy suggesting that with business so good, the incentive to afforest (in the parking lots) was somewhat reduced. Los Gatos shows a similar trend. Mountain View too shows a big gain in its retail character while its increase in canopy was somewhat modest. In Los Altos, its canopy grew — as a result of heavy earlier plantings — while its high-end retail did not change proportionally as much considering that it was already catering to a "high-end" clientele. Willow Glen's attention to tree planting appears to have yielded proportionately the greatest gain. A tie with Willow Glen's sylvan reputation may be cited. Campbell did relatively little to add canopy and the increase in Broad Area customer base is in part an artifact of a small number of cases and a the fairly large number of very small shops that form in part of the total.

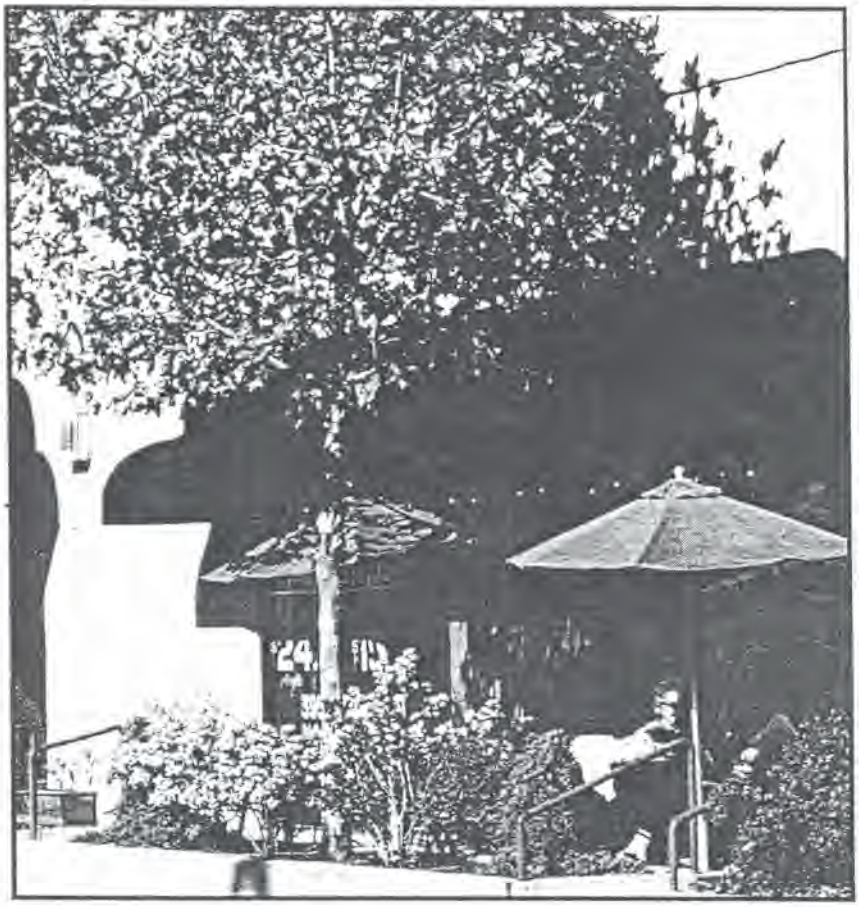
In sum, the relationship between increased business activity of a higher-end nature and tree canopy is strong. Of course, the impact of other forces cannot be dismissed. The general increase in population numbers, the increase in the level of affluence in SiliconValley, the demographics providing a large population in the market for high-end good and services, and with the disposable income to purchase them, must all be cited. Easier access is another. The freeway connection to Los Gatos is good, and the same can be said of Palo Alto, and Mountain View, and even Los Altos, with the connections from Interstate 280. Willow Glen's access is more difficult although Lincoln Avenue, as an arterial street causes many passing through to notice the area's development. Campbell finds itself in the position of being near Highway 17 but having only awkward access. Winchester Boulevard passes to the west with little notice of backwater Campbell Avenue, and the area is separated from prosperous Prune Yard Shopping Center by Los Gatos Creek and the twin "rivers" of the railroad and Highway 17.

Field Observations in the Six Downtowns

Street scene along Campbell Avenue, in Campbell. This is a good example of parking strip tree plantings that are physically attractive, yet the commercial response is not yet, at least, as successful as local planners would like. Other factors detract from Campbell's bid to match the other study downtowns in commercial activity.

This shop, in Los Gatos, selling nature photographs is a good example of the high-end type of retail establishment that has moved into the downtowns in recent years as they have converted from local market service centers to broad area markets for specialized goods and services. Rents and land values have increased as a result. One of the parking strip trees can be seen on the right.

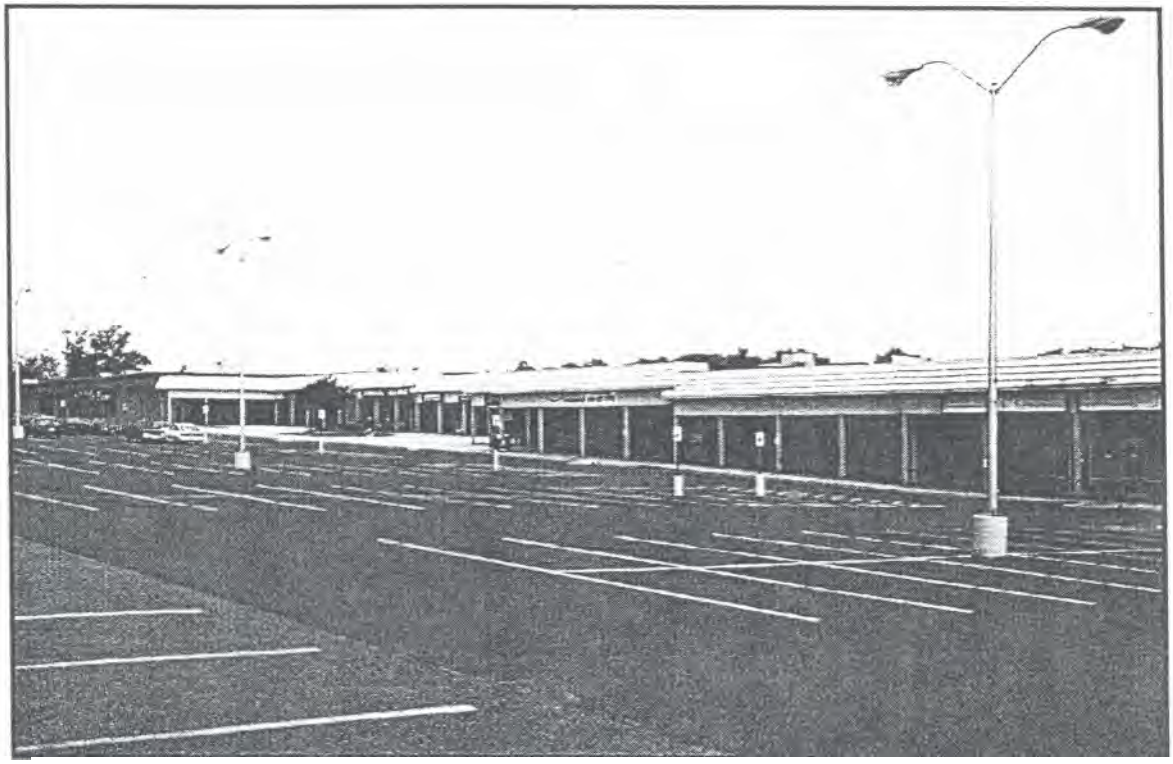
An outdoor eating area in an older building in downtown Palo Alto. The adjacent deciduous tree provides shade to the luncheon customers in summer but allows winter sun to warm this cozy spot.



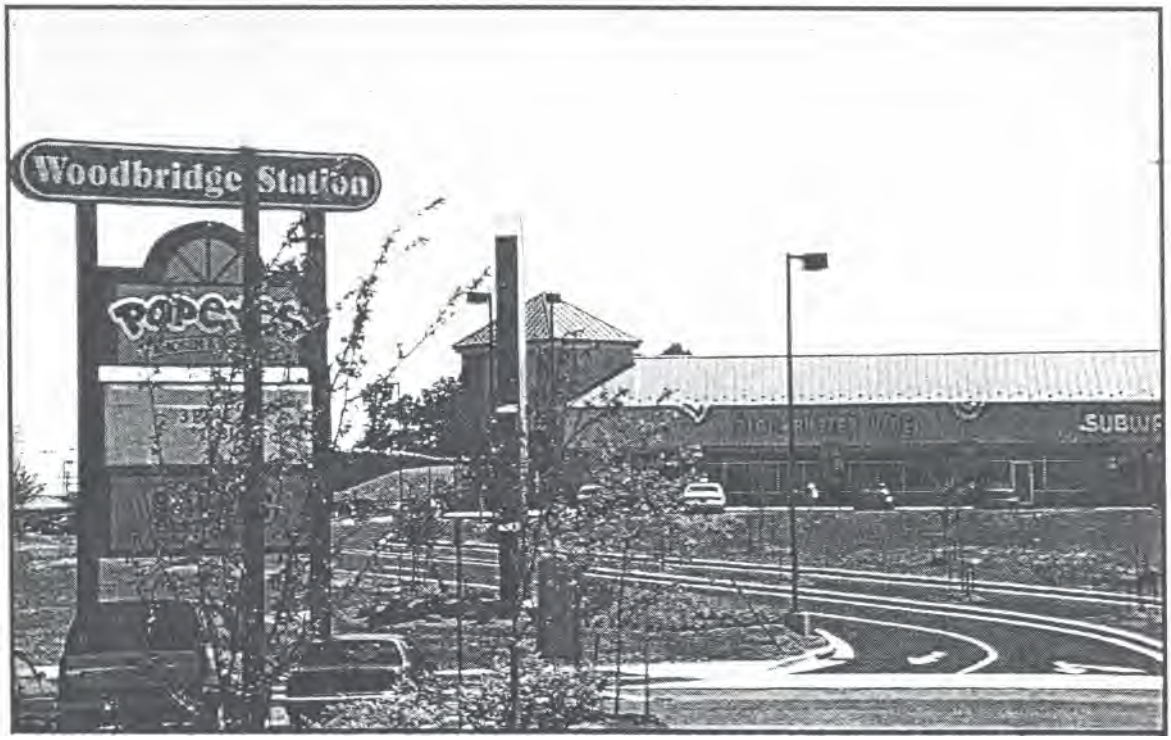
A tree shades luncheon diners at a restaurant along a side street in Los Gatos. The tree and its related planter box provide both shade while breaking up the inherent boxiness of the building. The curved awning and the umbrella assist.

This parking lot, in Los Gatos, has large trees at its perimeter. The parking area showing is actually the top floor of a parking structure ; cars are parked below.

Shopping Center Contrasts; a 1997 example from eastern U.S.



Above: a near treeless, partially abandoned shopping center, near Edgewood, Maryland; the only open stores are near the center's lonesome tree, in the distance.



A new, landscaped neighborhood class shopping center has recently been built across the highway (US 40) from the one above. Attraction of the new over the old is obvious with its landscaping, trees, and modern architecture.

Conclusions

Conclusions resulting, from the study are:

- The valid way to study the relationships between tree cover (the urban forest) and viability of commercial businesses in shopping centers and old downtowns is to measure both for two time periods and compare the products. In this study, the base date was 1971 and the latter date was the present.

- Historical and current vertical air photographs are ideal as they are easily interpreted and measurements can readily be made from them.

- Using the above led to the primary finding 6f the study: a high degree of association exists between urban tree cover and the presence of high-end offerings of goods and services. That retail offerings have converted from primarily a local market service base in 1971 to a predominant offering of goods and services to a broad area market (for all the downtowns and many of the shopping centers) and to significant changes for the others is a good indication that urban land values in these areas has also greatly increased in the 1971-1997 period.

- The six downtowns have undergone radical change during the study time period changing from local neighborhood centers to broad market area centers with an almost Bay Area wide clientele. They serve as major examples of the revival of downtowns, forming a model others seek to follow. Tree plantings form a significant part of revitalization.

- A sylvan ambiance, shown to be of value in improving residential areas, proves to enhance commercial areas as well.

- All obviously successful shopping centers and downtowns have many trees, while poorer shopping centers have few, although a few aberrations are seen.

- Several of the shopping centers have remained unchanged since their construction in the 1950s and 1960s. Some have survived thanks to other favorable forces at work, such as a good location or conversion of an ethnic neighborhood.

- A valuable by-product of the study has been the ability to offer prescriptions as to target areas for planting more trees, parking lots in particular.